The 12th International Scientific Conference
eLearning and Software for Education
Bucharest, April 21-22, 2016
10.12753/2066-026X-16-000

Learning - Contributions For One Prompt And More Personalized Tutoring

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***Abstract**: This article describes an experience teaching and tutoring online course "Project courses e/b-Learning" and was aimed at two main moments. At first moment we analysed and characterized the mentoring model formed by four tutors, reflecting on the advantages that this model provided in particular in relation to this aspect by which our model differs from traditional mentoring model made by a single tutor. In the second phase, we try to detect and analyse what were the days of the week that students have accessed the course in general and each of the specific modules, find answers to questions such as the duration of the modules, gender, day of the week to start the sessions / classes because they are important dimensions of distance education planning We seek to find patterns of behaviour trainees through the analysis of these records, which will allow us to move forward with a legislative proposal enhancer for more effective mentoring, faster and more personalized. The conclusions that this study allowed us to reach, given the sample used, (consisting of 31559 entries generated by 128 teachers of our polytechnic institute), show the following behavioural evidence: The highest number of total accesses to the course it was on Monday and Wednesday and the lowest number of accesses it was Sunday. The highest average accesses to the course it was on Monday and Wednesday and on Sunday it was the lowest number of accesses to the course. As contribution this study allows us to make the following proposal: The Mondays and Wednesdays are the most favourable days for successful tutoring and Sundays are unfavourable to schedule tutoring - discourage schedules tutorials.*

***Keywords:** e-learning; b-learning; personalized tutoring; prompt tutoring.*

I. INTRODUCTION

The paper Comparing the Portuguese experience with state of the art of other countries, we cannot consider ourselves as a country with a long tradition and history in distance learning (DL) [12] especially in offering distance education directed to higher education. The current number of students in distance education system in Portugal cannot be considered very high though, there are institutions and companies that have bet in this field with a consequent increase in training provision [3, 4, 10, 8, 1]. The reasons for the growing membership of educational institutions and training for distance education practices are multiple and varied. Since the reasons associated with a greater diversity in educational supply (not to limit the offer to the skills of training available in a certain place), through the ability to cover new audiences (usually away from the classroom training, by the impossibility of reconciling professional and social activities) and a potential cost savings, although this perspective is

not so consensual and is dependent on many factors (from the pedagogical model, the size of the target audience, for example) [7]. Furthermore the advantages of flexibility of time and place, the pedagogical benefits of better resource use and equity. The fact that, generally, distance learning does not imply a simultaneous presence, in spatially and/or in time terms by the teachers and students, allows a high degree of flexibility in time management [7]. This flexibility is particularly relevant when it comes to encouraging training practices throughout life, and to ensure consistent training scenarios with the new needs and new public [6, 9].

In higher education, the use of ICT is a constant topic among educators [5], since there is need for educational reforms to promote a more efficient learning [14]. Reflect on the use of technological resources as teaching scripts intermediaries implies the design of its use as interaction tools and mediation of knowledge and as a way to discover new paths for the learning process, breaking with the traditional model of teaching and learning [2]. However, for the effective use of technology in higher education institutions, some barriers have to be overcome. At the student's perspective, learning-based virtual contexts challenges him to leave his role as passive recipient of information and encourage him to develop new methods of construction of their own knowledge, based essentially on the adoption of a more critical attitude, active and dynamic [11]. From the perspective of teachers, since they require a practical continuing education that will enable them to use technology in a perspective of reflection and innovative teaching practices.

1.1 Design of e/b-Learning courses - Structure

In training and promoting the attractiveness of training offers, e-IPP - Unit of e-Learning and Pedagogical Innovation at the Polytechnic of Porto - aims to mobilize the teachers' community, by working for training and dissemination of best teaching practices by community. Aims to develop technical and pedagogical skills of the teachers from Polytechnic of Porto (PP), in the use and operation of web technologies. This training aims at further online training provision, in various areas framed in the mission of the PP in a joint effort with all seven schools in order to increase awareness of the institution in the field of e/b-learning and reach new audiences. To meet these needs, we designed a formation plan for the whole PP community, in which is listed, for example, the training course for the "Design of courses in e/b-learning". This training program aims to provide knowledge to facilitate familiarization with the learning environments in e/b-learning and building innovative courses, supported by the latest teaching and learning paradigms. To prepare this training program were considered educational goals, pedagogical models, audience characteristics, strategies and technologies that best fit the needs of the teachers and the educational context, enabling greater efficiency of the process as a whole. As instructional model we opted for the MIPO model - Model Objectives for Integration [13]. This model is supported in the traditional stages of development of a course (Analysis, Design, Development, Implementation and Evaluation) and incorporates in each phase the main tasks to accomplish and adds dynamic features and flexibility, indispensable to the specific needs of semi-classroom environments [13]. The offered course consists of five modules. Module I (MI): Concepts of e/b-Learning - estimated time for the completion of activities: 5 hours 30 minutes. Module II (MII): Content Production Tools - estimated time for the completion of activities: 20 hours Module III (MIII): Publishing Tools/Content Sharing - estimated time for the completion of activities: 6 hours. Module IV (MIV): Web Communication Tools - estimated time for the completion of activities: 6 hours. Module V (MV): Course construction e/b-Learning - estimated time for the completion of activities: 30 hours.

The description of each activity includes the following elements [14]: specific objectives; models, methods and pedagogical techniques; subject/community; title; description; tools; e-content; phases; division of labour; rules and results.

1.2 The Model of Tutoring - Four Tutors

Despite the high number of registrations for the course "Design of courses in e/b-learning", it was considered important not to exclude anyone, given the levels of interest demonstrated. In order to have a better monitoring of the online activities of this course, a specific mentoring structure with four tutors was designed. This option arises fundamentally the number of trainees, which we considered to be unaffordable for a single tutor, because it could compromise the quality of tutoring. So it was decided

to constitute a four tutors team, and one of them as its coordinator/moderator of the course, and instead of creating four independent classes, it was decided to create one, and organizing the students into four groups. This allowed better management of the learners' participation in activities - more personalized online and face monitoring, increased motivation and a more effective doubt's clarification - and enabled interaction with the entire class, particularly in synchronous classroom sessions.

The mentoring model - four tutors - was structured in four dimensions suggested in the MIPO model [13]: Educational, Social, Management and Technical.

In a pedagogical dimension, the trainer and tutors assumed the role of education designers and helped its implementation. They also made the entire follow-up activities, and were aware of possible problems of the graduates, helping them in understanding the importance of what they are learning and what they mean. The following main activities were considered: discuss the expectations at the beginning of the activity, the responsibilities of students and rules for participation; always keep the purpose of the discussion; help students prepare for the discussion; provide constructive feedback.

Recognizing that the success of a learning activity is influenced by social environment in which it takes place and that it's supposed to be friendly and reliable, tutors follow the following guidelines regarding the social dimension of its activities: help set a positive tone and useful to messages; building a climate of trust; correct with regards; motivate for the involvement of trainees in b-learning strategy.

In promoting a learning activity it is important for the teacher/tutor, as a responsible manager, track work in progress, ensuring that stakeholders are acting in accordance with the defined phases and are on schedule with the prescribed rate. Thus, the dimension of management tutors found the following action: define and schedule activities; follow the process for possible adjustments and problem solving; monitor the response time to requests; plan carefully considering management strategies of synchronous and/or asynchronous communication; create a web space support (forum) to explain the procedures of activity and encourage students in participation; keep the operation of the activity according to the defined rules; helping the management of group and individual tasks.

In the technical dimension of the tutor's role, it is important for them to feel confident with the use of the tools and to also promote a comfortable use for the students. In this field tutors sought to: understand the processes online; possess technical knowledge; have knowledge of online communication; have knowledge of the content; possess the ability of motivation and awareness when it comes to online relationships.

II. THE STUDY

At the end of the course "Design of courses in e/b-Learning", was drawn up this study with the primary purpose of detecting and analyzing the days of the week in which the students accessed the Moodle platform, emphasizing and extracting the absolute and relative frequencies of these accesses. With these data we tried to find behavior patterns that allow us to move forward with a proposal for an enhancer normative in a timely tutoring, more effective and more personalized.

III. SAMPLE

Our sample consists of 31559 entries generated by 128 higher education teachers representatives of all PP schools as follows: School of Education (ESE) - 12; Industrial Studies and School Management (ESEIG) - 15; School of Music, Arts and Entertainment (ESMAE) - 8; School of Technology and Management of Felgueiras (ESTGF) - 16; School of Health Technology of Porto (ESTSP) - 37; High Engineer Institute of Porto (ISEP) - 15; Accounting and Administration Institute of Porto (ISCAP) - 23; Central Services (SC) - 2.

IV. COLLECTION AND PROCESSING DATA

Data collection was done by consulting the records of each student access to each of the course modules in the Moodle platform and the responses of students to an online questionnaire at the end of the course. Data analysis was carried out by applying techniques of quantitative and qualitative analysis.

Modules started on the following dates: MI - January 12, 2015; MII - January 26, 2015; MIII - February 23, 2015; MIV - 9 March 2015; MV - 11 April 2015. The course ended at the end of July 2015. The time allotted for the performance of activities of each module is shown in Table 1.

	MI	MII	MIII	MIV	MV	**Total**
Realization time	5h 30’	20h	6h	6h	30h	67h 30’

Table 1. Provided time to carry out the activities of each module

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
MI	MI	MI				
MII						
MIII		MIII		MIII		
					MIV	
		MV				

Table 2. Distribution of days with more access to Modules

The Table 2 shows us that Mondays and Wednesdays gather the most popular modules accessed. The access to the modules I and III are repeated in three days: Mondays, Tuesdays and Wednesdays for Module I and Mondays, Wednesdays and Fridays for Module III. The Module II has its greater access on Monday, Module V on Wednesday and IV Module on Saturday.

All access/entries were recorded to the online course, verifying 31559 total entries in the course. The distribution of the number of entries for the five modules was as follows: MI - Concepts of e-learning - 17891; MII - Content Production Tools - 7415; MIII - Tools for Publishing/Content Sharing - 1714; MIV - Web Communication - 2649; MV - Course Construction - 1890. Table 3 shows the distribution of the total number of entries to modules, total and by day of the week.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
MI	3669	3504	3622	2332	2196	1627	941	17891
MII	1674	1272	1219	841	1163	761	485	7415
MIII	362	244	337	220	318	178	55	1714
MIV	392	113	265	450	422	959	48	2649
MV	280	248	563	127	395	236	41	1890
Sum	6377	5381	6006	3970	4494	3761	1570	31559

Table 3. Distribution of the total number of accesses to the platform - Total and for Days

As shown in Table 3, in module I - beginning of the course -, there were 17,891 entries registered. This high number of accesses can be interpreted as a demonstration of enthusiasm, high motivation, high commitment and great interest from students in the course. When moving to the module II accesses dropped to 41% (7415 entries). In the beginning of the module III there was a lower percentage of entries only 9.6% (1714 entries). Module IV had a rise to 15.8% (2649 entries). And in the module V - graduation -, there were only 10.6% of entries (1890 entries).

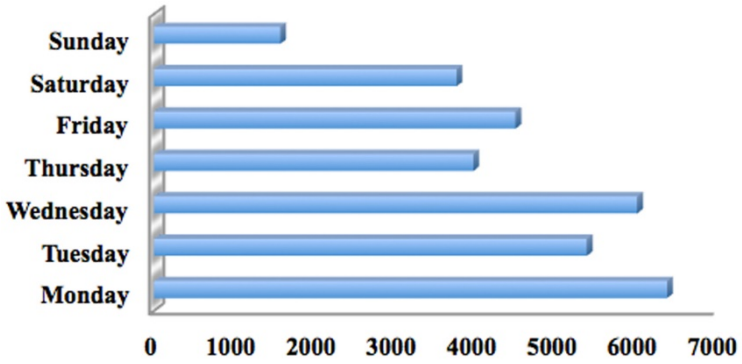

Figure 1. Total number of entries per day

As shown in Figure 1, the highest concentration of total accesses takes place between Monday and Wednesday. On Thursdays, Fridays and Saturdays this number decreases and on Sundays there is a drop in the number of very significant entries.

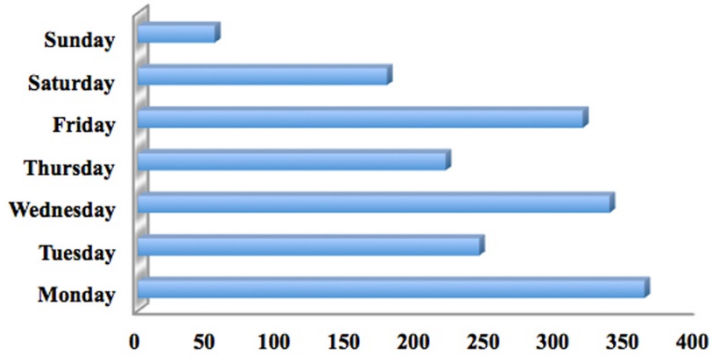

Figure 2. Average daily entries

As we can see from Figure 2, the average higher of access to the course, lie on Mondays and Wednesdays and the lowest on Sundays.

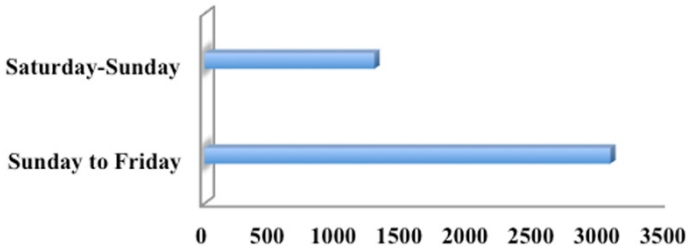

Figure 3. Medium accesses from Monday-Friday and Sat and Sun

Figure 3 shows the average access assembly formed by the interval of days between Mondays and Fridays are higher than the joint formed by Saturdays and Sundays.

Module I			
Days	AF	RF	Average
Monday	3669	20,51%	
Tuesday	3504	19,59%	
Wednesday	3622	20,24%	
Thursday	2332	13,03%	2555,86
Friday	2196	12,27%	
Saturday	1627	9,09%	
Sunday	941	5,26%	
Total	17891	100%	

Table 4. Distribution of access to Module I

Table 4 shows us the absolute and relative frequencies of access to Module I on each day of the week and also the respective average. We found that: is on Wednesdays and Mondays that is achieved the highest relative frequency with 20.24% and 20.51% of access, respectively; on Tuesdays with 19.59%; and on Sundays is reached the lowest value - 5.26%.

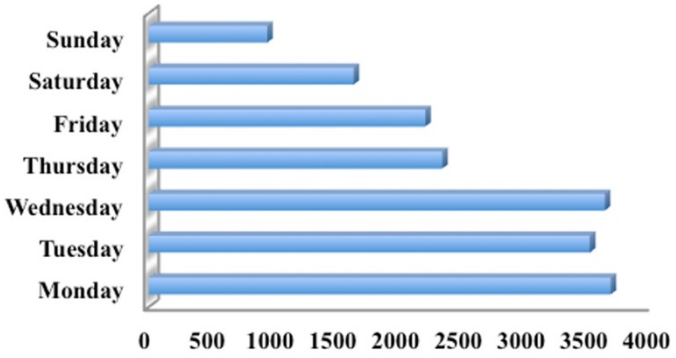

Figure 4. Number of daily access to Module I

As shown in Figure 4, the highest concentration of access to Module I is between Monday and Wednesday and at the weekend decrease access.

Module II			
Days	AF	RF	Average
Monday	1674	22,58%	
Tuesday	1272	17,15%	
Wednesday	1219	16,44%	
Thursday	841	11,34%	1059,28
Friday	1163	15,68%	
Saturday	761	10,26%	
Sunday	485	6,54%	
Total	7415	100%	

Table 5. Distribution of access to Module II

Table 5 shows us the absolute and relative frequencies of access to Module II course for each weekday, and the average as well. We found that: on Mondays is reached the highest relative frequency with 22.58% of accesses; on Sundays it reached the lowest value 6.54%; and on the other days of the week the frequency of access varies between 10.26% and 17.15%.

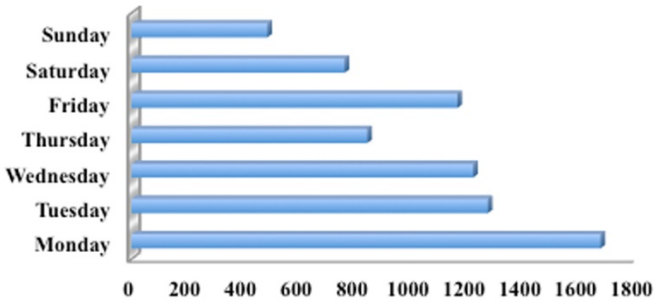

Figure 5. Number of daily access to Module II

As shown in Figure 5, the highest concentration of access to Module II is found on Mondays, on Thursdays there is a significant drop of access and at weekends the access decreases.

Module III			
Days	AF	RF	Average
Monday	362	21,12%	
Tuesday	244	14,24%	
Wednesday	337	19,66%	
Thursday	220	12,84%	244,86
Friday	318	18,55%	
Saturday	178	10,39%	
Sunday	55	3,21%	
Total	1714	100%	

Table 6. Distribution of access to Module III

Table 6 shows us the absolute and relative frequencies of access to the third module of the course on each day of the week and still the average. We found that: on Mondays is reached the highest relative frequency with 21.12% of accesses; on Sundays it's reached the lowest value 3.21%; and on the other days of the week the frequency of access varies between 10.39% and 19.66%.

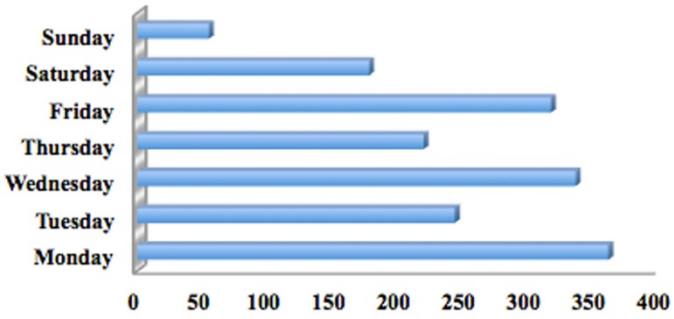

Figure 6. Number of daily access to Module III

As shown in Figure 6, we have a higher concentration of access to Module III on Mondays, Wednesdays and Fridays, on Tuesdays and Thursdays there is a significant drop of access and at weekend's decreases access.

Module IV			
Days	AF	RF	Average
Monday	392	14,80%	
Tuesday	113	4,27%	
Wednesday	265	10,00%	
Thursday	450	16,99%	378,43
Friday	422	15,93%	
Saturday	959	36,20%	
Sunday	48	1,81%	
Total	2649	100%	

Table 7. Distribution of access to Module IV

Table 7 shows us the absolute and relative frequencies of access to Module IV of the course each day of the week and the average. We found that: on Saturdays is reached the highest relative frequency with 36.20% of accesses; on Sundays it reached the lowest value 1.81%; on Tuesdays is reached the second lowest level of access to the module with 4.27%; and on the other days of the week the frequency of access varies between 10% and 16.99%.

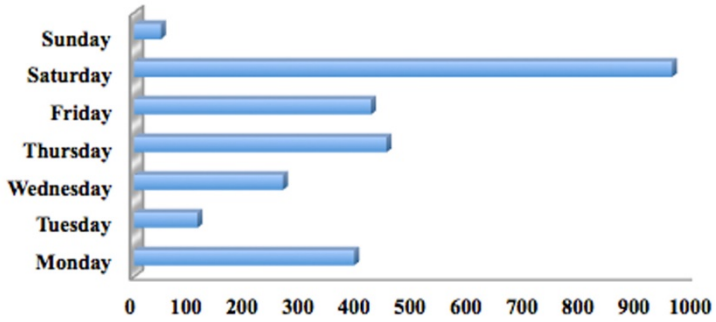

Figure 7. Number of daily access to Module IV

As shown in Figure 7, we have a higher concentration of access to Module IV on Saturdays, on Tuesdays there is a very significant drop in access and on Sundays the access is low.

Module V			
Days	AF	RF	Average
Monday	280	14,81%	
Tuesday	248	13,12%	
Wednesday	563	29,79%	
Thursday	127	6,72%	270,00
Friday	395	20,90%	
Saturday	236	12,49%	
Sunday	41	2,17%	
Total	1890	100%	

Table 8. Distribution of access to Module V

Table 8 shows us the absolute and relative frequencies of access to the course Module V on each day of the week and average. We found that: on Wednesday it's reached the highest relative frequency with 29.79% of accesses; on Sundays its reached the lowest value 2.17%; on Thursdays its reached the second lowest level of the module with 6.72%; and on the other days of the week the frequency of access varies between 12.49% and 14.81%.

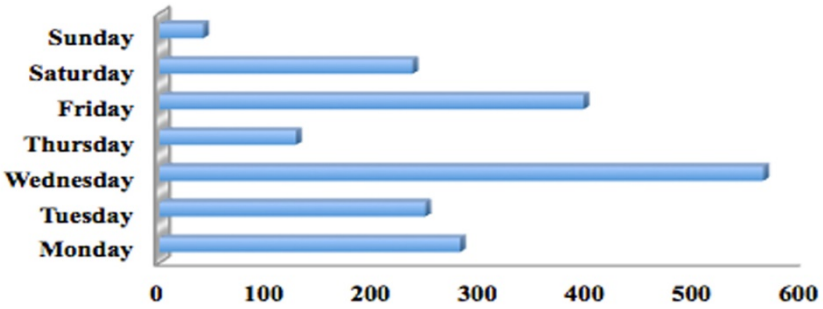

Figure 8. Number of daily access to Module V

Figure 8, we have a higher concentration of accesses to the Module V on Wednesdays, Thursdays we have a very significant drop, on Fridays increase access and on Sundays access is low.

V. CONCLUSIONS

From our study we can draw five major conclusions:

1) The high number of enrollments in the course involves the distribution of students by four groups, and the option of a four tutors team - one tutor for each group. This methodology allowed us the following results:

i) Better management of the learners' participation in the activities;

ii) A more personalized support both online and face-to-face;

iii) Greater motivation of students and more effective doubt's clarification;

iv) Better and more flexible interaction with all the students and particularly in synchronous classroom sessions.

2) It was found that the number of entries to the course showed a very high peak on module I - beginning of the course -, falling in the following modules, reaching only 11% of accessing module V - the end of the course.

i) The beginning of the course is characterized by a high number of accesses with a high degree of motivation and enthusiasm, which will significantly decrease along the course.

ii) There was an increased number of access to the modules task with estimated times of performing short and consequently the task modules with long times of realization, leading to decreased numbers of accesses.

iii) Checks on responses to the questionnaire that most students who have not completed the course, presented as the main reason "lack of time or downtime"

iv) Everyone who completed the course were successful - seems to be a rule of e/b-learning: student who completes the course, completes it successfully.

v) The results appear to be closely related to the expected time for conclusion of the course and the time for performing each task/module, with the stroke length in time - seven months total duration of the course - and wide intervals between modules - approximately one month interval between modules.

3) Considering the total accesses to the course, we find that:

i) The highest number of total accesses to the course is on Mondays and Wednesdays;

ii) The lowest number of access is checked on Sundays;

iii) The average number of access on weekdays (Monday to Friday) is higher than in the days of the weekend (Saturday and Sunday).

4) Considering the total accesses to each of the modules separately, we find that:

i) The greatest number of accesses to MI is on Mondays and Wednesdays;

ii) The largest number of accesses to MII is on Mondays;

iii) The greatest number of accesses to MIII is on Mondays, Wednesdays and Fridays;

iv) The greatest number of accesses to MIV appears on Saturdays (with a very big difference compared to the other days);

v) The largest number of accesses to MV is on Wednesdays.

5) While the analysis is focused only on this course but taking into account the duration of seven months and the high sample, our proposal for an enhancer a more timely tutoring, more personalized and more effective, we must focus on:

i) Mondays and Wednesdays are the most favorable days for the schedule of tutorials;

ii) Sundays are unfavorable for scheduling tutorials.

Acknowledgements

We thank all the teachers of the Polytechnic Institute of Porto and the GAP staff who collaborated on this study.

Reference Text and Citations

[1] Castro, O., Lencastre, J. A., & Monteiro, A. (2012). Um estudo sobre a implementação da educação online numa instituição de ensino superior. In Blended Learning em Contexto Educativo (pp. 151–172). Santo Tirso: DE FACTO Editores.

[2] Costa, J., Ferreira, J., Domingues, L., Diegues, V., & Coutinho, C. (2010). Conhecer e utilizar a Web 2.0 um estudo com professores do 2o, 3o Ciclos e Secundário. In Actas do X Congresso Internacional Galego-Português de Psicopedagogia. Braga: Univeridade do Minho.

[3] Coutinho, C., & Gomes, M. J. (2006). Critical review of research in educational technology in Portugal (2000-2005). Presented at the World conference on educational multimedia, hypermedia & telecommunications, USA.

[4] DeltaConsultores Tecnologia e Recursos Integrados L.da, & Recursos Integrados L.da. (2007). Estudo das Plataformas de eLearning em Portugal (Relatório Técnico do Projecto “Estudo de Base e Enquadramento de Requisitos para a Prospectiva de Solução para Plataformas de Formação”a Distância).

[5] Faria, P., Ramos, A., & Faria, Á. (2012). De Que Falamos Quando Falamos Em Literacia Digital? Um Estudo Exploratório Baseado Em Revisão Sistemática De Literatura. In Atas do II Congresso Internacional TIC e Educação. Lisboa, Portugal: Instituto de Educação da Universidade de Lisboa

[6] Gomes, M. J. (2008). Na senda da inovação tecnológica na educação a distância. Revista Portuguesa de Pedagogia, 42(2), 181–202.

[7] Gomes, M. J. (2008b). Reflexões sobre a adopção institucional do e-learning : novos desafios, novas oportunidades. E-Curriculum, 3(2).

[8] Gomes, M. J., Coutinho, C. P., Guimarães, F., Casa-Nova, M. J., & Caires, S. (2011). Distance learning and e-learning in Portugal : a study of the perceptions, concepts and teaching practices in the Institute of Education : University of Minho. In Proceedings of EDULEARN11 Conference (pp. 2617–23). Bracelona.

[9] Oliveira L, Jesus Â, Silva A, Peres P. Conceção De Cursos Em Regime e/b-Learning: Uma Experiência De Formação E Tutoria Online Numa Turma De Grande Dimensão. In: Atas da IX Conferência Internacional de Tecnologias de Informação e Comunicação, Challenges 2015. Braga: Univeridade do Minho, Centro de Competência em TIC; 2015.

[10] Monteiro, R., & Gomes, M. J. (2009). Práticas de e-learning nas universidades públicas portuguesas e a problemática da acessibilidade e inclusão digitais. In Actas do Congresso Internacional Galego-Português de Psicopedagogia (pp. 5962–5972.).

[11] Morais, N. S., & Cabrita, I. (2008). b-Learning: impacto no desenvolvimento de competências no ensino superior politécnico. Tékhne - Revista de Estudos Politécnicos, (9), 194–224.

[12] Paiva, J., Figueira, C., Brás, C., & Sá, R. (2004). E-learning: estado da arte. Sociedade Portuguesa de Física Softciências.

[13] Peres P., Pimenta P. (2011). Teorias e Práticas de b-Learning. Edições Sílabo.

[14] Roque, G., Pedrosa, S., & Campos, G. (2011). Ferramentas 2.0 e formação de professores - desenvolvimento de competências. Presented at the 17o Congresso Internacional de Educação a Distância, Manaus.