PRACTICE BRIEF
b-Learning in a Distance Learning Graduate Program for Deaf Students

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Abstract

This article results from a case study with exploratory traits where the implementation of a graduate degree in Portuguese Sign Language at the Portuguese Catholic University is analysed. With this study we intend to determine whether distance learning models using blended learning strategies are adequate for deaf students at the university level. The teaching practice using a learning management system and some Web 2.0 tools show us that is possible to provide education and training to disabled people that are not able to attend regular face-to-face courses at University. The option for technology-enhanced learning environments allows new solutions for old problems; issues that somehow limited the development of different skills in groups of individuals with specific traits.

Keywords: distance learning; blended learning; deaf education; Portuguese sign language

In 2008, the Portuguese Catholic University (UCP) launched the Portuguese Sign Language Graduate Program (Pro_LGP) specially designed for the deaf community. In such preparative work we were faced with two different realities: (1) by institutional option, a population made entirely of deaf students and (2) the fact that this population was mainly composed of working students. Consequently, it would be extremely difficult for students to attend regular classes at the University campus, fulfilling the frequency of attendance usually required by a face-to-face course graduation.

Bearing this in mind, and considering a previously successful experience at a master's program in educational computer science at UCP, the team decided to devise an educational design that would create the necessary conditions for significant learning[1]. Therefore we opted for a mixed training methodology, commonly designated as *blended* learning (b-learning). The academic results obtained so far and the students' perceptions about the technology environment used for learning have been encouraging and seem to indicate that our methodology choice was accurate.

This article intends to describe the operative procedures in this pioneer graduate program in Portugal, designed exclusively for the deaf community. It is currently running with two groups of students totalling 46 learners and taught in a distance learning system. All the students wrote their final high-school examination in Portuguese.

The Model For Developing the Program

Our target population fits into the expected framework for distance learning structures, according to some authors who have dedicated themselves to the study of these models such as Trindade (1992), Bates (1995), Keegan (1996), Holmberg (1997) or Lagarto (2002). The framework mentioned above identifies as potential distance learners those individuals with the following characteristics: maturity; being full time workers; and having achieved an adequate academic level, namely conclusion of high school (12th grade).

1 After the program began we have had contact with one similar experience running at Universidade Federal de Santa Catarina – degree in LIBRAS (Brazilian Sign Language)

A common definition for b-learning says that classroom activity should be followed by distance study, where students can interact online with course content, colleagues, and tutors in each Curricular Unit (CU). This study plan runs around three main scientific areas that support the knowledge and skills that students who finish the Pro_LGP graduate degree must acquire. Such areas are language science (90 ECTS[2]), neuroscience (36 ECTS), and educational science (54 ECTS). The area concerning language science is the one that weights more on the curriculum because our target public needs to acquire good linguistic and metalinguistic skills with their own language.

On the other hand, existing knowledge about how to teach working students shows that there is great difficulty in balancing professional activity and studies. Consequently, it is recommended that there should be no more than two or three CUs running simultaneously. Therefore we opted for a program with two CUs running in parallel during 12 weeks and having a weekly workload of around 10 hours each. This workload consists of individual assignments, readings, and participation in forums.

Students must attend classroom sessions every two weeks, where new content is introduced and activities are created that students must work on until the following face-to-face session. The language used in these sessions is Portuguese Sign Language (LGP), whether directly used by a fluent teacher in this language or through sign language interpretation. During the period between face-to-face sessions, students must work using the Learning Management System (LMS), where they can read content materials and participate in forums. Students' online participation is mandatory.

Each CU has a specific handbook, deliberately produced and published for the graduate program, which contains written information in Portuguese and also a DVD containing the CU's contents adapted to LGP. There are 26 handbooks that correspond to the 26 CUs of the program. To complement the handbooks, the LMS includes areas that allow teachers and students to upload and download additional content that builds upon the existing information, areas for posting relevant information, and areas for asynchronous communication.

Given the program's specificity and taking into account that it is designed exclusively for deaf students living among the hearing people majority, and that daily communication between hearing and deaf people is related to deaf individuals' fluency and proficiency in the Portuguese language, we elected bilingualism (LGP as their first language and written Portuguese as second language [L2]) as a methodological approach. Thus all course content is available in both languages. Based on observations by the teaching team, it is interesting to realise that, during the three years of the graduate program, students have been demonstrating increasing writing skills and many have chosen to do their assignments in written Portuguese. Such a development of their L2 was from the start a main objective because it provides the future graduates with better access to scientific documents and a wider integration in the academic community. Making the materials available in the typical distance learning formats (scripto and video, according to the categories established by Trindade in 1990), and in two languages, we were giving the students an opportunity to feel more confident and not feel lost while studying during autonomous learning periods.

The Technology Enhanced Learning Environment

Generally, a b-learning program should base its "distance" component on an LMS, a communication meeting point for students, teachers, and tutors. For the sake of simplicity, and because it provided us with the required pedagogical functions, we chose to use the existing software at the UCP - the Blackboard course management system. Due to the target population's specific traits, relevance was given to written and video languages, either through the video content available as part of the handbook or the content put together by the students themselves. Students were asked to create their own video productions for various course activities. We needed to have technology that allowed us to store and disseminate students' work and activities both in LGP and in written Portuguese since we had previously decided to ask students to communicate in both forms of written expression.

For this reason, it was decided that each student should create a digital portfolio, using a private blog, and therein store and exhibit all the assignments carried out during the course. Such blogs are of a reserved and confidential nature, and only the students, their teachers and the tutors/interpreters have access to them. It therefore became practical and easy for the teaching team to evaluate the students' work, eliminating the need to store files on disks, pen drives, or memory cards. The

2 European Credit Transfer and Accumulation System

convenience of this procedure is clear, which facilitated students' language expression and learning.

In these personal blogs the students collected all the produced work, either in written texts in Portuguese or in LGP, with short video recordings using the webcam and placing the file in the appropriate space. In this way, the tutor had clear access to the student's work. Some students chose to create such videos using YouTube. Other documents became part of the students' blogs, namely texts and presentations, the latter installed using online sharing software. The blogs became complete repositories of activities; a true personal e-portfolio.

The Tutorial Model

In an e-learning model, it is often fundamental for an active tutorial system to be set in place where the tutor has many functions, but whose tasks must be oriented in order to focus the learning process on the student's activities[3]. An active tutoring strategy implies an explicit commitment by the tutor to motivate the students; counsel; manage forums (placing questions, reading the students' interventions, posting corrections, raising new questions/issues, motivating the less participative students); evaluate students' learning; grade exams; and ccoordinate face-to-face sessions.

Active tutoring is by definition an extremely demanding process, although we acknowledge that all learning interactions do not occur exclusively between student and tutor. Anderson (2004) explains that the student can (and should) interact not only with the tutor but also with other students and learning materials. Only through this assumption it is possible to design financially sustainable training programs.

It is important to note that the developed activities and the interactions these practices generate have produced some user generated contents. This new tendency can modify the students' relation with the content and promote new and interesting ways of learning and building knowledge. Various products resulted from our graduate program, such as the massive construction of personal blogs and community spaces hosting communities of practice related to the specific themes and issues of the deaf population.

The tutors who are part of this graduate program's staff present an appropriate and complete professional profile, given that besides the specific functions concerning *online* support/tutoring, they also organize classroom sessions. The tutoring staff at PRO_LGP is composed of highly fluent signers. They are both certified sign language interpreters who developed pedagogical skills during the preparation period prior to the beginning of the program and experienced deaf teachers.

For purposes of answering any questions about the content covered in lectures, we favour public communication because it allows students to have visual access to their colleagues' questions. This practice also encourages other students to ask any questions that they might have. On more personal issues, where students might eventually feel less comfortable with public exposure, the tutor should use alternative and more private means of communication, namely email.

In the period of time in between face-to-face sessions, students are invited to take part in collaborative activities that are focused on small groups, where they interact among themselves, with their tutors and with learning materials. These collaborative actions are undertaken using the existing forums on the LMS. Forums are built around themes and allow students to post questions. All forums coexist in parallel and in some curricular units there are also social forums. This approach is facilitated by the existence, at the onset of the 3-year program, of a CU specially designed to train the students not only on how to use the LMS but also some common Web 2.0 tools that ease communication processes. Among those tools are blogs (blogger and Wordpress), Google sites, YouTube, Instant Messaging, and several others such as ooVoo software, highly used in LGP signing communications.

Written participation created in the students a need to perfect their writing skills, which resulted in an important asset in the global learning process and a positive factor for social inclusion. Marschark, Lang and Albertini (2002) found that deaf students face many difficulties when acquiring various skills and also in their professional lives due to an inadequate literacy in reading and writing in the majority's oral language. It is crucial to promote L2 in deaf students so they can achieve success in their professional performances.

The Evaluation Process

The learning output assessment in b-learning environments is usually based on several components. It is predictable that students will hand in a certain amount of work or perform tasks that are evaluated

3 We must consider, indeed, that in some situations, e-learning strategies may lead to learning without there being any tutorial support.

both qualitatively and quantitatively. These assignments constitute formative evaluation but also have some impact on final grades. At the end of each CU, students attend a classroom session in order to take an exam that is divided into two parts – one in written Portuguese and the other in LGP recorded in video. The sign language recording process works in a rather simple way, with students answering some questions available to them on paper. The answers are recorded with laptop webcams and the final result is given to tutors via portable hard drives.

Assessing satisfaction levels

To evaluate students' satisfaction level concerning the program methodology, a short evaluation survey was administered. Its structure fits the categories defined by specialised literature as the one that best evaluates effectiveness in distance learning training systems (Lagarto, 2002, 2009): biographical questions such as occupation, address, gender and age; satisfaction concerning proficiency in the usage of the online platform as a communication tool; approval and satisfaction concerning the quality of pedagogical materials; perceptions about the utility of classroom sessions and the role of tutors and interpreters; level of satisfaction concerning the methodologies and evaluation guidelines used throughout the program; and satisfaction concerning general support issues (administrative and logistical features). The questionnaire's most significant results are described below.

Age. The majority (21 out of 30) of students attending this graduate program are between 26 and 45 years old. Their maturity makes them an appropriate target public for distance learning programs.

Ownership of a laptop computer prior to entering the program. Almost 25% of the candidates to the program did not own a laptop prior to the beginning of the program. After the program was initiated, all students either acquired or obtained their own adequate equipment in order to fit the course requirements.

Evolution of knowledge about computer science during the graduate program (see Table 1). It was important to realise that most students in this program learned for the first time in their lives how to use a forum or how to build and edit their own blogs at the onset of the graduate program. Our program has clearly contributed to the improvement of the students' digital competence.

Level of satisfaction towards the program (see Table 2). In this second group of questions we show the students' positive levels of satisfaction concerning the printed and video materials containing the contents (in Portuguese and in LGP). Results also emphasize that deaf students feel more comfortable using their mother language (LGP) as opposed to their L2, as Lang and Steely (2003) also found. It is important to point out that, during the program, students have been gradually adapting to written Portuguese, which became for them a stronger L2. This will allow them to use more efficient communication skills both professionally and academically in the hearing world. Our initial investment in the bilingual approach was effective. Besides having led to an improvement in L2 competence (the majority's language in Portugal), it also added value to the deaf students' natural language through the pioneering creation of materials and a terminological dictionary in LGP[4] (Mineiro, Lagarto, Nunes, & Caldas, 2010).

In addition, the enormous appreciation students have for the tutoring/ interpreting team is pointed out in our results. They are fundamental elements in creating emotional relationships that promote learning development.

Conclusions

To study in a distance learning system does not constitute an easy process. In the case of PRO_LGP, difficulties are identified. Individuals with a professional occupation, living far away from campus, with enough maturity to learn in an autonomous fashion demonstrated the ability to achieve successful outcomes while participating in distance learning pathways. The fact that the population in study has an auditory limitation merely implied the adaptation of communication strategies to their needs in the existing context.

From the results of observation and those collected by a survey of students' experiences, we can conclude that this innovative experience has fully lived up to the initial expectations. The commitment and effort of students, teachers, tutor/interpreters; the results of the assessments/evaluations and survey feedback; and indicators taken from the online learning platform allow us to look ahead in optimism concerning the future development of this program and other programs that might follow, based on this pioneering experience. We

4 http://pro-lgp.com/dicionario/

Table 1

Knowledge Evolution in Computer Science During the Graduate Program

	Participating in Forums	Blog Creation and Editing
Cannot do	2	1
I know how to do it but I have not improved during the graduate program	5	6
I know how to do it and have improved during the graduate program	12	9
I know how to do it and learned it for the first time in the graduate program	11	14

Table 2

Level of Satisfaction Towards the Graduate Program

	CD	**D**	**AD**	**A**	**CA**	**NA**
The printed handbook's format is appealing and a motivating factor	0	1	6	**13**	**9**	1
The pedagogical material in LGP/DVD is a useful resource for learning	0	1	5	**12**	**12**	0
The tutor stimulates and motivates students in an adequate way	0	2	**7**	**13**	**8**	0
The tutor provides me with the adequate feedback whenever it is necessary	1	2	**8**	**8**	**10**	1
The LGP interpreter has always displayed a very useful and positive action	0	0	2	**15**	**13**	0

Note: Legend: CD – I completely disagree; D – I disagree; AD – I neither agree nor disagree; A – I agree; CA – I completely agree; NA – No answer

can therefore focus our explanation of the program's success on a few central factors: a pedagogical and structural model appropriate for the graduate degree, academic instruction delivered in paper and video formats, the use of adequate and stimulating LMS and Web 2.0 tools, bilingualism, and constant tutorial support. These have been the most important dimensions in this training program.

References

Anderson, T. (2004). Toward a theory of online learning. *Theory and Practice of Online Learning*, 33-60, Athabasca University

Bates, A. W. (1995). *Technology, open learning and distance education.* London: Routledge.

Holmberg, B. (1977). *Distance education – a survey and bibliography*. London: Kogan Page.

Keegan, D. (1996). *Foundations of distance education.* London: Routledge.

Lagarto, J. (2002). *Ensino a distância e formação contínua – uma análise prospectiva sobre a utilização do ensino a distância na formação profissional contínua de activos em Portugal*. Lisbon: INOFOR.

Lagarto, J. (2009) Avaliação em eLearning. Em *Educação, Formação & Tecnologias, 2*(1), 19-29. Available at http://eft.educom.pt/index.php/eft/index

Lang, H. & Steely, D. (2003). Web-based science instruction for deaf students: What research says to the teacher. *In Instructional Science, 31*. Netherlands: Kluwer Academic Publishers.

Marschark, M. Lang, H. G. & Albertini, J. A. (2002). *Educating deaf students: From research to practice.* New York: Oxford University Press.

Mineiro, A, Lagarto, J. R. Nunes, & Castro Caldas, A. (2010, June/July). Enseñanza y aprendizaje a distancia para sordos: Bases metodológicas del desarrollo curricular de la licenciatura em Lengua de señas Portuguesa. In minutes of *Systemics, cybernetics and informatics: WMSCI 2010*, Orlando, FL.

Trindade, A. (1990), *Introdução à comunicação educacional.* Lisbon: Universidade Aberta.

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