

EFFECTS OF PBL METHODOLOGIES ON THE STUDENTS PERSONAL COMPETENCES

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ABSTRACT

To meet the challenges that are currently being faced by Higher Education Institutions (HEIs) either in terms of the required roles for teachers and students, or of teaching and learning processes, it is pointed out, more than the reformulation of the (theoretical) mission of higher education, the recasting of the practice of the institutions that comprise it. In the present study we highlight PBL methodologies (either in a project-based learning or a problem-based learning perspective), based upon the principle of using contextualized problems of a professional nature as a starting point for the acquisition and integration of knowledge. This article reports on the effects of PBL methodologies on the students' personal competences in a simulation environment for the business reality. The case study for our investigation was the course of Business Simulation (BS) at the Higher Institute of Accounting and Administration of the University of Aveiro (ISCA-UA), as a PBL-type methodology. The generic objective of the course is the applied and contextual integration of previous information, in a global perspective, in order to prepare qualified professionals able to work in organisational environments. The research made use of theory, data and methodological triangulation. While semi-structured interviews were made to tutors, students and graduates' data was informed by questionnaires. Based upon some reflections we have been establishing, it is possible to consider 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. As it was observed, we identified two trends in the perceptions evidenced by the interviewees and the respondents. On the one hand, students, graduates and tutors support that PBL methodologies were important mainly at the level of resource use (management, planning and work methodology) and of knowledge construction (critical analysis, grounds for decisions and initiative). Another conclusion of the study is the fact that communication skills (oral and written) appear far less valued, when compared to the remaining items for self-development. On the other hand, for the employers, one can easily detect a persistent tendency to recognize PBL methodologies as responsible

for the valorisation of more consistent grounds and more confident attitudes, but not directly responsible for an improvement of graduates' personal competences, in general. To some extent, this aspect recognizes that methodologies have the ability to foster students' self-esteem, and self-confidence. Also and particularly interesting, seems to be the suggestion that, maybe, PBL methodologies can be related with the idea of self-employment and entrepreneurship. As literature does not approach this matter, it seems possible to us to sustain the possibility of inserting the entrepreneurship logic, motivated by PBL methodologies, in the existing theories. Once, mainly in vocational higher education, learning methodologies tend to become more reactive to the needs of employers, it seems important not to forget the mission of HEIs and so, we suggest a carefully analysis of the balance between the theoretical conceptualization and its practical applicability.

Keywords: PBL; Personal competences; Students; Academics; Employers; Higher education institution.

SUMMARY

This article reports on the effects of PBL methodologies on the students' personal competences. On the one hand, students, graduates and tutors support that PBL methodologies were important mainly at the level of resource use (management, planning and work methodology) and of knowledge construction (critical analysis, grounds for decisions and initiative). On the other hand, for the employers, one can easily detect a persistent tendency to recognize PBL methodologies as responsible for the valorisation of more consistent grounds and more confident attitudes, but not directly responsible for an improvement of graduates' personal competences, in general

1. INTRODUCTION

The new economic challenges, the speedy developments in information and communication technologies (ICT) or the emerging globalization, are some of the challenges that businesses are facing today. These rapid changes meant that business education must equip students to deal with increasing competition in a global marketplace, and to face the requirements of multi-facet skills. As a consequence, there is an increasing importance on the quality of the learning experience being provided to business students (Byrne & Flood, 2008; Mohamed & Lashine, 2003). To achieve this, higher education institutions (HEI) need not only to understand student learning but also to realize how employers value graduates and their capabilities (Archer & Da-

vison, 2008). Within the context of skills development, lifelong learning, collaborative strategies and other concepts, the discovery and deployment of new teaching and learning methodologies become an authoritative task (Chaparro-Peláez, Iglesias-Pradas, Félix, Pascual-Miguel, & Hernández-García, 2013). A possible way to foster and supplement the change of a traditional lecture-based method is the usage of a PBL methodology (either in a project-based learning or a problem-based learning perspective), supported by a business simulation context. The main goal of this study is to contribute for the theoretical discussion of the key factors affecting the students, tutors, graduates and employers' perceptions of learning using simulation-supported PBL. More specifically, we did limit our field of study to the context of personal competences. The structure of this document is as follows: in the first section, an introduction to PBL and business simulation is presented. After having established the theoretical foundations, a description of the case study and the instructional methodology is made. Then, data analysis is performed in order to evaluate the influence of PBL methodologies supported by a business simulation context in the personal competences of the students. Finally, conclusions from the data analysis are summarized, followed by a discussion of the findings from the study.

2. COMPETENCIES AND PBL METHODOLOGIES: THE CHANGING PARADIGM

Lifelong learning concepts, skills development and self-directed learning are concepts of growing importance in higher education agenda. Within the background of these educational trends, the positioning of new learning methodologies becomes an authoritative task (Chaparro-Peláez *et al.*, 2013).

As developed countries struggle to produce the intellectual capital required to compete globally, the more businesses' requirements of graduates' competences inflate. The effects of the expectation that new graduates can have the ability to add immediate value to businesses result in a growing interest on the current state and future of graduate skills. To assure that students acquire strategies, particularly in transferable skills which allows them to learn effectively and throughout their lives, organizations are tipping the balance of the responsibility of skill development to HEI (Jackson, 2010).

So, and mainly in vocational education, HEI need to produce graduates with the soft skills believed essential for increase productivity and innovation in their future workplace. So, and as several authors claim (e.g. Archer & Davison, 2008) there is a need for action by HEI and employers to address both skills deficit in the graduates. Even if the blame of inadequacies of the schooling system is consistently directed at the content, the design or the structure of undergraduate programs, the question of the methodological preparation of the future graduates is a central point (Jackson, 2010).

Different learning orientations and conceptions of learning have been explored in connection with different methods of learning, giving rise to the refinement of the concepts and their development in relation to specific educational contexts. In fact, if in the 1970s, studies that supported surface approaches to learning (memorization and rote learning), rather than deep approaches to learning (active construction and focus on meaning) arise, more recent studies in the 2000s (e.g. Fyrenius, Wirell, & Silén, 2007), show that understanding can be conceived of and attained in various ways. As the concept of understanding and of students' approaches to learning evolves, the surface and deep dichotomy is being replaced by entangled and collaborating activities. The expectation that education must be built on learning to know, learning to do, learning to live together and learning to be, is shared in the Jacques Delors' report (Unesco, 1998). At the same time, accepting that optimal teaching and learning occur when teaching styles align with learning styles, it seems possible to tailor both by integrating interactive simulations to support face-to-face classroom (Proserpio & Gioia, 2007). On the other hand, if traditional lectures are predominantly oriented by learning to know and, specifically in vocational training, by learning to do, several authors (e.g. Fyrenius *et al.*, 2007; Unesco, 1998) argue that it is necessary to provide education with designed methodologies able to involve, also, learning to live together and learning to be. Among several disadvantages pointed out to traditional schooling, the lack of connection between one element to the others, the lack of teamwork or the lack of knowledge transfer motivated by no research investigation among students, are some of the most cited (Kaufmann, Mense, Wahl, & Pucher, 2011). In the Portuguese case, the binary higher education system distinguishes between a polytechnic approach (identified with a professional orientation) and a university approach (identified with a more conceptual and theoretical orientation). So, and particularly in polytechnic education it is possible to understand the importance to adjust training to the professional needs demanded by employers. In order to strengthen such a position, new pedagogies centered in the relation between pedagogical practices and professional practices have been revealing themselves as an important methodological paradigm (Musal, Taskiran, & Kelson, 2003).

Several authors establish the benefits of problem solving skills in relation to a better understanding of the future professional activity (Karantzas *et al.*, 2013; Papinczack, 2009; Tate & Grein, 2009), and they call for a deeper relationship between employers organizations and HEI. These same skills are thought to enhance graduates' capacity to deal with novel and blurred problems and their ability to make connections between learning and practice (Karantzas *et al.*, 2013). Besides, as Clifford and Montgomery (2014) claim, problem-solving is important in enhancing students' ability to think and act as global citizens.

The PBL model, firstly developed by Howard Barrows and Robyn Tamblyn in the late sixties, was initially associated to medical schools. Nowadays, the PBL methodology

has been used in various professional areas and programs, gathering more than 40 years of experience (Nel *et al.*, 2008). Even if the concept of PBL varies somewhat in the literature (e.g. Moesby, 2006), there are key elements common to most descriptions of this methodological approach. Using PBL, teachers firstly present students with a problem that require students to go beyond rote-learning. In fact, after analyzing the problem and identifying the necessary information to begin the analysis, solving the problem should require students to actively engage in research, analysis and exchange of ideas. In this methodological orientation, teacher does not provide answers. Instead, he acts as a facilitator or tutor as he provides crucial assistance by helping students develop their problem-solving skills (Chaparro-Peláez *et al.*, 2013; Prince, 2004). In PBL, students are the center of the learning process as they are responsible for their own learning as well as for identifying their knowledge shortcomings and determining how to overcome them. Given the collaborative nature of the methodology, in PBL students usually work in small groups. All through the process, students are not only supposed to understand and critically explain the existing literature on the subject, but also to communicate with others and to develop self-learning competences. Accepting the perspective of several authors (e.g. Tate & Grein, 2009), the active nature of PBL call for a committed participation of the learner, which is a central point in knowledge reconstruction. As a result, it is possible to refer the acquisition of technical, (regarding the processes), personal (regarding questions of organization and communication), and social (regarding interpersonal relations) competences (Albanese & Mitchell, 1993; Musal *et al.*, 2003). Therefore, problems are used not only as a way to develop the skills needed to solve them, but also as a means to achieve knowledge (Savin-Baden & Major, 2004).

In general, the learning cycle begins with the presentation of the problem to the students. Afterwards, students have to analyze the problem and identify the most relevant facts about it. As they begin to understand the problem, and hypothesize possible solutions, they need to analyze the different strategies and decisions they must take in the process. The identification of knowledge shortcomings is an important part of the cycle. In fact, to do that, students have to research through a self-directed learning process (facilitated by teachers), search for relevant information to answer the questions that arise, reflect on the hypothesized possible courses of action, identify which concepts are need to be researched in detail and bring together all the information acquired (Chaparro-Peláez *et al.*, 2013).

3. PBL METHODOLOGIES SUPPORTED BY A BUSINESS SIMULATION CONTEXT IN ACCOUNTING

The enormous developments in ICT, the new economic challenges, the requirements of multifaceted skills and the rapid spread and acceptance of globalization technology, are some of the changes that have brought new challenges not only to business but also to business education (Kavanagh & Drennan, 2008; Mohamed & Lashine, 2003). The perception that graduates, in general, are not equipped with generic skills and attributes for the workforce of the twenty-first century, is a significant issue and some studies in this area can be consulted (e.g. Archer & Davison, 2008). In the accounting area and as a consequence of the changing business environment, this is a major problem. An evidence of the increasing focus on generic skills and attributes in accounting is the considerable body of research in this area (e.g. Jones, 2010; Kavanagh & Drennan, 2008). If business schools are responsible for closing the gap between the skills required by the markets and the ones acquired by its graduates and the environments for which graduates are prepared change, the issue that arises is that of knowing how education is preparing future accountants capable enough to cope with these same challenges (Mohamed & Lashine, 2003).

Like other disciplines, accounting belongs to a community of practice and so shares a set of knowledge, skills and ways of negotiating meaning and communicating with others. Therefore, and besides skills which are shared with other disciplinary areas, accountants are infused with their own language, structures, knowledge and practical skills. To know that generic attributes must be understood as part of the scholarly and professional practice, has profound implications for accounting education (Jones, 2010) and has been the subject of much debate (Kavanagh & Drennan, 2008). In other words, generic attributes in accounting must be taught as integral to disciplinary practice and are influenced by the accounting profession and the needs of employers. This means that there is the need of planning for the teaching and assessment of generic attributes all along the accounting curriculum.

Trying to provide accounting students with the knowledge and skills that raise their competency level to meet that required by the market, Mohamed and Lashine (2003), identified some skill sets and presented some curriculum design. Looking at accounting education from a client-oriented perspective, these same authors recommend a change from a knowledge based education to a process oriented one. In order to provide students with personal and social competences that prepare them for a better understanding of business in today's global environment, Mohamed and Lashine (2003) list the following categories: communication skills, computer skills, analytical and intellectual skills, multidisciplinary and interdisciplinary skills, knowledge of global issues, personal qualities and critical thinking. The question of a client oriented perspective is crucial, because in the absence of a client oriented focus the relevance between what the job market requires and what is being taught does

not exist. Also Kavanagh and Drennan (2008) claim that HEI should prepare their students with a more all-inclusive range of skills in order to lay the foundations for a lifelong commitment. A significant finding of Kavanagh and Drennan (2008) indicates that although employers are still expecting strong analytical skills and a good understanding of basic accounting skills, they are also requiring business awareness in terms of the real world. Particularly interesting, is the fact that both employers and students report that many of the non-technical and professional skills and attributes are not being sufficiently developed in HEI accounting programmes. These same ideas are aligned with the ones of Kelly, Davey and Haigh (1999). In fact, these authors suggest that what accounting academics are attempting to achieve is the adoption of alternative approaches to educational practices.

Particularly interesting is the recent work of France (2010). After introducing the idea of contemporary practices (as opposed to the traditional practices consistent with management accounting practices prior to the 1990s) as those that appear from 1990s onwards, the findings of France (2010) contrast with the pedagogical assumption that the skills required by accountants have to go beyond technical practices and emphasize personal and social skills. For the purposes of the discussion, the classification of traditional and contemporary practices used by France (2010), distinguishes between economic value added, balanced scorecard and activity based costing and management (contemporary) and other practices. The work of France (2010) concluded, on the one hand, that for those seeking a position as a management accountant, traditional management accounting practices (financial accounting, analysis, forecasting, budgets, reporting, costing and variances) are required. On the other hand, in contemporary management practices none appeared more salient than others. The conclusion of France (2010) is that it is critical for educators to know the practices that are required by employers, and to reflect those practices in the educational curricula. The dilemma remains in the association between theory and the real world arena. In other words, to understand the demands of employers, it seems necessary to have three different points of view: teaching, research and curricula that involve contact with practitioners and real life situations. Which lead us to the question of knowing what should also be taught to management accounting students, and what do accounting educators need to decide what to include in the curriculum beyond the common body of knowledge. Business educators who are looking for alternative methodologies to lecture based ones, may want to try PBL. In particular, some studies of PBL in the accounting area can be consulted (e.g. Hansen, 2006; Milne & McConnell, 2001).

Resuming to the call for a need to revisit accounting education from a client oriented perspective it is vital to strive for a methodological process that ensure effective learning. In order to help students relate the subjects to prior knowledge acquired an incorporate concepts and principles, a business simulation context in accounting

can be used. According to Clarke (2009), business simulation exercises are one way of enhancing skills most valued by companies: problems solving skills, capacity for innovation or high order leadership skills. The question that worries Clarke (2009) is the capacity of business simulation to deliver the learning outcomes desired by employers. If, traditionally, accounting education programs have adopted the functional silos that provide the outline of the curriculum, and business problems hardly ever present themselves in the compartmentalized silo supply-driven structure, there is a question of concern. So, the main problem is of how to provide students with a conceptual understanding in cross functional decision making. The business simulation suggested by Clarke (2009) encompasses an integrative approach that goes beyond the convectional lectures through learning by doing. Likewise, the simulation of the work environment in which students have to work in future, should provide them with the critical ability and ethics needed to make the right decision at the right time (Mohamed & Lashine, 2003). This methodological feature, as Mitchell (2004) says is more and more receiving attention either for the increasingly refined designs or for their promotion of student attention. Theoretically, the concept of simulation encompasses any artificial environment that is created for training purposes. In turn, training is the systematic acquirement of rules, knowledge, attitudes, concepts or skills that should result in improved performance (Salas, Wildman, & Piccolo, 2009). So, simulation based training can be conceptualized as any practice environment that is produced in order to provide trainees with the opportunities to develop and practice those competencies. Salas, Wildman and Piccolo (2009) suggest that simulation based training offers many advantages to management education, in general. In their work, by engaging in a simulated scenario similar to the future professional context, students show evidence of being able to contribute to the effectiveness of the problems more quickly and openly. In other words, simulation based training allows for the development of skills at a much faster pace than usual. As a hands-on approach, simulation based training presents an advantageous opportunity for improving the quality of existing curricula. The work of Salas and his colleagues (2009) delineate several of these distinct advantages. Also Wynder (2004), in extolling the advantages of business simulation, stresses the way learners can immerse themselves in the accounting context and learn by doing. The nature of experiential learning is an important part because of the active engagement with the context and because of the benefit of providing students with the opportunity to experience the consequences of their actions. As a consequence, students are able to see interrelationships between diverse approaches to managing performance, and the way in which they match or conflict with each other. The individual reflection that derives from the opportunity to continually revise decisions and see the consequences, is pointed out to be one of the major benefits. Another benefit of a simulation context is that it can compress time and space (Wynder, 2004).

Finally, and even though literature about PBL is not scarce, there is little research

about learning methodologies that combine PBL with simulation contexts (Chaparro-Peláez *et al.*, 2013). This lack of studies is even more noteworthy in the case of accounting. The need for realistic situations to develop PBL strategies has been mentioned by some authors (e.g. Chaparro-Peláez *et al.*, 2013). Several arguments can justify the usage of simulations in a PBL process (Chaparro-Peláez *et al.*, 2013). In fact, the importance of the context of a PBL problem is a critical ingredient to successful learning within a PBL approach. So, the capability of simulations to present a meaningful context makes them an ideal tool in the upkeep of PBL methodologies. Another argument is that simulations match the criteria for an adequate problem to be used in PBL, since business problem contexts characteristically lack sufficient information, and problems are often unclear with several ways to solve them.

4. INSTRUCTIONAL STRATEGY AND METHODOLOGY

The motivation for this study is to show how such a combination of PBL and simulation has produced implication on personal competences in vocational higher education. Starting from a PBL within a simulation business context, the study focus on (i) the role that methodology plays in the development of students' personal competences; (ii) how the methodology improve graduates' personal competences and (iii) the construction of a graduate profile for the third millennium.

4.1. THE CASE STUDY OF THE BUSINESS SIMULATION COURSE

The BS course is underpinned on the notion that graduates from ISCA-UA would have to increase their competencies in order to satisfy the ones required by employers. Within the vocational path of ISCA-UA it become imperative the need for building bridges between theoretical knowledge and professional accountancy practices. Such a context revealed itself a window of opportunity for the BS model inspired in PBL methodologies supported by a business simulation context.

The generic objective of the course is the applied and contextual integration of previous information, in order to prepare qualified professionals able to work in organizational environments. So and strategically, BS is placed at the end of the undergraduate accountancy programme. Apart from generic objective, more specific overall objectives can also be defined: (1) to consolidate and integrate knowledge acquired in previous academic years; (2) to provide a practical overview of the accountant profession; and (3) to allow the approach between professional ethics and business ethics. Additionally, other objectives may be mentioned: (4) to develop the ability to work in a team and under pressure; (5) to improve oral and written expression; (6) to provide an overview of the accounting activity; and (7) to perform a critical analysis of both the own work or the work of peers. The course was firstly introduced in May 1996 and has the duration of a semester that corresponds to a virtual year of work.

The foundations of BS lays in a simulated market of virtual enterprises, which small groups of students must manage and undertake. Each group consists of a firm or a public entity that is connected to an economic activity. The existence of suppliers and customers assures competition, such as in real life situations. Very important is the web platform that supports the simulation of the business reality. BS is also recognized by the professional association of accountants (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 of supplying professional experience, complementing social and professional competences and enabling a stronger articulation between academia and business, the BS 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 of ISCA-UA.

4.2. THE RESEARCH DESIGN

The present research elected a case study methodology. Yin (2009) 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 being, it can either confirm or complete conceptual knowledge about PBL methodologies supported by a business simulation context in accounting. Our paper focuses on the teachers, employers, students and graduates' perceptions. While selecting the teachers, we choose to include all those who had at least four years of experience in the subject, assuming that punctual collaborations would result in less limited perspectives. Fourteen interviews were made. In order to ensure the most broaden possible overview, we choose to retain only 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 BS 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 is was quite relevant to streamline the questionnaires to all the graduates from ISCA-UA who had attended BS, the 881 graduates present in the process since its beginning were taken into account. In this group, the return rate was of 84%.

The research was carried out making use of three cross-referencing sources in order to allow findings to be interpreted from different perspectives. The first is theory triangulation, as several streams were used in the literature review. The second is data triangulation since the views of students, graduates and academics were analysed. The third is methodological triangulation as it articulates quantitative and qualitative methodologies. While semi-structured interviews were made to tutors,

students and graduates' data was informed by questionnaires. 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 of the research. All through qualitative data collection respondents were free to express facts and convictions in their own language, therefore assuming the role of informants rather than of respondents (Lessard-Hébert, Goyette, & Boutin, 1990). 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). 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).

5. RESULTS AND DISCUSSION

As a prior point, it is fair to say that embracing a PBL learning approach represented a substantial change to both students and teachers of ISCA-UA, as it emerges, all of a sudden, as a methodology opposed to traditional methods. In fact, with all the curricular units of the accounting degree running according to traditional teaching methods, the methodological organization of the BS suddenly supervenes as a model which opposes to the traditional one. This factual situation gives place to an inevitable comparison between the methodological philosophies inherent to the two models. As a consequence, students, graduates and tutors tend to compare their PBL experiences with the traditional ones that they are more familiarize with. So, the fact that students, graduates and teachers tend to compare their traditional methodological experiences with the PBL experience of the BS, presents itself as a unique opportunity which adds up to the research the possibility to understand every opinion reported under the light of PBL methodologies versus traditional teaching methods. Also employers tend to compare PBL graduates with non PBL ones they are more familiarize with. So, as a preceding point, we can say that all the conclusions of our study must be read by the light of PBL methodologies versus traditional ones.

5.1. THE PERSPECTIVE OF STUDENTS

The perceptions of students regarding the question of the influence of the PBL methodology supported by a business simulation context on the development of their personal competences, seems to reveal strong positive answers (see Table 1).

Table 1. Degree of alteration or non-alteration of the personal competences (students' perspectives)

Degree of alteration or non-alteration of the personal competences at the level of	Tendency to increase (%)	Unaltered (%)	Tendency to decrease (%)
written communication	64	31	5
oral communication	61	35	4
critical analysis	78	15	7
time management	80	8	12
task planning	80	12	8
synthesis capability	70	27	3
creativity	70	26	4
setting of goals	67	27	6
decision reasoning	75	21	4
initiative capability	74	21	5
personal organization	60	31	9
dynamism	74	24	2
work methodology	75	22	3

At a first level of analysis, it is possible to find an accentuated positive influence of the methodologies implemented in two terms: on the planning and organization (time management and task planning); and on 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), setting of goals and personal organization. An hypothetical interpretation of the less valued competences may refer to the fact that competences regarding communication and personal organization transit, in a more direct manner than the others, from the traditional learning methodologies previously used by students.

5.2. THE PERSPECTIVE OF GRADUATES

The perceptions of graduates regarding the question of the influence of the PBL methodology supported by a business simulation context on the development of their personal competences are very similar to the results attained with students (see Tabela 2).

Tabela 2. Degree of alteration or non-alteration of the personal competences (graduates' perspectives)

Degree of alteration or non-alteration of the personal competences at the level of	Tendency to increase (%)	Unaltered (%)	Tendency to decrease (%)
written communication	52	46	2
oral communication	62	37	1
critical analysis	80	19	1
time management	82	15	3
task planning	83	14	3
synthesis capability	65	33	2
creativity	63	35	2
setting of goals	76	22	2
decision reasoning	79	19	2
initiative capability	73	25	2
personal organization	65	33	2
dynamism	68	31	1
work methodology	78	21	1

The data gathered seems to expose different valorisations of the items under study, somehow allowing the creation of a hierarchy of two distinct answer profiles. So, graduates bring up an accentuated positive influence of the PBL methodology supported by a business simulation context mainly on 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 communication, synthesis capability, creativity, personal organization and dynamism. The written communication item appears to be unaltered by the methodology implemented in BS, meaning that the methodology seems not to influence this competence.

5.2. THE PERSPECTIVE OF TEACHERS

As teachers assume the role of informants no formal questions were verbalized. Framed by the topic of personal competences, teachers expressed their opinions in their own language. From the interviewees, it was possible to understand that: the methodology allows students to develop their critical reasoning in a constructive perspective (as students have to analyse and incorporate different perspectives all throughout the problems' resolution); the difference of opinions among teachers is an important element to promote synthesis mechanisms and analytical capability among students; the methodology enables students to develop the ability to consolidate the resolutions he/she chooses to take (as students have to consider and inte-

grate different perspectives all throughout the problems' resolution); the endless flow of work encourages personal organization aspects; the methodology has the potential to improve synthesis mechanisms upon students (once they need to manipulate a vast set of information); it is possible that self-development mechanisms are encouraged (namely creativity, initiative capability and dynamism); the methodology has the potential of working written and oral competences (as far as the evaluation process includes written reports and oral presentations); the active learning process of the methodology generates a reflexive potential; the methodology provides students with self-esteem and self-confidence competencies (as students find themselves self-oriented and responsible for their own learning processes); the methodology has the potential of encouraging business opportunities and starting off careers by ones' own (as students need to deal and learn with their own mistakes). This particular point is a very interesting one as far as it is not identified in the literature.

5.3. THE PERSPECTIVE OF EMPLOYERS

As well as teachers, also employers assume the role of informants. Framed by the topic of personal competences, employers expressed their opinions in their own language. From the interviewees, it was possible to understand that: the methodology 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); the methodology renders graduates more confident and secure of their actions; graduates who attended the curricular unit of BS present themselves more valued and professionally acknowledged (when compared to other colleagues who did not to attend the subject); personal organization is not a competence which benefits from the attendance of the methodology.

Noteworthy is the fact that all employers who were interviewed were aware of the existence of the methodology of the BS unit at ISCA-UA, which seems to reveal the attention of enterprises with HEI, mainly in their recruitment arena.

6. CONCLUSIONS

This study explores the expression modes of the use of PBL methodologies supported by a business simulation context at the level of personal competences. We analyse the perspectives of students, graduates, teachers and employers. It is not our intention to generalize results. In fact, the collected data does not allow it. Nevertheless, it is possible to conclude that the learning and teaching methodologies grounded on PBL models validate some conceptual propositions on the subject. However, there are others which do not seem to be validated by the practical results gathered.

In line with the literature review, students, graduates and tutors support that PBL methodologies are important mainly at the level of management, planning and work

methodology and of critical analysis, grounds for decisions and initiative.

Not so aligned, 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 in written and oral examinations.

The influence of no uniform solutions is not surprising. In fact, the circumstance that teachers may not present identical solutions can encourage the debate among students. Consequently, it seems that the discussion of ideas which often occurs endures an underlying methodology which significantly increases the argumentative power of students, though they appear to develop more comfortable attitudes in more traditional environments.

Particularly interesting seems to be the suggestion that, maybe, PBL methodologies can be related with the idea of self-employment and entrepreneurship. As literature does not approach this matter, it seems possible to sustain the possibility of inserting the entrepreneurship logic, motivated by PBL methodologies, in the existing theories.

The results show that in this study some new perspectives can be understood, as not all personal competences have the same significant impact on perceived learning by various agents involved in the educational process (students, teachers, graduates and employers). Such as it is observed, we identify two trends in the perceptions of the interviewees and the respondents.

On the one hand, students, graduates and tutors support that PBL methodologies were important mainly at the level of resource use (management, planning and work methodology) and of knowledge construction (critical analysis, grounds for decisions and initiative).

On the other hand, for the employers, one can easily detect a persistent tendency to recognize PBL methodologies as responsible for the valorisation of more consistent grounds and more confident attitudes, but not directly responsible for an improvement of graduates' personal competences, in general. To some extent, this aspect recognizes that methodologies have the ability to foster students' self-esteem and self-confidence.

The results achieved with the analysis of the data collected also require some lateral reflections.

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 top problem that arises is to understand what kind of competences will be necessary to fulfil these vacant jobs, according to the employers' needs. So, maybe we need to know how to assure the early identification of competences which will secure the needs of a multifaceted market. If, mainly in vocational higher education, learning

methodologies tend to become more reactive to the needs of employers, it seems important not to forget the mission of HEI and so, we suggest a carefully analysis of the balance between the theoretical conceptualization and its practical applicability. Therefore, we are 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.

REFERENCES

- Albanese, M. A., & Mitchell, S. (1993). Problem-based learning: a review of literature on its outcomes and implementation issues. *Journal of the Association of American Medical Colleges*, 68(1), 52–81.
- Archer, W., & Davison, J. (2008). *Graduate Employability: What do employers think and want?* (R. Brown & K. Herrmann, Eds.). London: The Council for Industry and Higher Education. Retrieved from <http://aces.shu.ac.uk/employability/resources/0802grademployability.pdf>
- Byrne, M., & Flood, B. (2008). Examining the relationships among background variables and academic performance of first year accounting students at an Irish University. *Journal of Accounting Education*, 26(4), 202–212.
- Chaparro-Peláez, J., Iglesias-Pradas, S., Félix, J., Pascual-Miguel, & Hernández-García, Á. (2013). Factors affecting perceived learning of engineering students in problem based learning supported by business simulation. *Interactive Learning Environments*, 21(3), 244–262. doi:10.1080/10494820.2011.554181
- Clarke, E. (2009). Learning outcomes from business simulation exercises. *Education + Training*, 51(5/6), 448–459. doi:10.1108/00400910910987246
- Clifford, V., & Montgomery, C. (2014). Challenging Conceptions of Western Higher Education and Promoting Graduates as Global Citizens. *Higher Education Quarterly*, 68(1), 28–45. doi:10.1111/hequ.12029
- France, A. (2010). Management Accounting Practices Reflected in Job Advertisements. *Journal of New Business Ideas & Trends*, 8(2), 41–57. Retrieved from http://www.jnbit.org/upload/JNBIT_France_2010_2_.pdf
- Fyrenius, A., Wirell, S., & Silén, C. (2007). Student approaches to achieve understanding - approaches to learning revisited. *Studies in Higher Education*, 32(2), 149–165.
- Hansen, J. D. (2006). Using Problem-Based Learning in Accounting. *Journal of Education for Business*, 81(4), 221–224. doi:10.3200/JOEB.81.4.221-224
- Jackson, D. (2010). An international profile of industry-relevant competencies and skill gaps in modern graduates. *International Journal of Management Education*, 8(3), 29–58. doi:10.3794/ijme.83.288
- Jones, A. (2010). Generic Attributes in Accounting: The Significance of the Disciplinary Context. *Accounting Education: An International Journal*, 19(1/2), 5/21. doi:DOI: 10.1080/09639280902875523
- Karantzas, G. C., Avery, M. R., Macfarlane, S., Mussap, A., Tooley, G., Hazelwood, Z., & Fitness, J. (2013). Enhancing critical analysis and problem-solving skills in undergraduate psychology: An

- evaluation of a collaborative learning and problem-based learning approach. *Australian Journal of Psychology*, 65(1), 38–45. doi:10.1111/ajpy.12009
- Kaufmann, C., Mense, A., Wahl, H., & Pucher, R. (2011). Reducing the drop-out rate of a technical oriented course by introducing Problem Based Learning – a first concept. *SYSTEMICS, CYBERNETICS AND INFORMATICS*, 9(2), 51–55. Retrieved from [http://www.iiisci.org/Journal/CV\\$/sci/pdfs/OL229JZ.pdf](http://www.iiisci.org/Journal/CV$/sci/pdfs/OL229JZ.pdf)
- Kavanagh, M. H., & Drennan, L. (2008). What skills and attributes does an accounting graduate need? Evidence from student perceptions and employer expectations. *Accounting & Finance*, 48(2), 279–300. doi:10.1111/j.1467-629X.2007.00245.x
- Kelly, M., Davey, H., & Haigh, N. (1999). Contemporary accounting education and society. *Accounting Education: An International Journal*, 8(4), 321/340. doi:10.1080/096392899330829
- Lessard-Hébert, M., Goyette, G., & Boutin, G. (1990). *Investigação qualitativa. Fundamentos e práticas*. Lisboa: Éditions Agence d'Arc inc.
- Milne, M. J., & McConnell, P. J. (2001). Problem-based learning: a pedagogy for using case material in accounting education. *Accounting Education: An International Journal*, 10(1), 61–82. doi:10.1080/09639280122712
- Mitchell, R. C. (2004). Taylor & Francis Online :: Journal of Education for Business - Volume 79, Issue 4. *Combining cases and computer simulations in strategic management courses*. Retrieved June 11, 2014, from <http://www.tandfonline.com/toc/vjeb20/79/4#.U5jLefldUdc>
- Moesby, E. (2006). Implementing Project Oriented and Problem-Based Learning (POPBL) in institutions or sub-institutions. *World Transactions on Engineering and Technology Education*, 5(1), 45–52. Retrieved from [http://www.wiete.com.au/journals/WTE&TE/Pages/Vol.5, No.1 \(2006\)/09_Moesby38.pdf](http://www.wiete.com.au/journals/WTE&TE/Pages/Vol.5, No.1 (2006)/09_Moesby38.pdf)
- Mohamed, E. K. A., & Lashine, S. H. (2003). Accounting knowledge and skills and the challenges of a global business environment. *Managerial Finance*, 29(7), 3–16. doi:10.1108/03074350310768319
- Musal, B., Taskiran, C., & Kelson, A. (2003). Opinions of tutors and students about the effectiveness of PBL in Dokuz Eylul University School of Medicine. *Medical Education Online*, 8. Retrieved from <http://www.med-ed-online.org/pdf/f0000073.pdf>
- Nel, P., Keville, S., Ford, D., McCarney, R., Jeffrey, S., Adams, S., & Uprichard, S. (2008). Close encounters of the uncertain kind: reflections on doing problem-based learning (PBL) for the first time. *Reflective Practice*, 9(2), 197–206.
- Papinczack, T. (2009). Are deep strategic learners better suited to PBL? A preliminary study. *Advances in Health Sciences Education*, 14, 337–353.
- Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3), 223–231.
- Proserpio, L., & Gioia, D. A. (2007). Teaching the Virtual Generation. *Academy of Management Learning and Education*, 6(1), 69–80. doi:10.5465/AMLE.2007.24401703
- Salas, E., Wildman, J. L., & Piccolo, R. F. (2009). Using simulation-based training to enhance management education. *Academy of Management Learning and Education*, 8(4), 559–573. Retrieved from <http://www.ebooksmagz.com/pdf/using-simulation-based-training-to-enhance-management-education-373690.pdf>

- Savin-Baden, M., & Major, C. H. (2004). *Foundations of Problem-based Learning*. Maidenhead: Open University Press.
- Tate, S. L., & Grein, B. M. (2009). That's the way the cookie crumbles: an attribute sampling application. *Accounting Education, 18*(2), 159–181.
- Unesco. (1998). *Summary of the world conference on higher education for the twenty-first century: vision and action*. Retrieved from http://www.unesco.org/education/educprog/wche/declaration_eng.htm
- Wynder, M. (2004). Facilitating creativity in management accounting: a computerized business simulation. *Accounting Education: An International Journal, 13*(2), 231–250. doi:10.1080/09639280410001676639
- Yin, R. (2009). *Case study research. Design and methods (4th ed.)*. Thousand Oaks: Sage Publications.