

3

Artigo

Alumni from D.E. Teacher Preparation Degrees (Northern Consortiums and UAB: 2001-2012), Employability and Market Absorption

Otacilio Antunes Santana¹

ABSTRACT

The objectives of this work were to evaluate the differences between face-to-face and distance education models, when three variables were concerned: time, distance and grades, apart from its implication on employability and market absorption of graduate students. The study evaluated 13 federal universities that offer both face-to-face and distance Programs on Pedagogy, Biology, Mathematics, Chemistry, Physics and Philosophy. Data were collected through closed questionnaires. Results were consistent with the hypothesis proposed by this study, that graduate students from distance education were more quickly absorbed by formal market and with less expertise than students from face-to-face courses. When distance, time and grades are three dimensionally plotted, a change from face-to-face to distance education is observed. This results in a distinct market absorption for distance learning graduate students, without

a distinction in salary terms at hiring time, thus refuting the hypothesis of literature that despite the employability is directed to face-to-face students, this does not happen in practice.

Keywords: e-learning; u-learning; model.

RESUMEN

Los objetivos del trabajo fueron evaluar las diferencias de la educación presencial y a distancia en sus tres ejes: tiempo, distancia y notas y lo que esto implica en la empleabilidad y en la absorción del alumno egresado por el mercado. La investigación evaluó 13 universidades federales que tienen o tenían concomitantemente cursos presenciales y a distancia de Pedagogía, Biología, Matemática, Química, Filosofía y Física, siendo los cursos de distancia dirigidos por el sistema de la Universidad Abierta de Brasil y los Consorcios Septentrionales de Educación a Distancia. Los datos fueron colectados utilizando cuestionarios cerrados. La hipótesis del trabajo, dentro

¹ Universidade Federal de Pernambuco, Recife-PE; otacilio.santana@ufpe.br.

del grupo de estudio evaluado, fue aceptada demostrando que los alumnos egresados de la EaD son absorbidos más rápidamente por el mercado formal (régimen estatutario y regido por leyes del trabajo) y con menor especialización que los alumnos egresados de los cursos presenciales, quienes en su mayoría continúan con estudios de postgrado. La educación en sus variables: distancia, tiempo y notas, al ser representada en una dimensión tridimensional, se modifica de la educación presencial hacia la educación a distancia. Esto significó una absorción distinta por el mercado del alumno egresado, sin una distinción salarial entre las modalidades de enseñanza al momento de la contratación, rechazando la hipótesis de la literatura que señala que a pesar de la empleabilidad estar direccionada preferencialmente hacia alumnos presenciales, en la práctica no ocurre así.

Palabras-clave: EaD; u-learning; modelo.

RESUMO

Os objetivos deste trabalho foram avaliar as diferenças da educação presencial e a distância, nos três eixos: tempo, distância e notas e o que isso implica na empregabilidade e na absorção pelo mercado do aluno egresso. A pesquisa avaliou 13 universidades federais que oferecem cursos presenciais e a distância de Pedagogia, Biologia, Matemática, Química, Filosofia e Física. Os dados foram coletados através de questionários fechados. A hipótese deste trabalho foi aceita, demonstrando que os alunos egressos da EaD são absorvidos mais rapidamente pelo mercado formal (regime estatutário e celetista) e com menor especialização do que alunos egressos dos cursos presenciais. A educação em suas variáveis:

distância, tempo e notas, quando plotadas em uma relação tridimensional, se modifica da educação presencial para educação a distância. E isso implicou em uma distinta absorção pelo mercado do aluno egresso, sem uma distinção salarial no ato da contratação, refutando a hipótese da literatura que, apesar da empregabilidade ser direccionada a alunos presenciais, isto não acontece na prática.

Palavras-chave: EaD; u-learning; modelo.

1. INTRODUCTION

Ubiquitous education is the one in which the student is able to build knowledge anywhere and at anytime, provided the learning objects are at hand, mediation to provide interaction between them is available and the student is part of an environment where he or she can be part of an area of proximal development (SHIN *et al.*, 2011). Learning objects (books, laboratory and field practices, etc), mediation by the teacher-tutor, the area for proximal development, the interaction with schoolmates in the learning environment, are fundamental characteristics of the traditional on-site education model (SÁCÑHEZ-ALONSO *et al.*, 2011). However, they have also been observed in the distance model, with the expansion open and distance education (D.E.).

In virtual education, for instance, static learning objects (books, audio and video) are integrated with the dynamic ones (simulators, virtual laboratories, wikis, etc), providing the student more pieces to assemble the knowledge puzzle. All of this takes place in a virtual learning environment, or learning management system, with the collaboration of their colleagues through

direct communication (forums), interaction in games, and development of documents, presentations, and so on (KOÇ, 2012).

D.E. has then broken the barrier of distance and time. The student became able to build knowledge miles away from the physical educational unit, as well as to study at anytime through the availability of learning objects and collaborative participation in forums and virtual environments (XUEQIN, 2012). These two variables laid on the axes of Cartesian coordinates within a cause/effect relation (MARONNE, 2010) has shown that, before D.E., grounded on the following hypothesis for on-site education: the closer to the physical educational environment a student is, the longer he or she will be in contact with the knowledge (CROOKS *et al.*, 2012). Consequently, the longer the contact with knowledge, the greater will be the indexes of learning evaluation, i.e. grades. With this hypothesis, a third axis is inserted in the equation: the variable of learning success (grades value). And this is the Cartesian model presented by the ideologically resilient work on open and distance education (KELLY *et al.*, 2007).

This premise was gradually being defeated by data and success in learning of D.E., showing that students that build knowledge in environments distant from the physical school environment can move forward and obtain certification like a traditional-model student (PATRIARCHEAS, XENOS, 2009). However, a variable that produces concern is the student evasion in this model of teaching and learning. Several works and researches have shown that fewer than 35% of all enrolments in D.E. higher education

programs actually become alumni (SAMPAIO *et al.*, 2011; ABBAD *et al.*, 2010 and 2006). This is due to the new type of student the D.E. model requires. One that has more discipline, is more dedicated and motivated, and learns how to be independent (LÜFTENEGGER *et al.*, 2010). The independent student not only is able to absorb the codified content within the educational object transmitted by the mediated in the environment, but also is able to build his or her knowledge inserted into a social, environmental and cultural context (FREIRE, 2009), through his or her history of learning (meaningful learning).

Currently, the students show full independence from the educational system. To build knowledge, the student needs a teacher that guides them to the educational object, that provides step-by-step directions, and that is always motivated by the actors and educational environment (ODACI, 2011; THOMPSON, KNOX, 1987). Authors describe this as a possible result of a society that raises children in a very dependent way and does not stimulate independence and autonomy and for which there is a certain type of family or societal punishment (BLÖMEKE *et al.*, 2012). An example of this is the ready-made model for learning and professional success imposed on children by their families, which most times does not result in effective success (SODANO, 2011).

D.E. alumni are psychologically and pedagogically independent in comparison to on-site students, as they spend the entire teaching and learning process practicing self-discipline and self-motivation far from a physical school environment and from educational actors (WIJNIA, *et al.*, 2012).

Considering that the ability to adapt to the surrounding needs and the dynamics of the market, the independent alumnus will have the skills the marked desires (HIRSCHFELD *et al.*, 2011). Another important factor is that D.E. alumni have enough flexibility to be in contact with the market and take part in internship, scholarship and training (trainees), which could be limited to the traditional students due to time restrictions (SANTANA *et al.*, 2011).

However, employees within the private sector tend to generalize D.E., inferring the model does not offer high-quality education to its students, based on outdated information or uncertified, opportunist schools. The credibility for the D.E. alumni has emerged to the current market mostly from University that top the list of the best in the world (SUNG *et al.*, 2011), such as the University of Cambridge, Harvard University, and the Massachusetts Institute of Technology (THOMPSON REUTERS, 2012).

The hypothesis for this work was that D.E. alumni are more quickly absorbed by the formal market (statutory and labor laws regimen) albeit less specialized than alumni from traditional programs who, in most cases, move on to post-graduation programs. The objectives of this work were to evaluate the differences between the education models and the distance among the three axes (time, distance and grades) the implication in alumni employment and absorption by the market.

2. MATERIAL AND METHODS

The research has evaluated 13 federal universities that have – or have had – simultaneous on-site and distance

programs in Pedagogy, Biology, Mathematics, Chemistry, Philosophy and Physics, in which the distance programs were managed by the Open University of Brazil System (UAB, 2012) and the Northern Consortiums for Distance Education (MEC, 2012). The timeframe was from 2001 to 2012.

At first, from the mentioned university, 42 subjects from the programs were evaluated (21 on-site and 21 distance learning). For this purpose, data from the following variables were sampled:

- a) Distance from student residence to attending school environment;
- b) Student's length of stay in school environment (physical or virtual)
- c) Final grades, referring to disciplines with the same hour load and syllabus, taught at on-site and distance-learning teacher preparation degrees, collected through a questionnaire (<http://migre.me/9zkZz>)

The total of answered questionnaires were of 2,646 (total of interviewed students), which average 63 students per subject, or 1,323 per teaching model. The names of universities and subjects were omitted, as indicated by the National System for Ethics in Research (SISNEP, 2012).

For comparison, two sample groups were created: a) on-site programs and b) distance-learning programs. The same educational objects were made available to all classes, and the same tests were given. The only variable was the environment (physical, in the on-site model) and the collaboration form (on-site and forums). Even the teachers were the same for the on-site and distance-learning subjects (SANTANA *et al.*, 2011).

Tests were applied to calculate the significance between the sample groups (value of p) for the three variables. For graphic visualization the mid-point of data were dispersed in 3-D dispersion graphics where the axes (x , y and z) are the variables. The Pearson correlation was calculated among the variables measured in order to observe the proportionality and significance of the correlation (ρ).

The next sample was obtained from an online questionnaire (<http://migre.me/9yQES>), applied to the Human Resources (HR) offices of random private companies throughout Brazil until the total sample number of 100 was reached. The only prerequisite was that such companies ought to have branches in at least five Brazilian states, regardless of working capital or corporate net equity. The questionnaires were answered by the HR directors or head consultants responsible for selection of new hires (in the absence of an HR department within the company), who were directly contacted by email. The following were part of the questionnaire:

- Would you hire an Open or Distance Education Alumnus? (Possible answers: “yes” and “no”)
- Would you rather hire an Alumnus from which educational model? (Possible answers: “on-site”, “distance-learning”, “depends on professional resume”)

Answers were promptly supplied, considering that companies also use this method service and product satisfaction information and data survey regularly.

Alumni were also interviewed according to programs through online questionnaire (<http://migre.me/9yNYY>), which contained the following questions:

- What was your chosen degree?
- What was the education model of your program? (Possible answers: “traditional” and “distance-learning”)
- In what year did you start your degree?
- In what year did you finish your degree?
- Under which legal system are you currently working (statutory or CLT labor laws), are you currently taking a post-graduate program or none of the previous?
- At which point have you entered the status previously stated?
- If employed, what is your gross income?

A total of 317 questionnaires were answered for the distance-education model and, therefore, the questionnaires for the traditional model were limited to the same number.

The differences between answers provided by students of the two models were evaluated by calculating p in the χ^2 test. Averages, deviations, graphics and statistics were calculated and elaborated in the Sigmaplot 10 program (STATSOFT, 2008).

3. RESULTS AND DISCUSSION

The three variables initially evaluated had significant differences ($p < 0,05$) between the group of traditional and distance-learning subjects, as observed in the student questionnaire (Figure 1). The distance variable, as expected, would already present

this difference due to the target audience of the distance education model, consistent of students that live several miles away from the physical university environment. Students from the traditional model live approximately 3.5 miles³ (± 1.9) from their universities, while distance-learning students are 27.1 miles (± 14.8) away from theirs (Figure 1B), considering that some students, although living close to the university, opt for the distance education model because of the time restrictions imposed by the traditional model, as observed by the standard deviation of data.

In regards to time, the traditional model student has stayed in the physical environment a shorter period of time ($3.4 \pm 1,2$ h/day) than the distance-learning student has in the virtual environment ($6,9 \pm 0,5$ h/day), as shown in Figure 1B. And, according to some authors, this is a decisive factor for evaluation performance (SANTANA *et al.*, 2011), as also observed in Figure 1, where results obtained from distance-learning students were higher ($8,4 \pm 1,1$) than those obtained by the traditional model's ($7,6 \pm 1,3$), shown in Figure 1C.

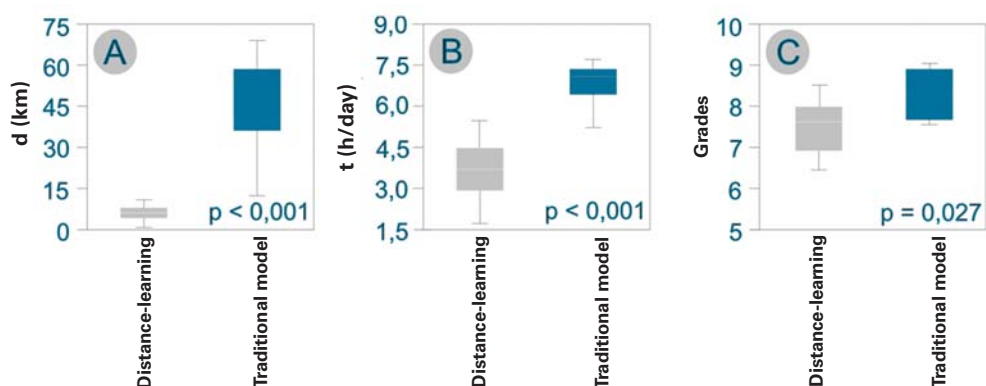


Figure 1: Average and Deviation of variables and value of p as a result of Test t among sample groups. (A) d = distance from physical school environment; (B) t = length of stay in physical (traditional) and virtual (distance-learning) environments; and (C) grades = final curricular average ($n = 1.323$ per teaching model).

It is clear the significant and directly proportional correlation between the evaluated variables for the distance-learning model ($\rho = 0,912$) in relation to the traditional one ($\rho = 0,797$). If observed in a graphic, with the three axes disposed in a Cartesian system (Figure 2), one can observe a migration of

the midpoint from the group of variable data, enhancing the volume of an imaginary cube (if calculated in its geometric formula $V = a \cdot b \cdot c$ and not considering the unitary system of 144,70 for 2.532,86), of traditional programs for the distance-learning ones.

TN: converted from original in kilometers

With the educational paradigm shift and all the literature that transfers the teacher from the knowledge center position to a mediation role, two indications become clear. First, the proximal development area, demanded by the advocates of traditional education, is also present in the distance-educational model, virtually and sometimes with more dedicated time, as the data have shown. What is open to discussion is the quality in interpersonal relationships, in which aspect traditional education excels. However, forums and social networking, according to some authors, actually encourage interpersonal

relationships, which is not necessarily true for the traditional model.

The second point is success in learning, evaluated by the average of grades, regardless of teaching model. According to the results of this work, students of the distance-learning model have presented higher grades on average. This result is an important curriculum component during professional selection processes and academic advancement, but is no actual indication of skills, usually measured by internships and training. Considering those standards, the distance-learning student takes the lead, as the results show.

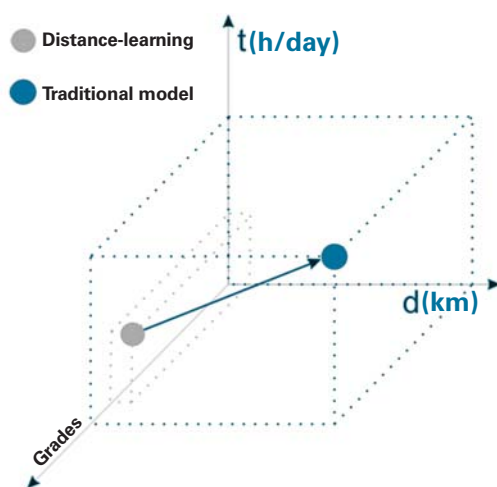


Figure 2: Relationship between the midpoint of subject data from evaluated programs in traditional and distance-learning models on the same axes: distance, time and grades

This tridimensional shift also changes the relation of the student when absorbed by the market. According to the survey undertaken with the human resources departments (HR) of private companies, 80% of employers would hire a D.E. alumnus (Figure 3). However, if presented with the

option, there is clear preference (97%) for a former student of the traditional model over one from the distance-learning one. When the option “depends on resume” is available, it kept 88% of answers, while 8% chose alumni from the traditional model and 4% chose alumni from D.E.

Initially, HR departments show some clear inconsistencies. They would accept alumni from D.E., but would prefer those coming from the traditional model and subsequently, acknowledge professional

experience as the most important quality in a candidate. These companies also seem to show limited knowledge of the open and distance education, which contributes to some ideological resistance.

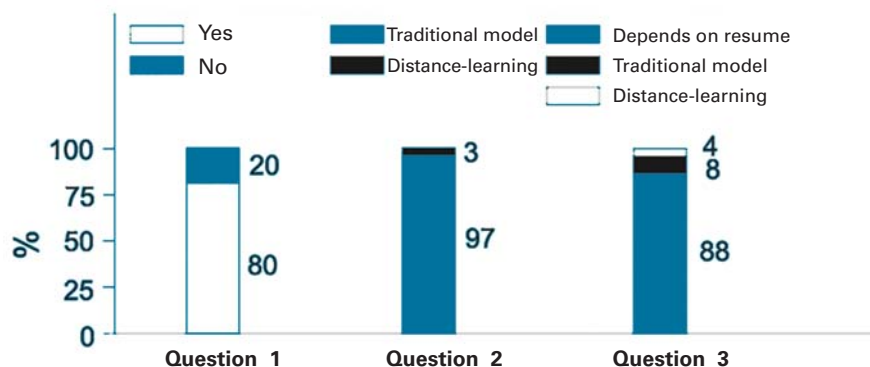


Figure 3: Question 1 – Would you hire an Open or Distance Education Alumnus?; Questions 2 and 3 – Would you prefer hiring an alumnus from which education model?(<http://migre.me/9yQES>) (n = 100).

However, the claim for employability chances faced with the reality of absorption, according to the data obtained by questionnaires submitted to managers and consultants in Human Resources (Figure 4). Of all students entering the traditional model, 56.25% graduate from their programs and only 13.33% of those are absorbed by the market within a year after they graduated (Figure 4A). Although 10.80% of those entering the distance-education programs graduate, 70.37% are absorbed by the market within a year after graduation (Figure 4B). Of those in the market, the majority of the students from the traditional model move on to graduate programs, while most of the D.E.

students enter the public service (statutory regimen), as depicted by Figure 4C.

The data has shown the dependency that the traditional model student has of scholastic environments. Most have kept themselves in university, conveniently hiding from the aggressiveness of the labor market or had not choice due to the limitation of their professional contact networks. Another point to be discussed is that students often see a post-graduation as their first job and an option to lifestyle continuity.

The high absorption rate among D.E. students (88%) has shown that the teaching model chosen by the student is not relevant

for employability. The time dedicated to internships, trainings and contact with the labor market and the independence towards the educational process has transformed the D.E. student into a professional with a profile

that is more suitable to the market, unlike the student from the traditional model. This is backed by the higher absorption rate amongst D.E. alumni within a year after graduation (70.37%).

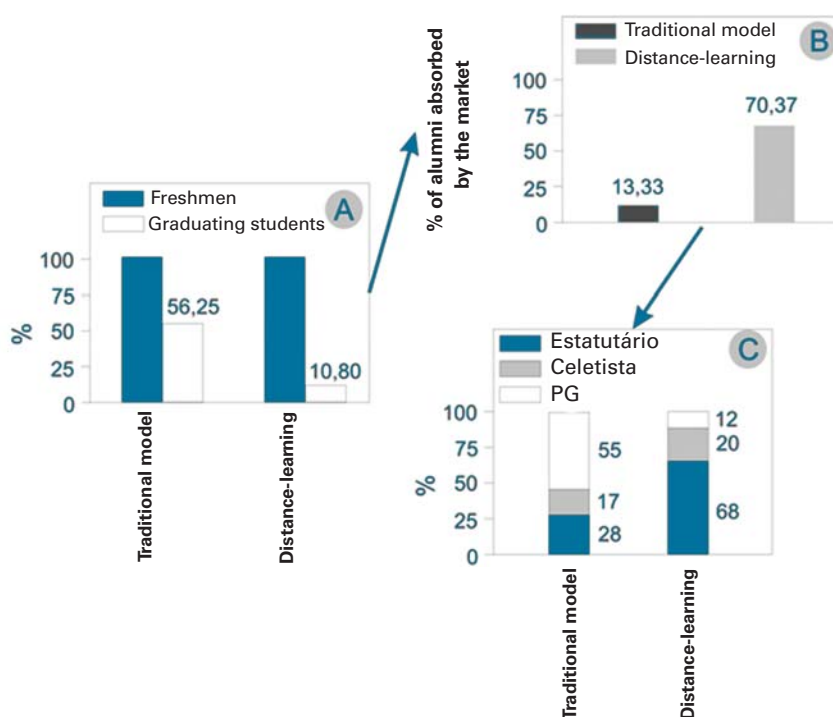


Figure 4: A) Percentage of graduating versus freshmen students (n = 13 universities); B) percentage of alumni absorbed by the market (within a year after graduation) (n = 317 alumni per model); and C) legal work regimen or PG = post-graduating; in traditional and distance-learning programs evaluated (n = 317 alumni per model)

The preference to post-graduation programs and other factors explains why students from traditional programs take longer to be absorbed by the market ($8,1 \pm 1,3$ anos), as observed in the alumni questionnaire (Figure 5A), than alumni from D.E. ($1,9 \pm 1,5$ anos). The time dedicated to graduate programs did not guarantee higher income

(Figure 5B), which can be observed by the lack of significant difference ($p = 0,621$) between the sample groups once they were absorbed. Perhaps this difference could become more relevant in the long run, which could not be verified in the duration of this research.

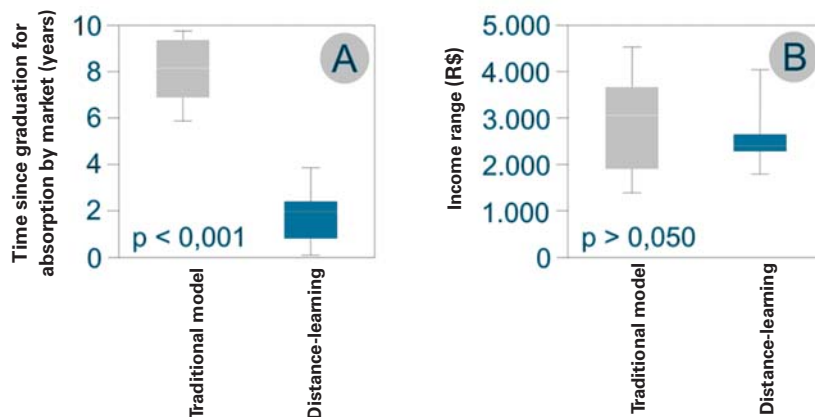


Figure 5: A) Average and deviation of time since graduation for alumni absorption by market; and B) Gross income range after market absorption (n = 317 for each model)

4. FINAL CONSIDERATIONS

The hypothesis of this work within the analyzed sample group was accepted, showing that alumni from D.E. are more quickly absorbed by the formal labor market (statutory and labor laws system regimen), despite having less years of education than alumni from traditional programs, whose majority continue on in graduate programs. Education in its variables – distance, time and grades – when potted in tridimensional relation, changes from the traditional on-site model to the distance-learning model. This has resulted in a distinct absorption of the alumni by the market, without salary distinction based on the learning model, refuting the theory in literature which states that, despite employability be preferably directed to students from the traditional method, the same was not true in practice.

5. LIMITATIONS OF RESEARCH

One of the limitations of research could have been the sample group used, professionals with D.E. Teaching Degrees background, who have a more flexible daily routine than those in the traditional model and could take advantage of an existing employment situation, which might be the reason for choosing the distance-learning model. However, this is not an entirely acceptable idea, considering that traditional-model teaching degrees are mostly evening or part-time programs, unlike Bachelor degrees, which also facilitates employment history prior to graduation. Another factor could have been attributed to the affirmative action in public policy, favoring continued education or practical certification of teachers, which became a priority with the expansion of D.E. Practical certification of teachers in the traditional model, such as PARFOR (Training of Teachers of Basic and Continued Education) for professionals in employment occupations (CAPES, 2013), cannot be forgotten and would work to balance the equation.

REFERENCES

- ABBAD, G.; ZERBINI, T.; SOUZA, D. B. L. Panorama das pesquisas em Educação a Distância no Brasil. *Estudos de Psicologia (UFRN)*, v. 15, p. 291-298, 2010.
- ABBAD, G.; CARVALHO, R. S.; ZERBINI, T. Evasão em Curso via Internet. *RAE Eletrônica*, v. 5, p. 1-25, 2006.
- BLÖMEKE, S.; SUHL, U.; KAISER, G.; DÖHRMANN, M. Family background, entry selectivity and opportunities to learn: What matters in primary teacher education? An international comparison of fifteen countries. *Teaching and Teacher Education*, v. 28, n. 1, p. 44-55, 2012.
- BRASIL. Decreto n.º 5.452, de 1 de maio de 1943, Aprova a consolidação das Leis do Trabalho. Disponível em: <<http://www.planalto.gov.br>>. Acesso em Maio de 2012.
- BRASIL. Lei n.º 8.112, de 11 de dezembro de 1990, Dispõe sobre o regime jurídico dos servidores públicos civis da União, das autarquias e das fundações públicas federais. Disponível em: <<http://www.planalto.gov.br>>. Acesso em Maio de 2012.
- CAPES – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. PARFOR. Disponível em: <www.capes.gov.br/educacao-basica/parfor>. Acesso em Abril de 2013.
- CROOKS, S. M.; CHEON, J.; INAN, F.; ARI, F.; FLORES, R. Modality and cueing in multimedia learning: Examining cognitive and perceptual explanations for the modality effect. *Computers in Human Behavior*, v. 28, n. 3, p. 1063-1071, 2012.
- FREIRE, P. *Pedagogia da autonomia: saberes necessários à prática educativa*. 39. ed. São Paulo: Paz e Terra, 2009. 148 p.
- HIRSCHFELD, R. R.; THOMAS, C. H.; BERNERTH, J. B. Consequences of autonomous and team-oriented forms of dispositional proactivity for demonstrating advancement potential. *Journal of Vocational Behavior*, v. 78, n. 2, p. 237-247, 2011.
- KOÇ, E. M. Idiographic roles of cooperating teachers as mentors in pre-service distance teacher education. *Teaching and Teacher Education*, v. 28, n. 6, p. 818-826, 2012.
- KELLY, H. F.; PONTON, M. K.; ROVAL, A. P. A comparison of student evaluations of teaching between online and face-to-face courses. *The Internet and Higher Education*, v. 10, n. 2, p. 89-101, 2007.
- LÜFTENEGGER, M.; SCHOBER, B.; SCHOOT, R.; WAGNER, P.; FINSTERWALD, M.; SPIEL, C. Lifelong learning as a goal – Do autonomy and self-regulation in school result in well prepared pupils? *Learning and Instruction*, v. 22, n. 1, p. 27-36, 2012.
- MARONNE, S. The ovals in the Excerpta Mathematica and the origins of Descartes' method of normal. *Historia Mathematica*, v. 37, n. 3, p. 460-484, 2010.
- MEC – Ministério da Educação. A Secretaria de Educação Superior (Sesu). Disponível em <portal.mec.gov.br/sesu/>. Acesso em Março de 2012.
- ODACI, H. Academic self-efficacy and academic procrastination as predictors of problematic internet use in university students. *Computers & Education*, v. 57, n. 1, p. 1109-1113, 2011.

- PATRIARCHEAS, K.; XENOS, M. Modelling of distance education forum: Formal languages as interpretation methodology of messages in asynchronous text-based discussion. *Computers & Education*, v. 52, n. 2, p. 438-448, 2009.
- SAMPAIO, B.; SAMPAIO, Y.; MELLO, E. P. G.; MELO, A. S. Desempenho no vestibular, background familiar e evasão: evidências da UFPE. *Economia Aplicada*, v. 15, n. 2, p. 287-309, 2011.
- SÁNCHEZ-ALONSO, S.; SICILIA, M. A.; GARCÍA-BARRIOCANAL, E.; PAGÉS-ARÉVALO, C.; LEZCANO, L. Social models in open learning object repositories: A simulation approach for sustainable collections. *Simulation Modelling Practice and Theory*, v. 19, n. 1, p. 110-120, 2011.
- SANTANA, O. A.; ENCINAS, J. I.; PEIXOTO, L. R. T. Aluno como ativo e não ativo em Ambiente Virtual de Aprendizagem em uma disciplina do curso de Engenharia Florestal da Universidade de Brasília: 2005-2009. *Revista de Ensino de Engenharia*, v. 30, n. 2, p. 43-48, 2011.
- SHIN, D. H.; SHIN, Y. J.; CHOO, H.; BEOM, K. Smartphones as smart pedagogical tools: Implications for smartphones as u-learning devices. *Computers in Human Behavior*, v. 27, n. 6, p. 2207-2214, 2011.
- SISNEP – Sistema Nacional de Ética em Pesquisa. Disponível em: <portal2.saude.gov.br/sisnep/>. Acesso em Março de 2012.
- SODANO, S. M. Integrating vocational interests, competencies, and interpersonal dispositions in middle school children. *Journal of Vocational Behavior*, v. 79, n. 1, p. 110-120, 2011.
- STATSOFT INC. 2008. STATISTICA (data analysis software system). Disponível em: <www.statsoft.com>. Acesso em: 21 set. 2008.
- SUNG, Y. T.; CHANG, K. E.; YU, W. C. Evaluating the reliability and impact of a quality assurance system for E-learning courseware. *Computers & Education*, v. 57, n. 2, p. 1615-1627, 2011.
- THOMPSON, G.; KNOX, A. B. Designing for diversity: Are field-dependent learners less suited to distance education programs of instruction? *Contemporary Educational Psychology*, v. 12, n. 1, p. 17-29, 1987.
- THOMPSON REUTERS. The: World University Rankings 2011-2012. Disponível em: < http://www.timeshighereducation.co.uk/world-university-rankings/2011-2012/top-400.html >. Acesso em Março de 2012.
- UAB – Universidade Aberta do Brasil. Disponível em < http://www.uab.capes.gov.br/>. Acesso em Março de 2012.
- XUEQIN, C. The Modeling of Virtual Environment Distance Education. *Physics Procedia*, v. 24, n. C, p. 2339-2346, 2012.
- WIJNIA, L.; LOYENS, S. M. M.; DEROU, E. Investigating effects of problem-based versus lecture-based learning environments on student motivation. *Contemporary Educational Psychology*, v. 36, n. 2, p. 101-113, 2011.