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Computer-based business simulations as revealers of cultural and learning differences. The case of Business Administration and Business Informatics Students in Egypt.

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Abstract:

In this article we demonstrate, through the case of Egypt, how the emphasis on one specific learning mode from primary through to secondary school, and to a lesser extent, culture, impact learning abilities. We describe how Egyptian students are impaired when confronted to learning modes they have not encountered prior to University, when they join a business-administration, bi-national, double-degree programme. We explain how a "globalized" method (computer based business simulation) was blended with a local context, and turned into a glocal one to respond to a learning challenge and to the needs of a double degree curriculum (French and Egyptian).

Key words

Management education, experiential learning, learning modes, culture, computer-based business simulations, Egypt, France, Globalization of Business and Management Education

Introduction

Computer-based business simulations (CBS) are one of the three simulation-based techniques, alongside with role games and physically based simulations, as defined by Salas, Wildman and Piccolo (2009). They are widely used in management education. They provide a real life experience of the decision-result-adjustment feedback loop in a simplified and manageable way. So widespread is their use that they can easily be described as a universally practiced method.

In this article we show how this global method was blended with a local context, and turned into a glocal one in response to the needs of a double degree curriculum (French and Egyptian).

The first part of this article specifies how the authors use CBS to teach business administration. Using the typology developed by Tilmans and Grootaers (2006) we investigate different learning modes and justify how three of them can be associated to our practice of CBS. We show that these three learning modes fall within the realm of what Kolb (1984), Kolb and Kolb (2008) define as experiential learning. The second part presents the Egyptian education system and its characteristic learning mode. We show how this mode is in opposition to the ones which correspond to our practice of CBS. The third part presents what happens when CBS are used for experiential learning with Egyptian students who have no previous exposure to the learning modes needed for such situations, and what can be done, through CBS to close the gap. The impact of an education system on students' learning abilities thus becomes salient. As Yamazaki (2004) suggested, cultural traits also impair learning abilities. Thus, we point out the ones we noticed and link them, whenever possible, to relevant authors. Finally, we present our conclusions and suggest leads for future research.

Part 1: Our practice of Computer Based Business Simulations (CBS) and the learning modes to which it corresponds

1. 1. Our practice of Computer Based Business Simulations (CBS)

The main aim of CBS is to simulate the impact of business decisions and, by extension, to make the students experience situations which are as representative as possible of a professional context. The following paragraphs help identify what is specific respectively to traditional teaching methods and to our practice of CBS. We acknowledge that both modes are essential and complementary and we do not wish to oppose one to another.

Traditional methods, which we compare to our practice of CBS, emphasize on teaching management tools and concepts. According to their format (lectures, sections) and to the level of student engagement (oral presentations, individual or group work, case studies, exercises, essays, ...), these methods can also cover a number of aspects not directly linked to business tools and concepts (oral and written expression, critical thinking abilities, team work capabilities, ...). By contrast, the distinguishing feature of business games, as opposed to traditional teaching methods, is to give students an opportunity to understand a business decision which they have made, analyse its impact over many periods, and witness the role played by information in decision making. There is a large variety of both simulation games and traditional teaching methods but despite this diversity we believe this broad distinguishing feature to be true.

When using traditional teaching methods it is always possible to provide students with a case study designed for decision making, or to analyse decisions made by company executives. However, if these decisions were not made by the students themselves, they will have an

incomplete knowledge of the context, bound to what is provided in the case study. Furthermore, should they recommend a decision, it will not be possible to simulate its impact and analyse its consequences. Similarly, it is possible to present a case study with the situation of a company after an important business decision has been made and to show its consequences, but it is impossible to have the students live the context of the decision, the consequences of which are presented in the case study.

Despite a very wide diversity of CBS, all have common characteristics mentioned hereafter. The elements below also correspond to the practice we advocate for CBS and to what we have done regardless of the cultural context.

In the context of a CBS one has the possibility to experiment with the decision-consequence relationship, to understand why the results of a decision are not always the expected ones. Competitors and customers may not act as forecasted, economic outlooks, weather conditions and all sorts of events, according to the complexity of the simulation, may not turn out as predicted. For any given game, two identical decisions, made by two players, each in separate competing virtual worlds, will not yield the same output. Thus there is no such thing as a ready-made decision for a given type of problem. Students also get an opportunity to understand the irreversibility of the decisions they have made. For example, a company which has overinvested will not revert back to its initial situation by selling its unneeded production capacities. The depreciation of its equipment, market conditions, loans that were contracted to purchase the equipment make it impossible to return to the initial situation.

Based on whether it happens after or before a course, CBS can either be an opportunity for students to consolidate and apply knowledge, or to discover introductory business concepts which they will learn with more ease at a later stage. A CBS can take place either as a

dedicated seminar (for a given period students work exclusively on the simulation) or over the duration of a semester (the simulation is part of the students' schedule and involves regular meetings).

Students taking part in a CBS are divided into teams, each in charge of running a company. Throughout the game each team will make between three to eight decisions depending on such factors as time available, complexity of simulation and learning objectives. Each decision corresponds to a given period of time (usually a fiscal year). Professors have to be available so as to explain the rules, enforce them and play the role of stakeholders (bankers, auditors, marketing specialists …).

The parameters of a decision will vary from one software program to another but may include such items as: selling price of product or service, advertising budget, number of machines purchased, amount borrowed or reimbursed,… To help the participants, question and answer forums can be organized. At regular predefined intervals the professors collect the decisions of all teams, enter them in the software program which simulates the behavior of customers and of other variables, according to predefined algorithms. Students do not have access to these algorithms but can order market studies which help them make informed decisions. With each decision handed over, extra assignments can be requested (break-even point analysis, reconstitution of financial statements based on partial information,…). Once the decisions are entered, the software program computes the results for each team. They are handed over and the teams are requested to analyse them to make another decision.

This cycle is repeated until the last decision, after which each team presents a report and makes an oral presentation. In the final grade, economic performance of the firms they have run do not count for more than 20-25%. We put emphasis on the students' ability to grasp

experience and reflect on it through assignments, a final report and an oral presentation which count for 40-50% of the grade. An individual examination is also organized, which counts for 25-40% of the grade, to assess individual retention of knowledge and prevent free-rider behavior.

1.2. Learning modes associated to business simulations

In order to specify the learning modes associated to business simulations, we use the typology developed by Tilman and Grootaers (2006), presented in **Table 1**. A learning mode can be defined as the learning path followed by the student or trainee. Each one has its own logic and cohesiveness.

Table 1: Overview of learning modes

	Execution	Observation-Imitation	Impregnation	Recording	Interrogation	Discussion-Synthesis	Research.
Activities	Execute orders, repeat	Observe, imitate	To immerse one's self in a given environment so as to become impregnated.	Reading, seeing, listening and recording messages.	Reading, seeing, listening and asking questions about the information received.	Discuss a problem and sum up the possible responses which come out of the discussion.	To search, grope, fumble, formalize, check.
Role played by instructor	Organise the learning sequences and generate a repetition of the learning contents.	To show one's self as a role model.	Present varied « life situations ».	Build clear and logical presentations.	Build presentations which integrate need to ask questions. Provide answer to questions.	Provide advice to the student. Be a privileged informant and resource provider.	To ask questions. To suggest. To reformulate.
Emphasis	Basic knowledge and skills.	Procedures for action, appropriate behaviours.	Structures, standards, tacit knowledge.	Reassoning abilities, basic knowledge.	Complex concepts and theories.	Elaboration of tailor made solutions, specific questions and problems.	Discovery. Sometimes elaboration of new knowledge.
Limitations.	Learning is limited to a very specific context and is not easily transferable.	Learning on a trial-and-error basis, completed with courses (time consuming). Some forms of tacit knowledge are not easily accessible.	Needs to be combined with more traditional forms of learning.	If the contents to be « recorded » are incomplete, student will lack whatever is missing out.	Gives access to knowledge that has been formatted by others and that is not always in full adequacy with the student's needs.	Requires an ability to formalize problems. Implies that student possesses personal initiative and creativity.	Time consuming. Requests intellectual abilities and solid theoretical background.
Relationship to the instructor.	Complete obedience of the student-subordinate to his "commander-in-chief".	Respect and trust of the student-beginner in the role-model impersonalised by the instructor.	Colleague to colleague relationship.	Student depends on the instructor in the same way a tourist would depend on his tourist guide.	Respect and fondness of the student-disciple for his master.	Functional relationship of student-problem-solver with a professional expert.	Partnership of student-researcher with a questioning accompanyist.
Environment	Contingency of social and material conditions.	"Fair distance" model. Realistic but secure learning environment.	Encompassing environment which compels learning.	« Clean slate » environment, reduced to the variables to be learnt.	Environment enabling feedback and providing opportunities for cognitive conflict.	Environment enabling multiple socio-cognitive conflicts. Social dimensions are key ones.	Environment open to experimentation, but in a secured manner. High importance of the historical, social and cultural dimensions.

Based on: Tilmans and Grootaers (2006)

According to us, business simulations belong to the realm of interrogation, discussion-synthesis and research, depending on the different stages of the game. These modes share the assumption that students are not empty heads to be filled with knowledge, but beings with a mental structure which already handles representations. The learning process involves a transformation of these representations in order to assimilate new elements through interrogations, discussions and synthesis organised by the professor and sometimes through the student's own research.

Interrogation can be defined as a management-of-feedback activity by the student, as he reacts to information provided by the instructor. "One first has to admit the existence of feedback in any education initiative and the fact that the students give this feedback a status"[1]. Our way of running business simulations emphasizes this aspect. We expect the students to ask us all the questions which nag them in the question and answer forums. Throughout the game we seek to organize what **Tilmans and Grootaers (2006)** define, in the manner of Piaget, as "cognitive conflicts" which are a source of questions from trainees. This learning mode requests that the students view questions as positive opportunities, as a proof of their competencies to question what they see and do not have an answer to. The interrogation mode facilitates the acquisition of complex notions and theories.

Discussion-synthesis can be viewed as a broadening of the interrogation mode in as such as cognitive conflicts are generated by situation-problems and by the confrontation of different visions, interpretations of the problems and of the possible solutions. The distinguishing feature of this learning mode is the search for a synthesis after confrontation and discussion of distinct positions. Within this framework, the student must become an owner of the situation. This is generally the case with our use of CBS. As students get caught "in the game" they

[1] TILMAN, Francis, GROOTAERS, Dominique, *op. cit.* (11) p. 46.

want to sell more, obtain a loan, gain market share. The respective positions of the student and the instructor change. The instructor becomes an information provider and the student a person with critical thinking abilities, able to question the information provided. Our use of CBS specifically emphasizes this learning mode when the instructors play the role of the banker or of any other expert requested by the teams, or when the students work together as a team to make a decision or to prepare their final report and presentation. This learning mode is efficient when it addresses real life problems such as the elaboration of procedures, opinions, conceptual reviews, the adoption of new social attitudes and norms.

Research is a learning mode which depends upon trial and error experiments which allow for scientific discoveries and techniques. As far as our practice of CBS is concerned it enables the student to discover a body of knowledge previously unknown to him. The idea is to conceive something that the student has to discover, which corresponds to his abilities so that he can succeed by his own means through a succession of actions and corrections. This mode assumes errors to have a positive status. Errors are not mistakes, they simply are a sign that the student's representation schemes or action plans did not work and have to be rethought. The idea is to confront representations to facts, to become aware of a variance between the two so as to build new representations which are in better accordance with facts. This learning mode enables the building of deep rooted knowledge and competencies. It also stimulates a certain category of intellectual skills called cognitive metacompetences (analyzing, comparing …). This is the reason why this learning mode can be considered as comprehensive. Also because it enables the student to become aware of what he does so as to learn, to define his cognitive strategy. Within this framework, the instructor will be viewed as a critical guide, as in a relationship between a master and his disciple. In our practice of CBS learning mode takes place when the students question themselves and question the instructor on the (usually disappointing to them) level of performance their companies have reached.

They believe they had used the best possible levers to increase their performance and are wondering what happened. We (instructors) question them on the type of information they have used to make a decision and on how they processed it. This enables us to make the students aware of the way they build representations and cognitive models. However, learning through the research mode is time consuming and does not happen at the same rhythm for all students or groups. Although most of the business knowledge base can be acquired through the research mode by using CBS but such factors as time, number of students and of trainers available decide otherwise. More direct question and answer forums save time and limit trial and error experiments.

These learning modes correspond to a constructivist vision of learning as defined by Piaget and as described in Tilmans and Grootaers (2006). As such the learning modes we use through CBS also fall within the realm of what Kolb (2004), Kolb and Kolb (2008) define as experiential learning, a process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience through concrete experience and abstract conceptualisation and transforming experience through reflective observation and active experimentation. Our practice of CBS does use these modes of grasping and transforming experience.

As we conclude this presentation of the learning modes leveraged by business games, we would like to point out that they are also associated with managing real-life organizations.

The French authors of this article safely assume that students who have been through a French curriculum have had an opportunity to experiment with the learning modes we associate with our practice of CBS. Such events as scientific workshops, discovery tours, philosophy

courses, civic courses do exist in the French pre-university system and are an opportunity to practice interrogation, discussion synthesis and research.

But is this the case for Egyptian students who we confronted to CBS? We now turn our attention to the characteristics of the Egyptian education system and to the learning modes to which Egyptian students are exposed.

Part 2: The Egyptian Education System: a focus on a single learning mode

2.1. The different school systems

The Egyptian pre-university education system is currently divided into three cycles and spreads over 12 years. It contains a mandatory primary cycle of six years, followed by a preparatory cycle of three years and a secondary cycle of three years. As a comparison the French general education system is divided into a 5 year primary cycle (*Primaire*) and a 7 year secondary (*Collège*, 4 years, and *Lycée*, 3 years).

The general education system in Egypt[1] is divided into three categories: Islamic religious schools from el Azhar, State schools and private ones[2].

As concerns the first category, Islamic religious education takes place in pre-university schools run by the famous Egyptian Islamic University, El Azhar. These schools have their own curricula, distinct from the civil schools, and approved both by El Azhar and the government. Education is provided free of charge and only to Muslims. The focus is on religion and on the Arabic language, although foreign languages are occasionally taught. The students who come out of this system generally pursue their studies at el Azhar University.

As concerns state schools, since foreign languages are not taught, or at a very low level, students from the French University in Egypt do not originate from these schools. They come from the third category, private schools. These institutions teach foreign languages (French, English and German) and some also teach subjects using these languages (mainly mathematics and sciences). A number of these institutions are private catholic French speaking schools whose creation is anterior to the existing state school system. The first such school opened in 1844 (Luthi, 1987, p. 22) specifically to cater to the education of young girls[3]. From this date onward catholic French speaking schools opened at regular intervals, be it for boys or for girls[4]. However, a number of Muslim families kept their children away from these schools. At the beginning of the 20th century secular French schools opened. In 1909 the French *mission laïque* (secular office) opened a non-profit secondary school in Alexandria, followed in 1910 by another one in Heliopolis and later by more branches in Maadi (Cairo) and Zamalek (Cairo). The fact that these institutions were secular helped attract a large number of students.

Today, these catholic and secular schools must follow curricula defined by the Egyptian government and do not have the freedom they once enjoyed. At the end of the secondary school cycle, all students must pass the *Thanawiya 'Amma* (end of secondary school diploma), like all pupils from state schools.

In the 1990's, a new type of school appeared on the Egyptian education market, secular, for-profit, private schools known as investment schools. They prepare students for international end-of-secondary-school diplomas such as the international baccalaureate or its American, British, French and German equivalents. Tuition fees are in the range of a few thousands of euros per year. They are accessible only to a minority of affluent Egyptian families. Most of these schools have been created recently[5] and their impact on the education market has not yet

been evaluated. Despite a bigger degree of freedom, investment schools also have to abide to curricula established and approved by government authorities. At the time this article was written, no students of the French University in Egypt, or hardly any, had come from these investment schools.

2.2. A focus on one learning mode

Despite a big difference between state and private schools as concerns the quality of infrastructure and teachers, all, regardless of their status, apply the same curricula and the same teaching methods: **"rote learning".** The programmes which have been defined and approved by the government for the different education cycles do not place any emphasis on critical thinking. A pupil is expected to learn by heart all that is written in the school books so as to obtain the best possible results. Primary school students learn about computer science from books. They are obliged to learn by heart all the functions of a keyboard, but seldom have the chance to see a computer. It gets worse at the level of secondary schools. The Egyptian end of secondary school exam is prepared over the last two years of the secondary school cycle. Students have to pass between six to eight exams over the course of two years. The teaching methods are the same as those of the primary and preparatory cycles.

In mathematics, for example, the methods consist of having the students learn dozens of exercises with their solutions. The performance of a student is measured by his ability to memorize all the exercises and their solutions so as to replicate the solutions in the few exercises that will be selected for the exam. Even for those subjects which request essays, pupils will learn by heart given model responses which correspond to given questions. They will do so mainly at private evening classes organised by teachers who try to complement their meagre revenues by training the pupils.

The *Thanawiya 'Amma* (Egyptian end of secondary school diploma) is a race for the highest score. Those who have obtained this diploma, in order to enroll in a state university, must, once they have obtained their grades, present their selection of choices to the general coordination office[6]. As a rule, a student who obtains the *Thanawiya 'Amma* has a right to pursue his studies at a state University or Institute. The higher his score, the better are his chances to obtain his first choice. In Egypt, higher education establishments are ranked as follows : first come Universities with many faculties, out of which the most prestigious ones are medicine, engineering, economics, political sciences, commerce and literature; second come four-year higher institutes (for those who did not have a high enough score to enroll in a University) and then the median two-year institutes. A pupil with a score of 60% at the *Thanawiya 'Amma* will at best enroll in a median institute. Those who did not manage to enroll in the state university of their choice can now turn to the private sector, authorised by the 1992 law on private universities.

In these private universities, the idea of selection, if and when it exists, is mainly based on the ability of families to pay tuition fees[7]. One of the authors once obtained such evidence from the customer manager of a major bank in Egypt, to whom the President of one of these Universities frankly confessed that *"of course we select our students. You have to be able to pay in order to enroll in our University"*. This sentence also alludes to the fact that this private university offers parents the guarantee that students from different social classes will not mingle together[8]. This is a strong pledge in a highly class conscious society.

In the state Universities, besides a few faculties (medicine, engineering) or highly selective tracks (such as the English and French speaking ones) with few students enrolled, the difficulties of the secondary school system repeat themselves. The auditoriums are

overcrowded. Ill-paid professors make both ends meet by organising private lessons or selling the text of their courses. Teaching methods do not favour critical thinking abilities.

This has recently led some students to choose directly to enroll in a private university without even expressing a choice for a state one. This decision, which can be a solution for some, constitutes a heavy financial burden for most students. The parents, able to make unprecedented sacrifices to ensure their offspring a better future will, in return, exert a considerable amount of pressure on their children to obtain the best possible results. *« Middle class parents are willing to bleed themselves to the bone to ensure that their children get a good education »* (Darwich, 2007).

Thus the students of private Universities are mainly middle-class and upper-middle class children, or even upper class ones. Students at the French University in Egypt are mostly conform to the above description.

Let us analyse the situation described in this part through the lens of the learning modes reviewed in part 1. The Egyptian primary and secondary school system relies exclusively on the **"execution-repetition" mode**. Pupils learn in order to respond to a stimulus which is the question they are going to be asked. In terms of skills, a heavy focus is placed on memorizing. Egyptian students have not been acquainted with other learning modes. Thus it is very difficult for a private University to build training programmes which deviate too much from primary and secondary schools learning modes. This would deter future candidates, except if it tries to recruit from private investment schools which use a wider spectrum of learning modes. However the pool of candidates from these schools is too narrow to constitute a solution to this problem, especially as a number of students from these schools pursue their studies abroad. The few Universities who try to break away from rote learning practices are

confronted to the challenge of managing a transition between the system to which Egyptian pupils and students are accustomed to and the demands of double degree curricula such as the one organised by the French University in Egypt (UFE) in partnership with the University of Nantes in France.

Business games such as they are practised at the UFE are a key to managing this transition. At different stages UFE students take part in business simulations which are a part of their curriculum. We now discover what happens when CBS takes place in this University.

Part 3: Relevant findings linked to the use of CBS in an Egyptian cultural context, at the French University in Egypt

CBS such as it is practised at the UFE does include the usual learning objectives associated with it, on top of which we add, in this specific context, the management of a transition between two education systems, a system based on rote learning on one hand and a system based on the academic requirements of a double degree programme on the other hand. Despite this additional objective, CBS sessions have been set up in identical ways at the University of Nantes in France and at the French University in Egypt. This was decided in order to avoid bias in behaviours due to initial setup conditions.

We consider our research methodology to be a research-action one, widely practiced in the fields of management (White, 1989, Susman and Evered, 1978) and education science (Wiersma, 2004, Liu, 1997, Barbier 1996). Research action enables the researcher to take part in solving a problem defined by the actors of an organisation, and to bring a contribution to the world of academia. The authors of this article are both researchers involved in the research action and actors confronted to the abovementioned transition problem.

After describing the student populations we worked with, we present relevant findings as regards the following:

- initial presentation of the business simulation,
- status given to rules and to professors in charge of enforcing them,
- status given to the concept of group,
- decision-making and the way decisions are justified.

3.1. Time frame and student populations

The work we report on in this article took place through academic years 2005/2006 and 2006/2007. We carried on using business simulations in 2007/2008 and 2008/2009 and are still running them at the date this article is written. Observations for these consecutive years confirmed the findings of the first two years.

Table 2 summarises the different sequences proposed, the past experience and the size of the classes we worked with, as well as the characteristics of the simulations we used.

Tableau 2: CBS sessions at the French University in Egypt

Year of study, date of business simulation.	Previous experience of the students with business simulations.	Student population.	Type of business simulation	Instructors involved
1st year students, business administration and business informatics. November 2005.	No previous experience.	48	Service activity, no taxes, no accounts payable and receivable. 4 decisions.	The authors of this article organised all CBS sessions and were directly involved in running them with occasional support from Egyptian and French colleagues.
1st year students, business administration and business informatics. April 2006.	One previous experience.	48	Service activity, with sales and income taxes, no accounts payable and receivable. 4 decisions.	
2nd year students, business administration and business informatics. April 2006.	No previous experience.	45	Production activity, no sales tax, income tax, accounts payable and receivables, inventory, two products. 4 decisions.	
1st year students, business administration and business informatics. December 2006.	No previous experience.	56	Service activity, no taxes, no accounts payable and receivable. 4 decisions.	
2nd year students, business administration and business informatics. April 2007.	Two previous experiences.	44	Production activity, no sales tax, income tax, accounts payable and receivables, inventory, two products. 4 decisions	
1st year students, business administration and business informatics. April 2007.	One previous experience.	56	Service activity, with sales and income taxes, no accounts payable and receivable. 4 décisions	
3rd year students, business administration. April 2007.	One previous experience.	45	Production activity, no sales tax, income tax, accounts payable and receivables, inventory, delay between ordering and delivery of raw materials, three products. 3 decisions	
Since academic year 2007-2008, simulation games have been taking place at the following rate: 2 sessions for 1st year students (1st and 2nd semester), one session with 2nd year students (2nd semester), one session with 3rs year students. Games increase in technical complexity, especially as regards accounting and financial skills but also in the complexity of the soft skills to be mastered by the students.				

3.2. Initiating the game and observing an impaired feedback learning loop

When a CBS session is being run for the first time with a public of Egyptian students, the announcement that they are going to take part in such a simulation generates a high level of anxiety. This type of activity puts them in a new, previously unknown, situation. The schooling that they have received prepared them to associate a given answer to a given question. Their inability to gather knowledge they have gained to transfer it to a new situation puts them in an uncomfortable situation and makes them foresee the risk of failure. They

focus on this risk and do not put themselves in a learning situation. The pressure put on them by their parents to be successful students increases this anxiety and is another reason for the mental blocks we observed.

Let us illustrate this with the case of a student who confided that she had never encountered failure up to now and that it was out of the question for her to obtain anything but top marks. In the case of this business game, she said, such an aim was unachievable as they were no answers to the questions and even at times no questions at all. The goals of the game reviewed in part 1 of this article were, for her, of a secondary importance. We were putting her in an unbearable situation.

Another illustration would be a student at loss, trying to adapt himself to the new demands placed on him, but unable to reach beyond the learning modes which he previously used. He came to see us, with the instruction booklet and the decision form to be filled in. He was persuaded that the booklet, which explains the rules of the game, was a document containing a list of questions and typical answers. The decision form was for him a list of questions, the answer to which had to be found in the booklet.

The use of teaching methods such as CBS with these students shows to what extent the behaviours we have observed remained fixed within the limits imposed by an education system based on rote learning. This impairs the development of a feedback learning loop, a point we now turn our attention to.

When the students prepare their decisions and test their justification prior to handing them over, the authors noticed the following behaviours, linked to the difficulty of putting a feedback learning loop into place:

- Difficulties encountered in processing information: Students do not integrate the loss of productivity of equipments, built into some of the simulation games. They also do not manage to link some of the market studies ordered with evolutions in terms of market growth. Thus, they do not put themselves in a position where they can invest to meet new demands and maintain production capacities. They lose commercial opportunities. Furthermore, they constantly repeat these errors. This is a sign that a feedback and learning loop is not putting itself into place. But why and how should this happen if students feel that the situation they are confronted to does not correspond to the standards of learning they are used to? There is no rote learning involved. Students thus find it hard to process and use the information put at their disposal. We first thought that the language used was a barrier (French is not their native tongue but their first foreign language). This is why, in 2006-2007 the instruction booklets were handed out in advance, so that the French language professor could work on it in class. As a result students were able to correct the mistakes on which the professors heavily emphasized. However, should a professor talk to a student about a mistake that does not concern his particular team, he will not pay attention to it and will have a high probability of making that mistake during the following sequence of the game.

- Difficulties in changing perceptions: Besides, some groups show a strong resistance to advice given by the professors, when it goes against their perception. For example, during a business game with 1st year students, in 2006, all groups wanted to target the same segment of customers because they accepted higher selling prices and thus, the students thought, enabled higher profits to be generated. The professor did not manage to convince them that if the all teams targeted the same customers, there would be more competition, higher costs and less profit. They also failed in making the students understand that there were two roughly equivalent business models in terms of profit (high prices and low sales volumes, low prices and high sales volumes).

- *Attitude to risk:* The vast majority of teams would like to borrow enough funds from the bank to cover both investments and all the expenses of the first sequence, as though they do not expect sales to cover these expenses. Some also are worried about being responsible for their decisions. They often come and ask the facilitator to prescribe the right decision. When he refuses to do so, they come back with a decision they have tried to make and they ask for his blessing.

The acquisition of knowledge that CBS enables, through putting the students in a challenging situation (a complex learning mode), reaches its limits in this type of situation. The limited ability to listen and to change perceptions is a consequence of all the other aspects presented above. Thus the learning loop puts itself into place, but at a slower pace.

Furthermore, besides the impact of the education system we also noticed other cultural traits which have an impact on learning abilities. The concept of culture we have used for this article is defined by d'Iribarne (2002) as an interpretation context, made up of values and references, the comprehension of which enables to decipher behaviours. To analyse what seemed to be cultural traits, the French co-authors of this article identified, through their observation of students during CBS, all the elements which surprised them. We assumed they were "surprising" because they did not fit with our own preconceptions. We analysed and interpreted our observations. We discussed them with our Egyptian co-author so as to validate, fine-tune or change our interpretations. We also submitted a first draft of our text to Egyptian academics who had an understanding of both French and Egyptian cultures because they had studied or worked in France. They gave us a feedback which was useful to further question our interpretations. We also contrasted these observations with CBS sessions carried out in France with mainly French students.

3.3. The impact of culture on understanding and practising the concepts used in CBS

- Financial management: The Egyptian students we worked with are French speaking; however their level of French can vary. But beyond the language barrier there remains the issue of understanding some of the concepts used in the game. The most striking example is perhaps with the concepts of overdraft, investing money and of financial interests on a loan or a financial investment. The software programs we use at the UFE allow for the virtual companies run by students to borrow money, have an overdraft or invest surplus amounts of cash. For French students at the University of Nantes in France, these concepts do not seem to be a challenge because the vast majority of them have a savings account which was opened by their parents when they were young. Before they ever had their first maths course, they have "witnessed" that investing money can produce interest. Furthermore these students all have a bank account. They understand the concept of overdraft as well as the risks associated with it in France.

In Egypt none of this can be considered as a pre-existing skill. The age set for the enjoyment of full civic rights is 21. But even students who have reached this age rarely have a bank account of their own. In 2006 no 1st, 2nd of 3rd year students had a bank account. In 2007, among 56 first year students only 7 had either a checking or a savings account. Over the following years, we observed similar figures. Thus, a student will have no means through which to experience financial independence and "live" through the concepts of investment, interest and overdraft which are, for him, total abstractions. The problem is less acute for 3rd year students as they have had the opportunity to explore these concepts in a financial mathematics course and have already been through two business games. Furthermore, the Egyptian context is one where cash payments are predominant[9] and this is a challenge for

teaching the difference between income and cash balance, based on accrual accounting. French students already find it difficult. Egyptian ones find it extremely challenging.

- The status of rules: a starting point for negotiations for Egyptian students, a line not to be crossed for the French instructors[10]. During CBS sessions we noticed non-compliance with some of the instructions, non-respect of deadlines and constant attempts to negotiate personal arrangements. For example, some students will vividly insist on obtaining market studies which they did not order in the first place. They first complain that some market studies have not been delivered to them and, after verification, when it turns out they had not ordered them, still ask for them and explain that they have forgotten to order them. Another illustration is how deadlines are systematically considered as extendable. It is also interesting to note that negotiation is carried out on a one-to-one basis, never on a collective one. Students come in a disorganised manner, each trying to bargain something for his company. By comparison French curriculum students who take part in business games we organised in France sometimes try to negotiate the application of some rules, but a refusal from the instructor, based on why it is necessary to enforce this rule is enough to stop any attempts at bargaining. The same difference was observed between Egyptian students and groups of Djibouti students at the UFE, in 2005-2006. Djibouti students go through a primary and secondary school curriculum which is very close to the one we know in France. Why do the French and Djibouti students end up respecting rules faster and better? We have no final answer at this stage. However we assume that in one case, the professor was viewed as a person invested with authority to preserve general interest through enforcing rules, whereas in the other case (Egyptian students), refusal was interpreted as a lack of trust in a one-to-one relationship. In each context, the persons invested with authority are not viewed as referring to the same concepts for accepting or refusing something. In one case they are viewed as “guardians” of the rules needed to enforce a framework necessary for collective action, in the other case they

are seen as “kind” or “unkind” within the framework of a one-to-one relationship. It is worth pointing out that a link can be made with Weber (1964) who identified different sources of legitimacy. There is the rational-legal order in which the source of authority is impersonal and derives from rules. People who hold an office have a power defined by rules and a mandate to be guardians of the rule of law. There are, on the other hand, the traditional and charismatic authorities which, although different, have in common the personification of authority. People who hold an office have a power defined by a leader and a mandate to do whatever he decides. In extreme forms of traditional and charismatic authority, rules and decision emanate from the leader. They change according to necessity or whim and the leader is thus perceived as “kind” or “unkind” according to circumstances. It seems as though Egyptian students relate to traditional or charismatic modes of authority. As a consequence, the course of the game itself as a collective framework for action[11] is constantly put under considerable stress.

The concept of collective framework for action: an abstraction. For the persons running the business simulation, rules are safeguards which guarantee the smooth operation of the game, conceived as a collective framework for learning. This framework is used as a reference both by the facilitators and the teams. For example, non compliance with a basic rule such as handing in business decisions before the deadline means that the facilitators will not be able to run the simulation software on time … and that all teams will get their results late. The question and answer sessions put into place by the professors are also part of this collective framework. The questions asked by one student, and the answer provided by the professor can be a useful resource for all students. This idea of a collective framework which ensures better working conditions for all involved is an abstract concept which the Egyptian students do not manage to put into practice, even when fines are applied to the companies managed by the teams who do not respect deadlines. A considerable amount of energy is thus expended for deadlines to be respected[12].

The same goes with question and answer forums. The vast majority of students do not attend them, although a big proportion of the final grade is placed on assignments, reports and oral presentations, which imply asking questions in order to prepare one's self. Asked why they do not come, the students reply that they have no questions to ask, or that they have already understood the topic, or that it is a waste of time. The authors were under the impression that students did not see the point of forums which are an opportunity to share questions and answers. This does not stop them from coming to see the professors, on a one-to-one basis, specifically when they are confronted with a problem. They put themselves in a situation where they react to problems as they occur and place themselves in a strictly individual relationship with the professor. The latter becomes so overloaded with individual requests that he is soon unable to cope. For example, during a simulation organised in December 2006, with 1st year students, who had already been through a similar business game three months before, no students came to the forum on deductible sales tax. Yet, this was a difficulty that had been added for this simulation, and that no other professor had taught them previously. Moving from one team to another, in the classrooms that had been assigned to them, the professors did however notice that at least half the students wanted to ask them questions on … deductible sales tax[13]. At first sight it seems that this finding is in contradiction with Hofstede's characterization of Arabic culture as the regards the individualism dimension (1981). The score for individualism, displayed on the webpage of Hofstede's website (date unspecified), shows 38 for Egypt, whereas it is 68 for the world average. This should mean that Egyptians live in a collectivist society, with long term commitments to member groups (family, extended family,...) and that loyalty to these groups is paramount to other values. In fact Hofstede's findings are very true and refer to a different concept of collectivism than the one we have used and tried to teach the students. We did not ask them for loyalty to the CBS

group, a notion that that they may have understood, but we tried to sell them the idea that rules, to which all members abide, ensure the smooth running of society.

To solve this problem, mandatory question and answer forums were put into place for the next business simulation, which took place with third year students. These students had been through a business simulation while they were second year students and they also had not attended question and answer forums at the time. When these mandatory forums were put into place, professors were struck by the inability of students to stop talking to listen to the questions of others, and by the difficulty they encountered in waiting for their turn to ask a question. This is why, in May 2007, with second year students who had already been through two business simulations as first year students, we put a heavy focus on the explicit link between rules, and collective frameworks for action (the relationship between me as a person and the others). This focus bore fruit and enabled us to make a number of assumptions. As regards their relationship to the concept of collective frameworks, we assume it derives from an inability to put themselves in the shoes of "the other". Their relationship to time and the fact that they associate asking questions with failure also come into play.

By contrast, in a similar context, French curriculum students at the University of Nantes have internalized the concept of collective framework. They have another relationship to question and answer forums. Each team sends at least one representative to these forums so that he can get the answers to the questions of his team and learn, on behalf of his team, from the questions of other teams.

Conclusion

In this article we have shown, through a research action, how individual and collective behaviours are the consequence of an education system and of a given social and family environment. We established a link between the characteristics of the Egyptian education system and of some relevant cultural aspects back to the behaviours we observed.

Implicitly, a specific conception of time comes as a backdrop to the elements analysed in the third part of this article. The present tense is a very immediate, instantaneous one, during which students focus on a very narrow and short term concern. The future tense does exist, but not as a means to anticipate. It is a means through which present constraints can be pushed away (decisions and assignments to be handed in, conflicts to be resolved,…). This perception of time seems to be an important cultural trait and it combines itself to the characteristics students have inherited through schooling to slow down dynamic learning capabilities through feedback loops. This feedback loop mechanism, often referred to, in the field of management as a Deming wheel, or PDCA (Plan, Do, Check, Act) is one of the foundations of CBS, because it is also a foundation of management today. If this feedback loop is not part of the student's knowledge base, he will have no grasp of management activities.

To sum up, the authors conclude that, for these Egyptian students, their past education makes learning through feedback loops particularly difficult. CBS is an appropriate way to reveal these difficulties. As shown in some of the notes, the reactions of the students are a reflexion of what takes place in the business world, in Egypt. This could be the subject of future research. Another lead for future research would be to explore the link between cultural traits, for example using Hofstede's dimensions (1981), and the way students behave during CBS sessions.

As professors we also benefited from a learning effect. We took into account the feedback we described in part 3 of this article by changing the way we ran these games. In Egypt, we place a much heavier emphasis on the importance of rules, questions and making mistakes to learn the feedback loop. Furthermore, for first and second year students, we work with shorter sequences and emphasize one objective at a time. Our research action initiative enabled us to put into place a curriculum based on a combination of traditional courses and CBS which associate the learning of increasingly complex business and accounting concepts with demands in terms of how students improve their management of time and autonomy.

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[1] To be understood as the general education system, leading to University studies, as opposed to the technical or vocational education system.

[2] International schools which belong to the embassies of foreign countries, such as the American School in Cairo or the *Lycée Français du Caire*, are not included in this presentation as they are not part of the Egyptian education system and represent a tiny minority of students.

[3] The first state school for girls was set up in 1873 by one of the kings' wives (Abd al-Rahman AL-RAF'Ĭ, 1987, p. 203).

[4] It is worth noting that these schools applied the French education programme until the second half of the 20th century

[5] The law by which such schools can be established was set up a bit more than 15 years ago.

[6] The General Coordination Office is responsible for allocating the students based on their scores and the minimal grades requested by the different faculties and institutes.

[7] Among private universities one can find bi-national universities (such as the American University in Cairo, with more than 80 years of existence in Egypt and a special status, and half a dozen other universities (German, British, Canadian, French, Russian, …) qui are governed by Egyptian law. There are also at least 20 private universities which do not market themselves as bi-national. The quality of these universities is uneven. They are all private and fight mercilessly to attract students.

[8] In an interview published in AL-AHRAM Hebdo, 7-13 February, issue 648, with Mrs Mervat Al-Telawy, General Secretary for the Economic and Social Commission of Western Asia (ESCWA) of the United Nations,

she insists on this problem: *"Our social problems are many but, to my opinion, the most important problem is the one of the imbalance in the distribution of wealth. Some people are too rich, some too poor. The gap between social classes can put our whole economic system into peril"*.

[9] As an example, up until 2005, the salaries of the employees and part-timers at the French University in Egypt were paid out in cash every month. When it was decided to give up this practice, a bank account had to be opened for all the employees who did not have one. Furthermore, the University was obliged to open accounts in the same bank for all the employees as there was, at the time, no inter-bank compensation system that would have allowed for the transfer of an employee's salary on a bank account of his choice, from the University's bank account.

[10] While based as a permanent professor at the UFE, one of the authors of this article was surprised to discover, during an endless meeting on examination rules that disagreements between French and Egyptian colleagues did not concern rules themselves, but in fact what should be published in the student booklet. It took this author a while to understand that his Egyptian colleagues had internalized the fact that whatever would be written would be interpreted by the students as a starting point for negotiations, or would only be used occasionally. The continuing disagreements were based on the misunderstanding that Egyptian colleagues made a distinction between what should be the examination rules (to which we all had agreed) and to what should be published in the document to be handed out to students.

[11] One of the authors of this article, who lived and worked in Egypt for four and half years, observed how collective frameworks of action were systematically put under considerable stress in many situations. Well run companies in Egypt manage to deal with this problem not through education, but through the enforcement of very strict disciplinary standards. There are exceptions, of course. In one company, a family business ran by a brother (engineering and production) and his sister (executive management), who had both studied abroad, the abovementioned author observed a successful attempt to change the culture of employees through intensive training. When this training was taking place at the workplace, the company's executive officer remembers that employees told her that she wanted to change the culture of the country, not the culture of the company. These employees, as a matter of fact, also did report that this training had improved their ability to communicate and solve problems more efficiently at home.

[12] Examples abound as to the energy needed for this task and imply a widespread problem. We will briefly develop just three cases. An Egyptian colleague who had worked with the training department of the biggest mobile telephone operator in Egypt told the authors that, in that department, prior to any training session

targeting even top ranking executives, two persons were dedicated to calling the participants the day before, and again at least one hour before the training was to take place. One of the (French) authors also remembers his Dentist in Egypt sending his patients an sms the day before and an hour before the appointments he had scheduled. The Chief executive officer of an insurance brokerage company in Egypt also testified to the fact that even financial penalties had no effect on the delays of some of his employees … especially on the young ones from upper-middle class and upper-class families (the profile of our Egyptian students by the way).

[13] France and Egypt have very similar rules as regards deductible sales tax (also called value added tax in the United Kingdom).

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