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Chapter 3

Teaching Accounting and Management through Business Simulation: A Case Study

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ABSTRACT

Everyday accounting and management teachers face the challenge of creating learning environments that motivate students. This chapter describes the Business Simulation (BS) experience that has taken place at the Polytechnic Institute of Porto, Institute of Accounting and Administration (IPP/ISCAP). The chapter presents students' perceptions about the course and the teaching/learning approach. The results show that pedagogical methods used (competency-oriented), generic competencies (cooperation and group work), and interpersonal skills (organisational and communication skills) are relevant for future accounting professionals. In addition, positive remarks and possible constraints based on observation, staff meetings, and past research are reported. The chapter concludes with some recommendations from the project implementation.

INTRODUCTION

In an era of increasing specialisation and professionalization higher education in accounting and management faces intense criticism for failing to

impact useful vocationally-related competencies to students. This criticism comes from students, employers, alumni, business leaders and opinion makers. The focus of the criticism seems to be of the inadequacy of the vocational competen-

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cies accounting graduates possess (Finn, 1987; Bennis and O'Toole, 2005; Mill, 2007; Augier and March, 2007).

After the Bologna Process, changes occurred in the teaching/learning paradigm. From teaching-centred education which emphasises the acquisition and transmission of knowledge, we now focus more on learning-centred education, which put the onus on students to develop the capacity to learn. In the end, this new paradigm promotes a continuum of lifelong learning, in which the individual needs to be able to handle knowledge, to update it, to select what is appropriate for a particular context, to learn permanently and to understand how to learn in new and rapidly changing situations (Tuning Project, 2009).

One attempt to satisfy the criticism of stakeholders and face the challenges of the Bologna paradigm has been the experience developed at the Institute of Accounting and Administration at the Polytechnic Institute of Porto (ISCAP/IPP) regarding the teaching/learning of accounting and management. The course, named *Simulação Empresarial* (Business Simulation, BS), begun in the second semester of 2002/2003, offered in the first cycle degree of accounting and administration.

This course was chosen as the focus of this paper for three reasons. First, Business Simulation can be used to evaluate higher levels of learning, such as integrating material from several sources, critically evaluating data, contrasting and comparing information. Second, the course offers a wide range of teaching techniques (tutorials, class exercises, problem-solving sessions, work based practice, classroom based practical classes, etc.) administered by a supervisor and several instructors according to educational objectives. Third, the assessment of the course involves more than testing for cognitive achievement (work placement reports or diaries, financial analysis, professional portfolios, fieldwork reports). It also includes the evaluation of attitudes (performance of skills while being observed) and communication skills (oral presentations).

The paper is organised as follows. The next two sections provide a general framework about accountant's competencies. Section two reviews the relevant literature and section three discusses the subject in the context of European Higher Education Area (EHEA) and international organisations (AICPA and UNCTAD). The fourth section describes the Business Simulation course and the process of teaching, learning and assessment. Section five presents the methodology used in the evaluation of the project by students and the following section discuss the results. Section seven is dedicated to the evaluation of the project (positive remarks and possible constraints) and the paper concludes with some recommendations and conclusion.

ACCOUNTANT'S COMPETENCIES: A BRIEF LITERATURE REVIEW

A large stream of research in accounting education has tried to identify some important skills that accountants must have. Lin *et al.* (2005) investigated the perceptions of Chinese accounting practitioners, teachers, and students on the required knowledge, skills, and pedagogy for accounting education. The authors concluded that accounting practitioners emphasize written and oral communication skills, a relatively weak area that should be strengthened in Chinese accounting education. Survey evidence from Dutch practitioners (Bots *et al.*, 2009) indicates that there may be three groups of competencies: basic, advanced and highly advanced. Basic competencies need to be present at graduation (e.g. written communication), advanced some years after the start of the career (e.g. financial management) and the highly advanced skills may be needed for Chief Financial Officer (CFO) candidates (e.g. project management). Ellis (2006) reinforces the importance of writing skills considering that a better understanding of what students learn is connected with a further approach in writing.

Teaching Accounting and Management through Business Simulation:

Team work is another important competency for accounting professionals as noted by Luthje and Prugl (2006). Exploring the role of team work among students with different backgrounds and the fact that prior studies had shown some relational problems among people from other disciplines, they demonstrated that their course experience provided an attitudinal beliefs' change among students. The main reason presented for that change was communication, as the more students shared experiences with each other and the more they familiarize themselves, the stronger these effects became (Luthje and Prugl, 2006). Investigating the effects of team-skill training on collaborative learning at an university level, Prichard et al. (2006) concluded that team-skill training facilitates teamwork on a collaborative learning task. Scofield (2005) advocates that selecting unstructured cases for a team approach can create pedagogical benefits, as students can improve their learning of accounting and their teamwork skills. Additionally, Daff, De Lange and Jackling (2012) recognized two types of generic skills: the cognitive that includes routine skills, analytic and design skills, appreciative skills; and the behavioral that includes personal and interpersonal skills. Besides these skills, the authors emphasize the need to incorporate emotional intelligence (personal and social competencies) in the accounting *curriculum*. De Villiers (2010) explores the changing needs of employers and the business community in relation to technical and soft skills (such as communication skills, business presentation skills and other interpersonal skills), supporting the importance of soft relational skills for all business graduates, including accountants. Fortin and Legault (2010) found that a mixed approach program significantly enhanced the development/improvement of all the generic competencies investigated, and that the students' perceptions of some benefits of the mixed approach differed significantly according to accounting work experience and prior academic performance.

The use of new information and communication technologies changed the way we live today, especially on how an organization works. Technological advances require that accounting professionals have skills to obtain information from several sources, manage computer-based projects, and utilise computers as the main tool of their work. Several authors called for more research in accounting education with a technological basis (Rebele *et al.*, 1998; Baupin and Zreik, 2000; Apostolou *et al.* 2001; Watson *et al.*, 2003). In UK, Larres and Radcliffe (2000) analyze the level of effectiveness in promoting student learning through computer-based instruction. They conclude that technological tools are valued by students in order to achieving educational results, and as a preparation for lifelong learning. However, it was not possible to conclude that this methodology was more effective than traditional ones. Another study done in UK (Lane and Porch, 2002) examines the impact of computer-aided learning (CAL) on the performance of non-specialist accounting undergraduates. The results illustrate that the project enhanced students' Internet knowledge and skills to access information on a technological basis. In the USA, Bhattacharjee and Shaw (2001) analyzed the effects of using a project that was designed to concurrently develop students' computer-based skills and improve their perceptions towards technology. The authors found that the project enhanced students' technological skills. Stanley and Edwards (2005) developed a CDROM to assist students in their accounting learning and concluded that students were receptive to learning in on-line environments, which are properly designed and built.

Also, there seems to be a positive effect on students' performance by using technologic-based education tools. Potter and Johnston (2006) explored the association between undergraduate accounting students' use of an on-line learning system and the learning outcomes achieved by those students. The results demonstrated that the

use of an on-line learning system by students has a positive influence on their learning outcomes.

Although accounting professionals should acquire important competencies and skills to be prepared to perform at the best way, those qualifications may not be sufficient. The continuous changes in several areas require an “up-to-date” professional. Lifelong learning is a habit that must be addressed by accounting professionals. Some studies have been done about this issue. Candy (1995) defends lifelong learning as one of the main important pillars in undergraduate programs. He stated that universities that focus on developing lifelong learning perform their role at their best way.

ACCOUNTING EDUCATION AND THE EUROPEAN HIGHER EDUCATION AREA (EHEA)

One of the key issues in business education that arose from the Bologna process was the debate around how to teach, and the learning activities and assessment methods that would best allow students to obtain the intended competencies. These competencies are understood as including knowing and understanding (the capacity to know and understand theoretical knowledge), knowing how to act (the practical and operational application of knowledge in real-life situations), knowing how to behave (valued as an integral part of living with others in society). The level to which a person is capable of performing a combination of attributes (knowledge and its application, attitudes, skills, responsibilities) is called a competency.

Supported by the European Commission, Tuning Project (2009) developed a methodology to (re) design, develop, implement and evaluate study programs for different areas of study cycles. In this project a survey was conducted involving employers, graduates, students and academics from different institutions across European countries. All groups were asked to rank the importance of thirty one generic competencies and the extent

to which they thought these competencies were achieved in higher education. From these, six were selected for different areas of business: i) ability for abstract thinking, analysis and reasoning; ii) ability to apply knowledge in practical situations; iii) knowledge and understanding of the subject areas and understanding of the profession; iv) ability to identify, pose and solve problems; v) capacity to learn and to stay up-to-date with learning; vi) ability to work in a team. Then, using the same methodology, specific competencies were also selected for business education (first cycle): i) ability to analyse and structure an enterprise problem and design solution (e.g. entering a new market); ii) identify and use adequate tools (e.g. market research, statistical analysis, comparative ratios); iii) understand existent and new technology and its impact for new/future markets; iv) learning to learn (how, when, where new personal developments are needed); v) identify the functional areas of an organisation and their relations; vi) understanding, reading, speaking and writing in a foreign language.

In the accounting profession, according to American Institute of Certified Public Accountants (AICPA, 2006), individuals must be able to use strategic and critical approaches to decision-making, considering issues, identifying alternatives, and choosing and implementing solutions to deliver services and provide value. Other functional competencies of an accounting professional include: risk analysis (audit and business risk) and control; ability to apply different measurement criteria; communication skills to report findings or recommendations; research skills to access relevant guidance or other information; necessary skills to use technology tools effectively and efficiently. International Federation of Accountants (IFAC) developed a framework for competencies required of management accountants during their careers. A five experience level (novice, assistant, competent, proficient, expert) was identified involving the possession of 375 competencies for the expert practitioner (Birkett, 2002). A brief example of those skills are: technical skills (e.g.

writing reports, computer literacy), analytical/design skills (e.g. analysis/problem structuring, planning), appreciative skills (e.g. responsiveness, multi-disciplinary perspectives), personal skills (e.g. flexibility, morality), interpersonal skills (e.g. oral communication, team leadership), to organizational skills (e.g. organizational awareness, process management) [Birkett, 2002]. As the United Nations Conference on Trade and Development (UNCTAD, 2003, p. 4) states: “it is not sufficient for persons aspiring to become professional accountants to possess only theoretical knowledge. Accountants must be able to apply theoretical knowledge in practical, real-life situations by obtaining, analyzing, interpreting, synthesizing, evaluating and communicating information”.

After presenting the competencies for the professional accountant we ask which appropriate modes of teaching and which learning activities might best foster those competencies and how do we assess them.

A wide range of teaching techniques could be used, depending on the focus of the teaching and the intended learning outcomes for the students. From the classical lectures (more or less interactive), to the more technology-oriented methods (e/b learning), we can mention other techniques such as seminars (small group teaching), work-based practice, demonstration classes, workshops (classroom-based practical classes) and problem-solving sessions.

Students are also required to do some learning activities like conducting searches for relevant materials in libraries and on-line; surveying literature; asking questions and communicating answers to others using a variety of media; working under time constraints; leading or being useful members of teams; chairing and participating usefully in meetings; preparing and making oral presentations, either in groups or individually; practising professional skills, working with other students to co-produce a report/answer to a problem, research and write papers or reports.

To complete the cycle of learning one must look at how students’ achievement of learning outcomes is assessed. Different modes of assessment could be used, such as tests of knowledge and skill, oral presentations, analyses of texts and data, performance of skills while being observed (work placements), professional portfolios, fieldwork reports or diaries. Written examinations can take the format of essays, multiple choice questions, problem-solving exercises, analyses of cases, or literature reviews. Oral examinations can take the form of oral questioning or demonstration of a practical skill.

In a recent position paper about the state-of-art of education assessment, Birenbaum *et al.* (2006) support the need of changing the traditional assessment system used not for learning but only as an assessment instrument of learning. These authors defend a paradigm shift from assessment of learning towards assessment for learning and propose an integrated assessment system to overcome the problems of the traditional assessment. Therefore, that system should integrate both new and old ways of assessment, offer other new ways on test validity, develop new methodologies, include both formative and summative assessment forms, and be cost-effective (Birenbaum *et al.*, 2006).

To provide some application about these issues, the next section describes the teaching, learning and assessment processes of the Business Simulation course at ISCAP.

IMPLEMENTING BUSINESS SIMULATION (BS) AT ISCAP/IPP

Background

ISCAP is one of the biggest Portuguese accounting schools. It is one hundred and five years old and has nearly four thousand students (First Cycle). Although ISCAP provides five different degrees (Accounting and Administration, International Business, Marketing, Business Communica-

tion, Tourism and Hospitality Management and Administrative Assistance and Translation), the majority of students (almost 70%) are enrolled in Accounting and Administration. The case that will be presented shows how the course of this study program has changed the way ISCAP works.

In February 2003, a Business Simulation (BS) course was introduced. This change occurred in a proactive manner. First, to be a future member of the Portuguese Chamber of Certified Accountants (OTOC), it is compulsory to complete an internship in an accounting firm or a module of simulation integrated in the management/accounting degree. Second, accounting education had been orientated to basic competencies that do not have sufficient value for the accounting professional. Third, some old-fashion accounting concepts that were taught had no practical use. In the same stream of other higher education institutions, ISCAP has changed the way accounting and business was taught.

To implement this course, it was necessary to invest in many material resources, especially hardware and software. Two classrooms were equipped with computers, printers, scanners, telephones, and other equipment. Other rooms, for administrative purposes, were also equipped with hardware and software. A management integrated system software and a relational database were prepared to build a wide network environment. In the very beginning it was necessary to have many human resources, as the project began with more than a thousand students.

Since the start of the project, companies have had an important role as sponsors. There is a partnership between ISCAP and external entities in the project.

Objectives

The main objective of the BS course is to overcome the weaknesses of traditional education, by giving a practical view of professional activity and preparing students for the real business world. This aim is consistent with some studies that proclaim

action-based learning (e.g. Adler and Milne, 1997; Fiet, 2001). Another objective of the BS course is to enable students to apply knowledge previously obtained in other courses (e.g. Financial Accounting, Tax Law, Management). Although some difficulties appeared, as the study program was not totally prepared to facilitate that purpose, the process has been in place.

A new teaching method was used in ISCAP with the implementation of the BS course. Students have to know, not only traditional and theoretical concepts, but also how to apply them in a practical situation. Moreover, students should be prepared for lifelong learning during their professional careers. As students use an integrated management information system, they are prepared for high-level business and management careers.

Resources

In the beginning, seventeen teachers, and administrative and technical staff were involved because of the large number of students. The background of the teachers was mainly in management and accounting areas. The teachers' role in the classroom was essentially to explain and support students' activities. All activities were planned and available for students with one week in advance. Additionally, some administrative tasks were done by teachers, such as, preparing the environment, providing some special services (banks, insurance companies, public administration, etc.) to students' companies. Administrative and technical staff maintained the operation of the whole system.

In terms of material resources there were two classrooms with a maximum capacity of sixty students each. A planning and an administrative room were also provided. The planning room is used for teachers' work and for meetings. The administrative room is divided into two parts; one for computer servers and all the needed material to keep the system running, and the other for students. Students are allowed to practice into the information system, whenever they want in order to improve their performance during the classes.

Business Simulation Environment

With advances in technology, the problems of information scarcity and access have diminished considerably. For an accounting professional, it is very important to choose the relevant information. In addition to several important competencies, an accounting professional should have an adequate information system to manage all information. Consequently, the accountant's role is increasingly important for organisations, as their work has a widened perspective. Participation in the decision-making process and the knowledge of how companies work are some examples of an enlarged accounting professional's activities. The BS course aimed to alert students that all of these changes (in the world, and consequently in the accountant's / manager's role) are not a future trend but a fact of life. Therefore, to stimulate lifelong learning, students are requested to read and analyse business magazines and newspapers so that they can make some comments about the possible consequences for them. Portuguese and English were used in this task. Additionally, students have to apply their broadened knowledge in BS courses. The first example is the process of a company set-up, which allows students to apply law concepts. Other examples of activities are inventory management, human resources management, financial management, and information systems management. All these activities are possible without any risk, as students perform in a "protected" or risk-free environment.

In a classroom, there are several groups of students. Each group has three or four students that represent a company. This procedure is intended to provide a teamwork skill, as advocated by other authors (Prichard *et al.*, 2006). The students' companies have to do exactly what a real company does, especially concerning deadlines. All real events that have a deadline, such as taxes and payment of salaries, must be accomplished by students' companies. Each student's company has a different activity, providing a diversified market. Other special entities, such as business

associations, insurance companies, banks, rental companies, public administration, leasing and factoring companies, etc., are managed by teachers (ISCAP, 2005a).

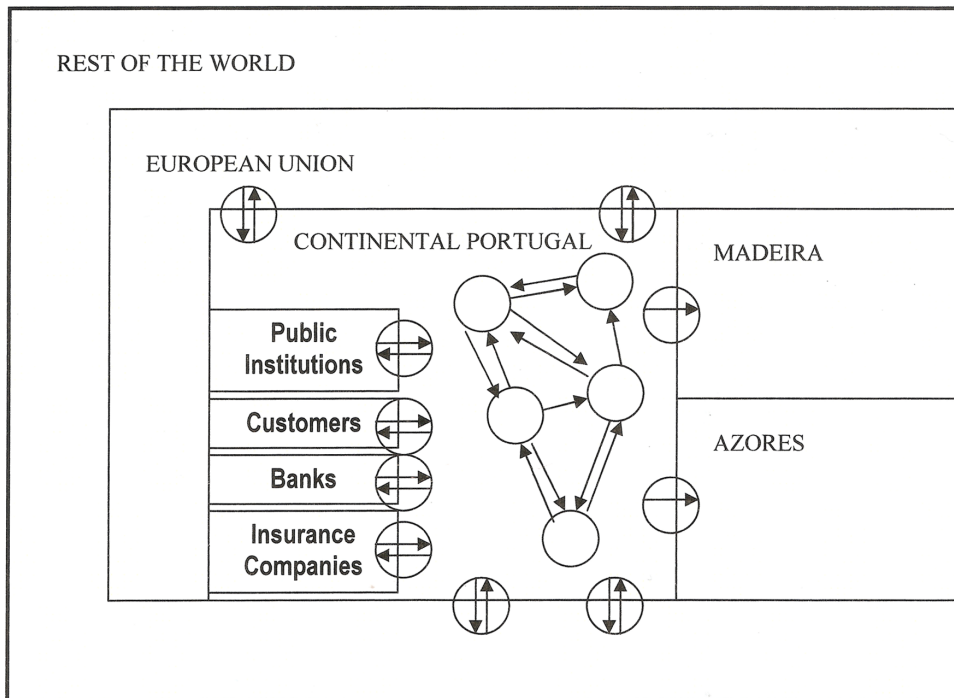
Students' companies are the main entities of the simulation environment, as they are the focus of the new methodology. They cooperate and compete among themselves. All tasks completed by students provide a substantial volume of information for the decision-making process. In spite of the fact that students have a business plan with some constraint costs, there are some decisions they have to make. For example, some questions like 'how many products should be ordered?'; 'what to do if there is too much, or not enough money in the bank account?' should be answered in practice by students.

Students write a report about their company's performance during the semester and present it orally, at the end of the term. Students' companies have to comply with quality standards in order to be certified by ISO 9001-2000. As the real world provides much uncertainty and imply the satisfaction of deadlines, some tasks are done under pressure. To balance the system, constraints must be respected by all students' firms (ISCAP, 2005a).

Assessment System

The introduction of the BS course required special assessment: a group evaluation component of 65%, and an individual evaluation part of 35%. Group evaluation is divided into two parts: continuous evaluation, and summative evaluation. Continuous evaluation consists of class assessment, and summative evaluation encompasses assessment of physical files and of the final report. Individual evaluation takes into account participation, behavior, and the report's oral presentation. All these assessment procedures are completed by teachers, helped by the information system. Each semester the number of classes must be the same for all students. If a teacher cannot attend a class, another teacher will replace him/her. Table 1 presents the components of the assessment system.

Figure 1. The business simulation model



Adapted from ISCAP (2005a).

Table 1. Components of the business simulation assessment

Evaluation	0-100 scale	0-20 scale
Continuous	48,75%	9,75
Summative (Files)	9,75%	1,95
Summative (Report)	6,50%	1,30
Behaviour	10,50%	2,10
Participation	10,50%	2,10
Oral report presentation	14,00%	2,80
TOTAL	100,00%	20,00

Source: ISCAP (2005b).

METHODOLOGY

Data used in the study come from different surveys, conducted in several years (2006, 2007, 2008, 2009, 2010), using the same questionnaires that were fulfilled by the students of BS along the years. After preliminary questions regarding age, gender and professional experience, the questionnaire asked students to focus on the interest of the course (Q1), if the course was a useful way to learn (Q2), if the simulation method was

better than the traditional one (Q3), if the course wasn't useful (Q4), if the course provided practical competencies to management (Q5), if the course was necessary (Q6), if the competencies developed along the course will be useful in the future (Q7), if during the course the cooperation among students went well (Q8), if during the course the students developed teamwork spirit (Q9) and if during the course the works and reports demanded by teachers developed writing skills (Q10). A 5 points Likert scale was used for the answers: 1 = totally disagree up to 5 = totally agree. The sample used in the study is presented below (Table 2).

A total of 480 students were surveyed during the five years period, each one accounting for different weights (varying from 35.2 in 2007, to 8.3 in 2010). Additionally, not all the respondents answer the questions posed, being curiously gender the one that created more discomfort. In the end, approximately 56.9% of the students were female, 15.6% had more than 30 years, and 52.1% had professional experience (Table 2).

Table 2. Sample

Variables	Frequency	(%)
Gender		
Female	329	68.8
Male	149	31.2
Total	478	100.0
Age		
<23 years	238	49.6
23 – 30 years	167	34.8
>30 years	75	15.6
Total	480	100.0
Professional Experience		
No	229	47.9
Yes	249	52.1
Total	478	100.0
Years		
2006	114	23.8
2007	169	35.2
2008	55	11.5
2009	102	21.2
2010	40	8.3
Total	480	100.0

RESULTS AND ANALYSIS

As we can see in Table 3, younger students gave more importance to the course than older students (4.04 well above 3.6 or 3.7). The only exception is question 8 where older students seem more cooperative. The same is true for students that have no professional experience, which tend to see this course as a complement to their more theoretical or scientific education. In general, males considered the course better than females, except when we question cooperative and work group competencies. Question 4 positively tests for the veracity of the answers given by students. The years of 2006 and 2008 were considered more interesting by the students with higher appreciation in almost all questions.

The perceptions of students regarding the interest of BS for the development of some hard and soft skills were factor analyzed using principal component analysis with varimax rotation. The results are shown in Table 4. The analysis found three factors with eigenvalues greater than one that, together, explained 77.83% of the variance in the data and these were initially retained for further analysis. Not included in the analysis was the question 4 of the questionnaire.

Coefficient alpha was computed for each of the three obtained factors and they ranged from 0.531 to 0.812, suggesting between moderate (F3) and high reliability (F1 and F2). The mean scores for the three reliable factors were higher than 3.

An examination of the factor loadings suggests that factor 1 was related to respondents' perceptions about the novelty and interest of the teaching method. Most of the items were related with the way this curricular unit has been delivered (competency-oriented) and the pedagogical method used which was different from the classical method (lecture). This new approach to teaching involves a move from teaching-centred to learning-centred education. The previous paradigm involved an emphasis on the acquisition and transmission of knowledge. The new paradigm, recommended by Tuning Project (2009), includes education centred on the student, the changing role of teacher and a new organisation of learning. This involves a more flexible delivery of teaching, the autonomy of students, and a more guidance and support of teachers. The results obtained from the respondents reinforce the approach taken by BS.

Factor 2 measured respondents' perceptions about the outcomes of the learning process, emphasizing the soft skills that students seem to value the most. Instrumental competencies, such as cooperation and teamwork were related with the capacity of working in groups and dealing with issues of group dynamics, time management and the decision making process. The importance of these non-technical skills, developed in BS, has

Table 3. Descriptive statistics (mean values)

Variables	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Age										
<23 years	4.04	3.89	3.85	1.50	3.54	3.97	3.99	4.19	4.25	3.52
23-30 years	3.62	3.60	3.62	1.78	3.28	3.72	3.77	4.19	3.95	3.26
> 30 years	3.71	3.64	3.67	1.92	3.36	3.72	3.71	4.24	4.15	3.44
Prof. Exp.										
No	4.04	3.88	3.87	1.49	3.53	4.01	4.04	4.15	4.21	3.50
Yes	3.70	3.64	3.63	1.81	3.32	3.71	3.72	4.25	4.06	3.33
Gender										
Female	3.79	3.70	3.69	1.67	3.40	3.80	3.82	4.25	4.18	3.45
Male	3.95	3.87	3.85	1.64	3.44	3.98	3.97	4.09	4.02	3.35
Years										
2006	4.10	3.97	4.05	1.59	3.73	4.17	4.08	4.22	4.23	3.57
2007	3.76	3.62	3.67	1.64	3.33	3.76	3.83	4.27	4.19	3.43
2008	4.29	4.22	4.13	1.74	3.67	4.16	4.36	4.16	4.22	3.73
2009	3.60	3.54	3.37	1.81	3.15	3.47	3.57	4.18	3.94	3.17
2010	3.45	3.58	3.74	1.76	3.25	3.95	3.55	3.95	3.93	3.13

Source: Authors' own survey data.

Table 4. Factor analysis for perceptions of students regarding the interest of BS

Factors (Reliability alpha)	Loading	Eigen-values	Explained variance	Mean
1: Teaching method (0.812)		3.984	46.106	3.824
Interesting	0.868			
Useful	0.853			
Better than others	0.779			
Practical competencies of management	0.702			
Necessary	0.830			
Useful in the future	0.798			
2: Soft skills developed (0.682)		2.621	21.311	3.126
Cooperation	0.950			
Teamwork	0.775			
3: Hard skills (0.531)		1.742	10.422	3.008
Writing skills	0.902			
Total variance explained		77.839		

Source: Authors' own survey data.

Notes: Extraction method – Principal component analysis; Rotation method – Varimax with Kaiser normalization; KMO=0.834; Bartlett's test of sphericity: p=0.00.

been noted by employers (Tuning Project, 2009), researchers (Luthje and Prugl, 2006; Prichard *et al.*, 2006; Scofield, 2005; Larres and Radcliffe, 2000; Lane and Porch, 2002; Bhattacharjee and Shaw, 2001; Bots *et al.*, 2009) and professional institutions (Birkett, 2002; AIPCA, 2006).

Factor 3 was related to respondents' perceptions about the interest of developing interpersonal skills (organisational and communication skills) for future accounting professionals. These competencies include the capacity to do oral and written presentations in native language, and computing and information management skills.

EVALUATION OF BUSINESS SIMULATION EXPERIENCE

After eleven years of experience with Business Simulation course it is time to evaluate what has been done. This evaluation process is based on week meetings of the BS working group (teachers, monitors and coordinator), many informal talks with students and the direct observation in the classroom listening and watching student's behaviour in a way that allows some type of analytical interpretation (Mason, 2002; Ghauri *et al.*, 1995; Yin, 2009). Most of these remarks are also reinforced by researchers (Gronlund, 1985; Shaoul, 1990).

Positive Remarks about Business Simulation

- BS can induce students to changes in performance in the cognitive domain whose objectives emphasise intellectual outcomes such as knowledge, understanding and thinking skills and also have an impact on attitudes, responsiveness, appreciation and methods of adjustment (Gronlund, 1985);
- BS motivates students and creates a positive learning environment for accounting education as they are learning by doing it

for themselves rather than passively reading about it (Shaoul, 1990);

- BS provides the instructor with feedback about student learning, as the instructor can comment on time how well students have learnt it, where they have done less well, how to improve, and what steps might be taken to complete the task satisfactorily;
- BS enables students to select, organise, and evaluate facts in order to analyse their impact on the activity of the firm;
- BS can develop students' ability to apply, integrate, think critically, and solve problems;
- BS provides different modes of assessment (written report, oral presentation, group work, etc.);
- BS develops a spirit of teamwork in a business and competitive context requiring students to listen to others, be sensitive to the needs of others and accept the differences (Shaoul, 1990);
- BS facilitates the transfer of learning since students have the opportunity to try out different combinations of conditions and thus be better prepared (Shaoul, 1990);
- The number of students who have passed BS course is over 90%, due to the strict assessment regulations and the need they feel to work everyday.

Possible Constraints of Business Simulation

- BS is very time consuming for instructors and students;
- BS is very demanding in financial and human resources (hardware, software, rooms, instructors);
- There may be peer pressure to exclusion when a student, representing the group, did something wrong;

- When negative feedback occurs, future work can be affected, because it may discourage students;
- Assessment can be influenced by the values of the instructor, e.g. general impression of the student (well dressed, good looking, ...);
- BS may requires an overall strategy for the study program if it is not totally prepared to apply previously obtained knowledge in other courses (e.g. Financial Accounting, Tax Law, Management).

RECOMMENDATIONS AND CONCLUSION

ISCAP/IPP started in February 2003 the BS course in the Accounting and Administration degree. The Bologna Process was implemented in the academic year of 2007/08. This course approached the teaching/learning process with new physical facilities, including several classrooms equipped with computers, printers, office material and accounting software that were kept exclusively for that purpose. At the end of the course students were asked to fill a questionnaire that has been analyzed. Results show that BS is a good example for students of a new approach to teaching, learning and evaluation.

Some recommendations can be emphasised about how to increase students' cognitive learning:

- Encourage and recognize students' work, being alert to nonverbal clues, and occasionally comment positively on students' work (but do not do it every time);
- Instructors should act as facilitators covering theoretical topics when needed and helping students remember or research previous concepts;
- Provide a summary and/or conclusion at the end of a class or group of classes.

Other recommendations to increase the affective aspects of learning can be considered:

- Know your students' (motivations, profile, etc.);
- Be sensitive to students' feelings;
- Challenge the students, but do not threaten them;
- Deal with conflicts (do not ignore them).

Knowing some positive points and possible constraints of BS can help instructors make better decisions about whether or not to use this simulation environment. However, BS is not only a teaching tool, as learning activities and an independent assessment system had also been developed to provide an integrated approach.

As previously described, BS is flexible enough to design assignments and learning environments that enhance higher levels of cognitive learning (application, analysis, synthesis) and increase the likelihood that students will be able to address the open-ended problems they will face in their professional roles.

The empirical work shows that BS is relevant to students and employers as the competencies developed are asked by two of the most important stakeholders involved in the education process. The teaching/learning activities pointed out by BS are well connected with the Bologna paradigm and change the way accounting was teaching at ISCAP.

REFERENCES

Adler, R. W., & Milne, M. J. (1997). Improving the quality of accounting students' learning through action-oriented learning tasks. *Accounting Education*, 6(3), 191–215. doi:10.1080/096392897331442

American Institute of Certified Public Accountants. (AIPCA). (2006). *Functional Competencies*. Retrieved 2006/06/25, from <http://www.aicpa.org/edu/func.htm>

Teaching Accounting and Management through Business Simulation:

- Apostolou, B. et al. (2001). Accounting education literature review (1997-1999). *Journal of Accounting Education*, 19, 1–61. doi:10.1016/S0748-5751(01)00010-0
- Augier, M., & March, J. G. (2007). The pursuit of relevance in management education. *California Management Review*, 49(3), 129–146. doi:10.2307/41166398
- Baupin, N., & Zreik. (2000). Remote decision support system: A distributed information management system. *Knowledge-Based Systems*, 13, 37–46. doi:10.1016/S0950-7051(99)00051-9
- Bennis, W. G., & O'Toole, J. (2005, May). How business schools lost their way. *Harvard Business Review*, 96–104. PMID:15929407
- Bhattacharjee, S., & Shaw, L. (2001). Evidence that independent research projects improve accounting students' technology-related perceptions and skills. *Accounting Education*, 10, 83–103. doi:10.1080/09639280110058909
- Birkett, W. F. (2002). *Competency profile for management accounting practice and practitioners: A report of the AIB*. New York: Accountants in Business section of the International Federation of Accountants, IFAC.
- Bots, J. M. et al. (2009). An empirical test of Birkett's competency model for management accountants: Survey evidence from Dutch practitioners. *Journal of Accounting Education*, 27, 1–13. doi:10.1016/j.jaccedu.2009.06.001
- Candy, P. C. (1995). Developing lifelong learners through undergraduate education. In *Proceedings of the 4th Annual Teaching Learning Forum*. Edith Cowan University.
- Daff, L., de Lange, P., & Jackling, B. (2012). A Comparison of Generic Skills and Emotional Intelligence in Accounting Education. *Issues in Accounting Education*, 27(3), 627–645. doi:10.2308/iace-50145
- De Villiers, R. (2010). The incorporation of soft skills into accounting curricula: Preparing accounting graduates for their unpredictable futures. *Meditari Accountancy Research*, 18(2), 1–22. doi:10.1108/10222529201000007
- Ellis, R. A. (2006). Investigating the quality of student approaches to using technology in experiences of learning through writing. *Computers & Education*, 46, 371–390. doi:10.1016/j.compedu.2004.08.006
- Fiet, J. O. (2001). The Theoretical Side of Teaching Entrepreneurship. *Journal of Business Venturing*, 16(1), 1–24. doi:10.1016/S0883-9026(99)00041-5
- Finn, C. E. (1987). Education that works: Make the schools compete. *Harvard Business Review*, 87(5), 63–68.
- Fortin, A., & Legault, M. (2010). Development of generic competencies: Impact of a mixed teaching approach on students' perceptions. *Accounting Education: An International Journal*, 19(1-2), 93–122. doi:10.1080/09639280902888195
- Ghauri, P., et al. (1995). *Research methods in business studies: A practical guide*. Prentice Hall International, Londo.
- Gronlund, E. (1985). *Stating objectives for classroom instruction*. New York: MacMillan.
- ISCAP. (2005a). *Business Simulation: Support Book*. Instituto Superior de Contabilidade e Administração do Porto.
- ISCAP. (2005b). *Regulamento de Inscrição, Frequência e Avaliação das Disciplinas de Simulação Empresarial*. Instituto Superior de Contabilidade e Administração do Porto.
- Lane, A., & Porch, M. (2002). Computer aided learning (CAL) and its impact on the performance of non-specialist accounting undergraduates. *Accounting Education*, 11(3), 217–233. doi:10.1080/09639280210144902

- Larres, P. M., & Radcliffe, G. W. (2000). Computer-based instruction in a professionally-accredited undergraduate tax course. *Accounting Education*, 9(3), 243–257. doi:10.1080/09639280010017211
- Lin, Z. J. et al. (2005). Knowledge base and skill development in accounting education: Evidence from China. *Journal of Accounting Education*, 23, 149–169. doi:10.1016/j.jaccedu.2005.06.003
- Luthje, C., & Prugl, R. (2006). Preparing business students for co-operation in multi-disciplinary new ventures teams: Empirical insights from a business-planning course. *Technovation*, 26, 211–219. doi:10.1016/j.technovation.2004.10.010
- Mason, J. (2002). *Qualitative Researching* (2nd ed.). London: Sage Publications.
- Mill, R. C. (2007). Meeting the needs of business: are we teaching the right things? In *Proceedings of 2007 IABR & TLC Conference Proceedings*. IABR.
- Potter, B. N., & Johnston, C. G. (2006). The effect of interactive on-line learning systems on student learning outcomes in accounting. *Journal of Accounting Education*, 24, 16–34. doi:10.1016/j.jaccedu.2006.04.003
- Prichard, J. S. et al. (2006). Team-Skills Training Enhances Collaborative Learning. *Learning and Instruction*, 16, 256–265. doi:10.1016/j.learninstruc.2006.03.005
- Rebele, J. E. et al. (1998). Accounting education literature review (1991-1997), part II: Students, educational technology, assessment, and faculty issues. *Journal of Accounting Education*, 16(2), 179–245. doi:10.1016/S0748-5751(98)00010-4
- Scofield, B. W. (2005). Adapting cases for a team approach. *Journal of Accounting Education*, 23, 248–263. doi:10.1016/j.jaccedu.2006.01.002
- Shaoul, J. (1990). Teaching accounting with computers – Before and after CTI. *Historical Social Research (Köln)*, 15(2), 104–118.
- Stanley, T., & Edwards, P. (2005). Interactive multimedia teaching of accounting information systems (AIS) cycles: Student perceptions and views. *Journal of Accounting Education*, 23, 21–46. doi:10.1016/j.jaccedu.2005.04.001
- Tuning Project. (2009). *Tuning Educational Structures in Europe (Business), Reference points for the design and delivery of degree programmes in business*. Publicaciones Universidad de Deusto.
- United Nations Conference on Trade and Development (UNCTAD). (2003). *Revised Model Accounting Curriculum (MC)*, TD/B/COM.2/ISAR/21. Author.
- Watson, S. F. et al. (2003). Accounting education literature review (2000-2002). *Journal of Accounting Education*, 21, 267–325. doi:10.1016/j.jaccedu.2003.09.003
- Yin, R. K. (2009). *Case Study Research: Design and Methods* (4th ed.). London: Sage Publications.

KEY TERMS AND DEFINITIONS

Action-Based Learning: An educational process whereby students work and learn together by tackling real issues and reflecting on their actions. Students acquire knowledge through actual actions and practice rather than through traditional education. Action-based learning develops students' abilities to think independently, make decisions without sufficient data, and continually reflect and inquire.

Business Simulation: A simulation used for business training in a risk-free environment taking into account real schedule with real deadlines. Learning objectives include strategic thinking, financial analysis, operations, teamwork, leadership, writing and oral skills.

Continuous Evaluation: An educational method of assessment in which students are examined continuously over the duration of the course. It is usually proposed or used as an alternative to a final examination method.

Teaching Accounting and Management through Business Simulation:

Generic Skills: The skills that can be applied across a variety of subject areas and normally take longer to acquire than subject area skills.

Institute of Accounting and Administration (ISCAP): One of the seven schools of Polytechnic of Porto. It has five different degrees: Accounting and Administration, International Business, Marketing, Business Communication, Tourism and Hospitality Management and Administrative Assistance and Translation. Is also provides eight masters degrees in: Digital Marketing, Translation, Entrepreneurship and Internationalisation, Administrative Assistance, Auditing, Logistics.

Interpersonal Skills: The life skills used every day to communicate and interact with other people, both individually and in groups. People who have worked on developing strong interpersonal skills are likely to be more successful in both their professional and personal lives.

Polytechnic of Porto (IPP): The biggest Polytechnic Institute of Portugal. It is composed by seven different schools located in the Porto district.