

Effects on The Students' Personal Competences of the Usage of PBL Methodologies in Professional Reality Simulation Environments: Students, Teachers, Graduates and Employers' perceptions

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Abstract: Trying to ensure that every student who enters the work market bears a set of personal attributions acknowledged as essential, higher education institutions (HEIs) have been being confronted with the need to activate new ways to produce and disclosure knowledge, compatible with the transition from an educational to a work environment. This research analyses the effects on the development of the students' personal competences of the PBL methodologies in a simulation environment for the business reality. Setting off from a case study of a vocational HEI, we resorted to the interview technique with teachers and employers and the questionnaire technique with the students and graduates. Students, graduates and teachers support that the PBL methodologies contribute for the further development of personal competences, mainly at the level of resource use (management, planning and work methodology) and at the level of knowledge construction (critical analysis, grounds for decisions and initiative). By the employers, one can easily detect a persistent trend not to acknowledge the PBL methodologies as directly responsible for an improvement of the graduates' personal competences, with the exception of the valorisation of more consistent grounds and more confident attitudes.

Key words: Students' personal competence, PBL Methodology

Introduction

The society's current conditions require an extraordinary educational commitment in favour of the training for the new generations. The higher education system itself does not go unharmed by the social, political and economical transformations we experience. Bearing this context in mind as a reference, it is possible to realize a society which generates challenges over a set of professional, but also personal and social competences. The expectation that the graduates will be able to evidence a vast set of much needed attributes for a lifelong learning process is shared not only by the employers and graduates, but also, with grand centrality, by higher education institutions (HEIs). As cited in Radloff, de la Harpe, Dalton, Thomas & Lawson (2008), the graduates who prove to have relevant attributes are taken into great consideration by the employers and regarded as citizens who generate social rise in value. In this sense, it is quite important to tend to the mutual influence dynamics among the varied agents involved and the structures which they consist of (students, teachers, graduates and employers). Trying to ensure that every student who enters the work market bears a set of personal attributions acknowledged as essential, confronts HEIs with the need to activate new ways to produce and disclosure knowledge. Some authors insist in the idea that it is central to change learning and teaching strategies, in order to develop students' horizontal competences (e.g. Silén & Juhlin, 2008). The arguments involved in such methodologies are multidimensional and diversified.

In the present study we highlight PBL methodologies (either in a perspective of project-based learning or a problem-based learning), based upon the principle of using contextualized problems of a professional nature as a starting point for the acquisition and integration of knowledge (Kolmos, 1996). Throughout this work we reflect upon the need for the HEIs to answer to new ways of knowledge production and dissemination, which value not only the *know-how* and the *do*, but also the *know how to be with others* and the *know how to be*. Against the background of this problematic, the general goal of this project is to try to contribute for the theoretical discussion on the way change movements associated to the PBL methodology produce implications at the level of the higher education students. We did, however, limit our field of study to the context of personal competences, trying to render more viable the control of the existing complexity and diversity in the PBL methodology paradigm. Specifically, we will centre our analysis on the set of perceptions and positions assumed by the main groups involved and with particular interests in the learning processes: students, teachers, graduates and employers. Based on the pointed outlines, and more specifically, we intend to: (1) inquire about the role which the PBL methodology plays in the development of the students' personal competences; (2) find out if the methodology improves the personal competences of the PBL graduates when compared to others; and (3) perspective the role of the PBL methodology at the level of personal competences, in the construction of a graduate profile for the third millennium.

This article is organized into five key points. After the introduction we try to contextualize PBL methodologies within the changing learning and teaching paradigm in vocational higher education. The next section focuses on the methodological

aspects of the study, including the context of the case study used in the research and techniques for collecting and processing data. The fourth section is devoted to presenting and discussing the results obtained from students, graduates, academics and employers. The paper ends with the main conclusions of the study.

PBL Methodologies and the Changing Paradigm in Vocational Education

In the Report made for UNESCO by the International Commission on Education for the Twenty-first Century (International Commission on Education for the Twenty-first Century, 1996) a complementary mission for education is immediately referred: that of fructifying the creative talents and potentialities of all individuals. In that very same report, the need for a lifelong learning process is strengthened, as one of the keys to access education. The idea conveyed by the group of rapporteurs sustains that, in order to be able to answer its set of assignments, education must be built upon the symbiosis of four basilar learning processes: learning to know (acquiring not only a set of codified knowledge, but also, and most importantly, the domain of those instruments), learning to do (adjusting training to the future professional activity, in such a way as to apply the knowledge obtained), learning to live together (cooperating with others in the resolution of common projects) and learning to be (allowing for the full development of the person, rendering him/her apt to create autonomous and critical thoughts, capable to judge different circumstances in life). However, if traditional teaching (which is understood as a model of transmission of both knowledge and values, in the unequivocal direction teacher to student) is primarily oriented by the learning of how to know and, especially in the field of higher vocational training, by the learning of how to do, according to the authors of the above mentioned report, it will be necessary to provide education with structured methodological ways, capable to involve both the learning of how to live together and the learning to be. In such a perspective, it is possible to sustain the idea of focusing on learning, thus realizing that the latter can not occur without people or a reference to its subjectivities and personal and social contexts (Fyrenius *et al*, 2007).

All together, the adequacy of the higher education system to the teaching-learning model sustained by the Bologna Process, did also jeopardize a profound change of paradigm: in order to confront the European student profile, the HEIs should emphasize horizontal competences which render students responsible for their learning processes, thus leaving the teachers with the task to facilitate and orient those processes. The implementation of these guidelines does inevitably create the need to re-evaluate the pedagogical activities at the level of goal definition and assessment, as well as, particularly, at the level of execution and follow-up of the methodological processes. In the Portuguese case, the higher education network is developed upon a binary system, accentuating the distinctly professional prominence of the polytechnic higher education, as opposed to more conceptual and theoretical features of the university education. Hence we find two distinctive logics: in the university education and in sequential periods of time, we may distinguish *knowledge* and *know-how*, whereas in the polytechnic education, at the same time, *knowledge*, *know-how* and *do* coincide. So, and particularly in polytechnic education it is possible to understand the importance to rethink the training of its students adjusting it, as far as possible, to the professional needs demanded by employers. In order to strengthen such a position, new pedagogies centred in the relation between pedagogical practices and professional practices have been revealing themselves as an important methodological paradigm (e.g. Musal, Taskiran & Kelson, 2003).

A possibility to establish the transition between educational practice and professional practice is that of fostering the change of a traditional teaching system to a PBL model. Developed by Howard Barrows and Robyn Tamblyn as of the late sixties and initially associated to medical schools, the PBL methodology has been used in various professional areas and programs, already gathering 40 years of experience (Nel, *at al.*, 2008). The PBL methodology is based upon the principle of using contextualized problems of a professional nature as a starting point for the acquisition and integration of knowledge (Barrows & Tamblyn, 1980). So being, and ontologically speaking, the use of professional problems works, simultaneously, as a learning incentive and a focus. In PBL methodology, students work in small groups, analysing the problem they are presented with, identifying the necessary information for its solution, directing their learning activities according to the knowledge needed to process the problem presented and, finally, formulating possible solutions. Throughout this process and by means of self-learning mechanisms, one may assume students develop competences which allow them not only to achieve the desired professional results, but also to work different personal and social features (Papinczack, 2009). In this way, it is supposed for the profile of a graduate who recurred to a PBL methodology to include not only basic knowledge, which will allow him to research, understand and critically explain the existing literature on a certain matter, but also the aptitude to communicate with others or the ability to solve problems which his professional experience enables him with, both as a person and a technician. On the other hand, and accepting the perspective of several authors (e.g. Tate & Grein, 2009) that learning has its place when there is an active and committed participation of the learner, it becomes fundamental for him to reconstruct knowledge, adjusting it to his needs and image. PBL methodology conceptually predicates an active construction of meanings for those who learn it, promoting, as a result, a more lasting internalization of the learning experiences. In such a perspective, this custom made concept stimulates, on the one hand, personal and social competences of intellectual growth and, on the other, it makes those competences more effective ones. Following the PBL methodology, the students who are looking for the answers to the questions they asked themselves, will select which may in fact answer their doubts and justify the solutions d«found. As a result, it is possible to refer the acquisition of competences at three different levels: technical (referring to the quality of the service rendered), social (associated to the nature of interpersonal relations) and self-developing (regarding questions of organization, argumentation and communication) (e.g. Albanese & Mitchell, 1993; Musal, Taskiran & Kelson, 2003). In particular, some studies of PBL in the accounting area can be consulted. According to the analysis of the state of the art about accounting and education, Rebele *et al.* (1998), Apostolou *et al.* (2001) and Watson *et al.* (2003, 2007), reveal that that between 1991 and 2005 only three articles refer to PBL. Nevertheless, some other studies may be point out. More recently, Tate and Grein (2009) or Xu and Yang (2010) have done some work on it. So, it is precisely the condition of the existence of

few readings about PBL methodologies in accounting that instigates us to consider the paradigm of the effects on the students' personal competences of the usage of PBL methodologies in professional reality simulation environments.

Method

Within the problematic discussed, the main objective of our work is to contribute to the theoretical discussion of how changes related with PBL methodologies produce implications on personal competences in vocational higher education. Supported on the several authors that frame the conceptualizing of our study, it is possible to sustain the thesis that PBL methodologies develop and reinforce students' personal competences (*e.g.* Tate & Grein, 2009). In more specific terms, we intend to inquire about the role which the PBL methodology plays in the development of the students' personal competences. Simultaneously, we want to find out if the methodology improves the personal competences of the PBL graduates when compared to others. Finally, we want to perspective the role of the PBL methodology at the level of personal competences, in the construction of a graduate profile for the third millennium.

3.1 The Case Study: Business Simulation

As previously referred, the case study which shapes this work is based upon the curricular unit of Business Simulation (running since 1997), included in the last semester of the last year of the study plan of the first cycle of studies of the accounting course available at the ISCA-UA. The origin of the idea to create a subject which aims to present a new teaching solution which brings the later closer to the business reality derived, mainly, from the conjugation of two primordial factors: a first factor which results from the difficulty to introduce a curricular training period in the course (which meant professionally placing about 160 students per year) and a second factor which resulted from the need to place upon the market accountants who were potentially more apt and advantageously competitive for the exercise of their profession, facing the growing offer of graduates qualified to exercise it.

Methodologically, the need to build bridges between the theoretical knowledge and its practical applications, among the conceptions teachers had on the professional needs and the competencies required by employers, motivated the use of a contextual learning process, integrated in a reality which mirrored the professional environment of the future graduates, following an ideological line of learning by doing. Parallel to this, there is the idea to simulate, within the school, the business reality which tried to offer a greater follow-up to the passage from a purely academic life to an active professional one and, at the same time, complement the initial training of the future graduates, by means of a holistic integration of the knowledge achieved during previous academic years. Such a context revealed itself a window of opportunity for the structuring of a systemic model inspired in PBL methodologies. The structure of the model chosen for the subject of Business Simulation completely unfolds around projects which imply themes from different subject areas, thus fostering learning by the resolution of problems that emerge during the formulation or implementation of those very projects. Based on teamwork, the model privileges self-learning and comprises, in its logical structure, the figure of the group's tutor who has a role of guidance.

The Business Simulation method consists of a simulated market of virtual companies, which small groups of students must manage and administer. The number of groups created annually is, roughly, 75, comprising the most varied fields of activity, with special attention to the fact that the interconnection among them demands for the existence of supplier and consumer companies, as well as competitive companies, just like it occurs in the real market. The subject takes place in 15 real weeks, which correspond to a virtual year, thus allowing students to perform the accounting simulation of the beginning and the end of the exercise. In order to maximize the real character which the Business Simulation is intended to have, the subject has similar goals to those established for analogous situations in the real world, with the delivery being the only true fictional aspect. The approximation to the professional activity is also ensured by the collaboration of three centrals which simulate the products and services necessary for the full operation of the business network: public, financial and commercial. While the public central emulates the role of different public entities, the financial central focus on assuring a set of diversified financial products and services. Finally, the commercial central has the role to promote the necessary dynamic to the functioning of the various sectors of business activity represented in the simulated market.

The importance granted to the subject is acknowledged by the Chartered Accountants Association Council (OTOC), which means that ISCA-UA is one of the schools which is exempt of the training period requested by the OTOC in order to have access to the enrolment as a chartered accountant. As that training period has the triple goal supplying professional experience, complementing social and professional competences and enabling a stronger articulation between the school and the world of work, the Business Simulation fulfils, according to the OTOC's perspective, the goals established for a training period. So being, it brings an added value to the profession of the future graduates.

3.2 The research design

After the definition of the main objective and the investigation questions that circumscribe this investigation, we elected a case study methodology. As a means of research, the methodology of case study enables, as far as Bell (1998) is concerned, to broaden the limitations of the existing knowledge and enable future researchers to confront their decisions with those referred to on the study. Yin (1994) also refers the fact that the most important aspect of a case study is not the statistical generalization of the phenomenon, but rather the analytical generalization in itself. So, our option derives from the belief that it can confirm and complete conceptual knowledge and from the opportunity of interest it represents, namely at a vocational level in accounting courses. More, we add the fact that a single case study can be a pilot case in future studies of multiple cases. On the other hand, we considerer important to elect the main groups involved and with particular interests in the learning processes: students, teachers, graduates and employers. In the empirical study we developed, we used the technique of interviews with the teachers and employing entities and that of questionnaire with the remaining participants. When observing the data collected

we also resorted to varied strategies: the qualitative approach elects content analysis techniques to deal with the information gathered, whereas the quantitative approach chooses a statistical treatment of the inquiries performed.

The scripts for the semi-structured interviews made to teachers and employers were basically outlined according to the literature review and to the specific object and goals defined for the research. It must be properly highlighted that during the qualitative collection of information, all the interviews transferred a role of informer, rather than that of respondent, on to the interviewees, as they were free to express facts and convictions in their own language (Lessard-Hébert, Goyette & Boutin, 1997). All interviews were recorded with the proper consent of the authors and their answers were studied with the QSR NUD*IST software (*Non-numerical Unstructured Data Index Searching and Theorizing*). The questionnaires proposed to the students and graduates were conceived similarly to the interviews, as of the revised theoretical setting and the specific object and goals established. In each question, it was explored whether the PBL methodology of Business Simulation did or did not originate the changes in the students' personal competences. The answers were pre-oriented on a Likert scale with 5 points, with a neutral possibility, and the respondent had to mark that which was closer to the way he/she perceives things. All questionnaires were prepared for an optical reading and the answers were examined following descriptive statistics. The software used was the SPSS (*Statistical Package for Social Sciences*).

While selecting the teachers, we choose to include all those who had at least four years of experience in the subject, admitting that punctual collaborations dispersed throughout several years would result in less limited perspectives on the methodological functioning of the curricular unit. 14 interviews were made. In order to confirm the diversification principles and in such a way as to ensure the most broaden overview possible of the problems and situations which take place within the group of the employing entities, we choose to only retain entities with graduates from ISCA-UA who were carrying out duties related to the accounting area, but spread out in several departments. Such a choice returned five entities, which corresponded to thirty-two graduates (twenty-three of which had attended Business Simulation as opposed to nine who hadn't). In this study we also involved all the students enrolled in the subject when the empirical part of the project was developed, which meant a total of 138 students. The return rate achieved was of 96%. Given that it was quite relevant to streamline the questionnaires to all the graduates from ISCA-UA who had attended Business Simulation, the 881 graduates present in the process since its beginning were taken into account. In this group, the return rate was of 84%.

Finally, it is also very important to mention that the adoption of a PBL methodology within Business Simulation presented itself as a challenge accrued both for students and for teachers. In fact, with the total development of the curricular units of the accounting degree running according to traditional teaching methodologies (identified, as previously mentioned, as a uniform model for the transmission of knowledge in the univocal direction teacher to student), the methodological organization of the Business Simulation suddenly supervenes as a model which opposes to the traditional one. This factual situation rises, namely by students and teachers, an inevitable comparison between the methodological philosophies inherent to the two models. In terms of this study, the fact that students, graduates and teachers tend to compare their traditional methodological experiences with the PBL experience of the Business Simulation, presents itself as a unique opportunity which adds up to the research the possibility to understand every opinion reported on the empirical part, as considered under the light of the PBL methodology *versus* the traditional teaching methodologies.

Results and discussion

As formerly referred, the sudden introduction of a PBL methodology in a course formatted according traditional teaching moulds, constitutes, *per se*, a fundamental element for the comparison of the learning experiences reported by students and by teachers of the institution. Methodologically and within the scope of this work, we resorted to the possibility to confront the two teaching methods (traditional and PBL) by the intervening elements (students, teachers and graduates) was a way to conceptualize the same study group and control group. So being, we argued that, although it is possible to introduce external variables in the analysis, such a fact allows for the reduction of the latter, as each analysis unit is built in a paired manner: before and after the use of a PBL model. Ergo, and as an aspect prior to the whole discussion, we assumed that each element (student, teacher and graduate) is his/her own control, with each group simultaneously becoming a test and a control group, where the samples gathered concern the records of the same element exposed to different aspects of the situation under study: traditional and PBL methodologies.

In this stage of our analysis, we tried to account for a set of perceptions expressed by the varied elements from the samples under study, who conceptualized the positions of students, teachers, graduates and employing entities regarding the features of the students and graduates' competences at a personal level. We included items relating to written and oral communication, critical analysis, time management, task planning, synthesis capability, creativity, setting of goals, decision reasoning, initiative capability, personal organization, dynamism and work methodology. With the dimension regarding the self-development abilities, we were able to circumscribe a set of assertions in on how the surveyed intervenients interpret the ways how the teaching-learning processes which use the PBL methodologies may eventually interfere in the structuring of the students and graduates' personal competences.

4.1 The Students' Perspective

The information presented in Table 1 characterizes the set of answers collected by the inquiry presented to the students, thus allowing us to establish an approximate picture regarding the reflection they make on possible alterations of their personal competences due to the PBL methodology implemented in the Business Simulation.

Table 1. Characterization of the percentage results of the group of students

Degree of alteration or non-alteration of the personal competences at the level of	Tendency to decrease	Unaltered	Tendency to increase
written communication	5.3	31.1	63.6
oral communication	3.8	35.6	60.6
critical analysis	6.8	15.9	77.3
time management	12.1	7.6	80.3
task planning	7.6	12.1	80.3
synthesis capability	3.1	26.5	70.4
creativity	4.6	25.8	69.6
setting of goals	6.1	26.7	67.2
decision reasoning	4.6	20.6	74.8
initiative capability	4.5	21.4	74.1
personal organization	9.1	31.1	59.8
dynamism	2.3	23.1	74.6
work methodology	3.0	22.0	75.0

Focusing on the students' answers in positive positions regarding the question of the influence of learning in the development of their personal competences, some items seem to reveal a stronger convergence of positions. Therefore, at a first level of analysis, it is possible to find an accentuated positive influence of the methodologies implemented in two terms: that of the planning and organization (time management and task planning); and that of knowledge construction (critical analysis, synthesis capability, creativity, decision reasoning, initiative capability, dynamism and work methodology). At a second level of analysis, the empirical study points to the development, although slightly less accentuated, of competences referring to communication (oral and written), personal organization and setting of goals. Although the results need to be carefully processed, an hypothetical interpretation of the values gathered (especially for the first three items) may refer to the fact that the competences regarding communication and personal organization transit, in a more direct manner than the others, from the traditional learning methodologies previously used by students. In fact, the whole traditional path run by the student during his/her schooling process, had always, generally speaking, relied on written and (probably less, but also) oral communication. On the other hand, the personal organization, in turn, had always been a present element in the student's traditional schooling.

4.2 The Teachers' Perspective

It was also of great interest for us to study, from the teachers' point of view, if the PBL methodology in Business Simulation did have any impact in the personal competences of the students. In this category, we included the following items: oral and written communication, critical analysis, synthesis capability, creativity, initiative capability, personal organization, dynamism, work methodology, reflection and self-esteem and self-confidence. By means of the detailed exhibition of the results gathered, we tried to understand how teachers perceive the effective possibility of changes at the level of the student's personal competences.

As far as the critical analysis is concerned, almost all the interviewees state that the methodology applied allows students to develop their critical reasoning in a constructive perspective. Another perspective referred by two teachers, presents us with the idea that the varied opinion presented by them is not a weak point, but rather an asset which is capable of adding analytical capability to the students' activity. Regarding the decision reasoning there are unanimous positions by the teachers: the PBL methodology enables them to develop, within the student, the ability to consolidate the resolutions he/she chooses to take. Also regarding personal organization aspects, the interviewees state that the methodology followed in the subject provides for mechanisms which go beyond life at school. Prolonging the aspect of personal organization, teachers refer to the urgency of a work methodology motivated by the PBL process, that forces students to have a constant and permanent flow of work. Based upon the answers intentions which were presented, it seemed to us beyond the shadow of a doubt, that there are, throughout the course of the subject, several moments which promote oral and written communication. Exactly as described in literature (e.g. Kirschner, Vilsteren, Hummel & Wigman, 1997) the interviewed teachers state that the methodology crates, in fact, synthesis mechanisms upon students, in such a way as to enable them to manipulate much information with which it is daily confronted. Within the self-development area, the interviewed teachers refer it is possible for students to collect, form the methodology, competences referring to creativity, initiative capability and dynamism. Such an active participation of the students in the construction of their learning processes is, equally, accompanied by a reflexive potential. In fact, teachers are unanimous when underlying the fact that the methodology is an important instrument for the process. In the perspective of one of the teachers, there is also an extra fact, which is the fact that Business Simulation provides the student with self-esteem and self-confidence competencies, capable of rendering him/her more apt to take on a Professional career. Particularly interesting to us seems to be the suggestion by the same teacher in the sense of assessing the number of graduates who choose to start off their career on their own. This choice referred by the teachers seems to understand the methodology as a dynamic process capable of encouraging business opportunities among associates.

4.3 The Graduates' Perspective

The statistical analysis performed on the matter of the data collected by this group, aim at analysing the perspective of those as far as the alteration degree of their personal competences is concerned, my means of the methodology followed in the subject. The data presented on table 2, characterizes the set of answers collected.

Table 2. Characterization of the percentage results of the group of graduates

Degree of alteration or non-alteration of the personal competences at the level of	Tendency to decrease	Unaltered	Tendency to increase
written communication	2.4	46.0	51.6
oral communication	1.2	36.7	62.1
critical analysis	1.4	18.8	79.8
time management	3.1	14.7	82.2
task planning	2.6	14.0	83.4
synthesis capability	2.4	32.5	65.1
creativity	2.1	34.5	63.4
setting of goals	1.7	22.4	75.9
decision reasoning	1.9	19.1	79.0
initiative capability	2.1	25.4	72.5
personal organization	1.4	33.4	65.2
dynamism	1.7	30.6	67.7
work methodology	1.6	20.6	77.8

The analysis of the set of items which comprise the personal competences block allows us to, broadly, underline the positive tendency evidenced by the graduates on the possibility to register alterations, caused by the PBL methodology followed in the Business Simulation. The statistical treatment described, besides allowing the identification of some more relevant themes in terms of the results gathered, does also induce hypothetical interpretations in terms of the configuration of the subjects' answers. Despite certain optimism, it soon becomes quite obvious that there are different valorisations of the items under study, somehow allowing the creation of a hierarchy of two distinctive answer profiles. The analysis of the table allows the verification of a markedly positive profile, which comprises critical analysis, time management, task planning, setting of goals, decision reasoning, initiative capability and work methodology. However, there is also another shade in the opinions of the graduates. According to this second profile, it is possible to detect more moderate positions which, surely, continue to express the perception that there is a positive trend which promotes oral and written communication, synthesis capability, creativity, personal organization and dynamism. One must particularly highlight the graduates' judgement, as far as the written communication item is concerned, where opinions are divided between a neutral assessment and weak positive evaluation.

4.4 The Employers' Perspective

With the interviews made to the employers we intend to perspective a set of questions referring to the personal competences of the graduates. In order to better circumscribe changes at this level, we now describe the results extracted from the meaning units associated to the items approached by entities, being that they only referred the items decision reasoning, personal organization, self-esteem and self-confidence.

According to all the employers interviewed, the Business Simulation enables graduates to develop their ability to reason decisions, limited not only by theoretical concepts, but also by practical aspects which have already been experienced. Upon such a basis, the graduates who attended the curricular unit of Business Simulation present themselves, this way, more valued and professionally acknowledged, while achieving certain levels of the profession, when compared to other colleagues who choose not to attend the subject. When observing the sense of the answers, generally speaking, employers do not acknowledge personal organization as a competence which benefits from the attendance of the Business Simulation subject. As far as self-esteem and self-confidence are concerned, only one of the employers approached the subject, assuring that the experience acquired during the Business Simulation subject, while granting them with more preparation, renders graduates more confident and secure of their actions. The very same employing entity meets the opinions presented by some teachers, referring that attending the subject is an asset in terms of ability to assume a positive attitude. An element worthy of mentioning has to do with the fact that all employers who were interviewed were aware of the existence of the subject of Business Simulation at ISCA-UA, a fact which seems to reveal the attentions schools who train graduates within the scope of companies' needs deserve.

Conclusions

This work investigates the expression modes of the use of PBL methodologies at the level of personal competences by students and graduates at a higher education level. It is not our intention to generalize results. In fact, the data we processed does not allow for it. Nevertheless, based upon the indicators we examined it is, already, possible to conclude that the teaching-learning methodologies grounded on PBL models, validate some conceptual propositions of the already existing theoretical production on this theme. Still, there are others which do not seem to be corroborated by the practical results collected. Based upon some reflections we have been establishing, it is possible to ponder new perspectives, capable of contributing for the activation of a debate around the dynamics of self-development competences, associated to the use of PBL methodologies. Hence, despite the fact that, theoretically, the research reveals methodologies under study tend to affect the students' personal profile, it is not

clearly evident how such alterations are perceived by the various agents involved in the educational process (students, teachers, graduates and employers). Such as it was observed, we identified two trends in the perceptions evidenced by the interviewees and the respondents.

On the one hand, the results collected with the group which comprised students, graduates and teachers leads us to sustain that the methodologies under study contribute to the development of personal competences, mainly at the level of resources' usage (management, planning and work methodology) and knowledge construction (critical analysis, decision reasoning and initiative capability). Such specificities are eventually identified with the characteristics of the profile of the graduate who used a PBL methodology on his training process, as Albanese (1993) and Kolmos (1996) refer. Another conclusion of the study is the fact that the communication skills (oral and written) appear far less valued, when compared to the remaining items for self-development. One may perhaps find a justification in the fact that traditional methodologies already explore these aspects. Another possible perspective refers to the circumstance that teachers may not present uniform solutions, which, likewise, encourages debate among the students. In this sense, it seems that the discussion of ideas which often occurs bears an underlying methodology which significantly increases the argumentative power of students, though they appear to develop more comfortable attitudes in more traditional environments. One must also underline that teachers have been questioning the choice on the possibility to establish a professional career on their own (entrepreneurship). To some extent, this aspect acknowledges that methodologies have the ability to foster self-esteem, and self-confidence in students, also being able to, together with several other factors, contribute for the assumption of the idea to create companies in the field. As literature does not approach this matter, it seems possible to us to sustain the possibility of inserting the entrepreneurship logic, motivated by the new methodologies under study in this work, in the existing theories.

On the other hand, the perception manifested by the group of employing entities seems, however, not to acknowledge, at least not so noticeably, the impact of those methodologies at the level of the trainees' personal development. Following a certain path, we find a tone of speech which values methodology as a potentiating force for more consistent groundings, enhanced by the practical experiences the students have already gathered. The same positive tone is evidenced in the items referring to attitudes of a more confident posture and greater security. It is, however, possible to find a persistent tendency for employers not to acknowledge PBL methodology as responsible, at least not directly, for the improvement of the graduates' personal competences. These facts lead us to conclude that the methodological models which sustain alterations in the students at a personal level are rather simplistic rendering it, in our opinion, unreasonable to generalize this problem, at least as far as employers are concerned.

The results achieved with the analysis of the data collected also require some lateral reflections. A possible consideration has to do with the understanding of a strategy which potentially favours the development of personal competences, but which does not have the same effect on every student or context. Another pertinent reflection: if, as the European Centre for the Development of Vocational Training refers, the forecasts for employability for Europe in 2020 point at eighty million jobs, the bottom question which arises is the need to understand what kind of competences will be necessary to fulfil these vacant jobs, according to the employers' needs. On this page, a potential uneasiness refers to the need to know how we may be able to assure the early identification of competences which will secure the needs of a multifaceted market.

Simultaneously, we reflected on the need to open the worlds of education and training, namely at a higher level, making them more reactive to the needs of learners and employers, by means of the development of relevant competences, centred on tangible studies and results. Nonetheless, and according to the HEIs role while cultural diffuser, it is important to carefully analyse the equilibrium aspect between theoretical conceptualization and its practical applicability. We are, therefore, before the pressure of a flexibility exercise at the level of competence management, not only professionally, but, more intensely, at a non-cognitive level and, particularly, at a personal one. This because modernizing in order to meet new challenges places a considerable pressure on the current education and training systems, especially in developing countries.

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