MICHEL CALCIU
Maître de conférence, HDR
LEM IAE - Université des Sciences et Technologies de Lille
IAE - 104 Av. du Peuple Belge, 59043 Lille, France
Tél. :03 20 12 34 09
e-mail :   michel.calciu@univ-lille1.fr

IOAN POPA
Professor
Academia de Studii Economice Bucuresti - Fac.REI
Bld. Dacia nr.41, sector 1, 010404 Bucharest, Romania
Tél. :+4021 319.19.90
e-mail :ioan.popa.rei@gmail.com

CRISTIANA TUDOR
Assistant Professor
Academia de Studii Economice Bucuresti - Fac.REI
Bld. Dacia nr.41, sector 1, 010404 Bucharest, Romania
Tél. :+4021 319.19.90
e-mail :ioan.popa.rei@gmail.com

Document Based Marketing Simulations as vehicles for knowledge acquisition. Observing their impact on student progress applying learning theories in an intercultural context.

Abstract

We argue that business simulations are fast track vehicles for acquiring knowledge and can be central to developing comprehensive teaching schemes. When document based they become more flexible and can be easily embedded in e-learning platforms and extended using the latter's collaborative, group-ware facilities. Students' learning effort and learning achievements can be thoroughly tracked and compared to performance achieved during the simulation. Additional document based artifacts can be introduced in order to measure learning progress. Certain learning theories seem adapted and may also be mobilized in order to assess student achievements.

We consider a business simulation as document based when all the data concerning the simulation are persistently stored into documents (files) and the data exchange between participants relies exclusively on documents. One of the two marketing simulations we discuss in this paper is based on new XML document technologies and uses our document based development framework that has been presented in a previous paper (authors, 2010). It transfers most of the simulation implementation work to documents and most of the simulation's interaction logic to the e-learning platform. It replaces many computer language programming tasks by human readable documents leading to increased separation of concerns and acceleration of the business simulation's access to the market.

We have integrated two document based simulations, in similar strategic marketing master courses given to business students in France and Romania that were supported by a moodle e-learning platform. In order to observe their impact on student progress we use the educational theory of generative learning to analyze student reports. Additional evidence is obtained by collecting student performance and usage information recorded on the e-learning platform.

Key words: business simulation, e-learning platforms, generative learning, learner performance, learner behaviour tracking.

1. Introduction and objectives

Many college students are visual learners, they prefer to be taught through pictures, diagrams, flow charts, timelines, films, and demonstrations whyle marketing is mainly based on lectures or written assignments. Non synchronisation between teaching styles and learning styles is often causing stundents' underperformance (Clark, Flaherty, and Yankey 2006). Simulation based teaching can bridge the gap between a theoretical perspective and the need of students for active learning. Business simulations have proven their pedagogical virtues long before[1]. Superficially, they provide a hiatus for students (and professors) from lecture and more traditional educational activities (Zantow & al., 2005). As collaborative learning techniques they help increase perceived learning scores among students (Arbaugh & Benbunan-Finch, 2006). More substantially, they provide students with hands-on experiences and opportunities to practice decision making (Keys & Wolfe, 1990).

We suggest that simulations can be used as kernels in an e-learning framework. Marketing simulations are fast track vehicles for acquiring knowledge and should be central to developing a comprehensive teaching scheme. The student is learning by participating in a model based business game. He quickly acquires essential concepts and mechanics in a well-structured way by navigating in a visual and information rich environment. The challenge of doing better than his competitor incites him to learn more about the domain. Over the Internet additional links towards relevant teaching documents, case studies etc. can easily be included.

When document based simulations become more flexible and can be easily embedded in e-learning platforms and extended using the latter's collaborative, group-ware facilities. Students' learning effort and learning achievements can be thoroughly tracked and compared to performance achieved during the simulation. Additional document based artifacts can be introduced in order to measure learning progress. Relevant learning theories may also be mobilized in order to assess student achievements.

One of the two document based marketing simulations we discuss in this paper is based on new XML document technologies and uses our development framework that has been

---

1 Some simulation models , like MARKSTRAT (Larréché and Gatignon, 1990), have gained large acceptance and interest among academics. Due to the high level of reality MARKSTRAT has also been used for research purposes, to study various aspects of managerial decision making (Van Bruggen, Smidts and Wierenga, 1998).

presented in a previous paper (authors, 2010). It transfers most of the simulation implementation work to documents and most of the simulation's interaction logic to the e-learning platform. It replaces many computer language programming tasks by human readable documents leading to increased separation of concerns and acceleration of the business simulation's access to the market.

We have integrated two document based simulations, in three similar strategic marketing master courses given to business students in France and Romania that were supported by a moodle e-learning platform. In order to observe their impact on student progress we use the educational theory of generative learning to analyze student reports. Additional evidence is obtained by collecting student performance and usage information recorded on the e-learning platform.

2. Document based marketing simulations and e-learning platforms.

Web based instruction can be delivered purely on-line or mixed with classroom instruction. While management education research attention has first focused on comparing on-line and traditional classroom instruction , and on understanding the factors that lead to effective on-line management courses it showed more recently growing interest in the use of the web and web-based Course Management Systems (CMS) to enhance classroom courses (Martins &Kellermanns, 2004). The combination of e-learning and face to face teaching increases accessibility, flexibility and choices for interactivity (Rosenberg, 2001).

E-learning platform's as collaborative web applications are particularly well suited to loosely integrate (using hyper-links) documents, web applications or even full featured remote experimental platforms. For integration examples on the Moodle platform of a remote laboratory see Restivo & al. (2009) or of an educational 3D game see Gonzales & Blanco (2008).

We consider a business simulation as document based when all the data concerning the simulation are persistently stored into documents (files) and the data exchange between participants relies essentially (exclusively) on documents. Such simulations in their simplest form work off-line and their simulation or game logic reduces to an exchange of documents between the administrator/teacher and the players' teams (student teams). The teacher participates in this exchange first with documents rendering the initial business situation and subsequently with documents that express the evolution of that situation after having collected students' decisions and simulated the next period. Students participate with documents

containing their decisions for each period. Such a game logic isn't much of a concern for the simulation developer and can be easily transferred to the e-learning platform. The documents that store information and/or are exchanged can take binary, text or xml form[2].

Document based business simulations have at least two advantages over their non document based counter parts: they are easier to develop and integrate better with e-learning platforms, especially when using new xml document technologies.

We have integrated two document based simulations, in three similar master courses given to students from France[3] and Romania[4] that were supported by a moodle e-learning platform. These were: a stylized dual marketing simulation developed by us and the well known Markstrat simulation (Laréché & Gatignon, 1990).

Our dual strategic marketing simulation model represents the market as a perceptual space in which brands exert attraction on customer segments, like in Markstrat, but also introduces retention and the relationship marketing dimension. Segments have ideal points in the perceptual space indicating their needs. In each segment there are key and non-key customer sub segments. The customers in these sub segments respond with varying sensitivity to the brands' attraction and retention mix incentives. Most are versatile but some are or can become loyal to certain brands.

The two simulations have been identically embedded on the e-learning platform. While for our simulation we used a link on the platform toward an automated version that students could play individually on-line against virtual competitors, the Markstrat 2 simulation has been embedded as follows:

Students belonging to Markstrat firms or teams were affected to *moodle groups*. The student's version of the simulation program and the initial files with the results for each team have been made available as *downloadable file resources*. After each decision period students *uploaded* their team files (including their latest decisions) as an *on-line assignment*. The teacher collected those files from the platform, simulated the results for the next period (using the teacher's simulation program) and sent the team files augmented by the results of the last period to all groups.

---

2   In the older Markstrat 2 simulation these files are binary.

3   Master 1 Marketing Direct and Master 2 Marketing & Commerce at the IAE Business School, University Lille 1

4   Master 1 International Business at the Faculty on Interantional Business, ASE Bucharest

Grading occurred in several ways. While our stylized simulation has been left as a homework for students and granted 15% of the final mark, the more realistic Markstrat simulation counted for 42.5% of the mark and has been played mainly in class and was more thoroughly controlled by the teacher. Each team (group) had to complete an on-line text assignment for each period in which they were supposed to explain, on half a page the strategy they had adopted. The rest of 42.5% of the total notation was attributed to another learners' achievement measure.

Each student in our simulation and each team in the Markstrat simulation received a grade for performance on the basis of the net marketing contribution achieved at the end. In business simulations several variables can be chosen for grading. Keating (1979), for example, used sales in dollars, income before taxes, return on sales, return on assets and stock price, variables used by Forbes in ranking top management teams in real-world corporations.

As in the Markstrat simulation individual contribution to a group's decision making is not directly measurable the students were invited to produce a very short individual report that has been integrated as a peer assessment activity called a "workshop" on the Moodle platform.

Besides the common elements evoked above the three courses that we will call from now on the simple, the dual and the collateral course (see table 1) diverged on several aspects.

The "*simple*" course was almost exclusively simulation based and periodic reports explaining team decisions were the main assignment. Additionally the course used the most recent version of the Markstrat simulation that was on-line vendor controlled and could be embedded to a lesser degree into the e-learning platform than the Markstrat 2 version used in the two other courses that was teacher controlled.

In the "*dual*" course the strategic marketing half based upon the simulation preceded a marketing analytics half, and knowledge acquisition control for that second half was done by an examination. The exam was a multiple choice and problem-solving quiz in order to prevent subjective judgment of the instructor to have effect on outcomes (Keating, 1979). In 90 minutes 30 questions had to be answered. They were randomly extracted from a pool of 1020 questions that had been previously uploaded from a text file in GIFT format. In preparation of their exam, students could participate in quizzes on the platform concerning each subject the course had dealt with and their grading could be monitored. On-line gradebook monitoring has been outlined as the primary form of feedback seeking students use to assess classroom

performance and is a significant, positive predictor of final course grades (Geddes, 2009).

In the "*collateral*" course students were invited to use the classical strategic marketing simulation as an inspiration for suggesting a domain specific direct marketing simulation, which was the final assignment in this course. Table 1 gives some additional details concerning the three courses.

Table 1 – Characteristics of the three master courses based upon the same strategic marketing simulations

Name	Simple	Dual	Collateral
Master programs	M2 Marketing & Commerce	M1 International Business	M2 Direct Marketing
Description of tasks	Only simulation based teaching	Simulation preceded the analytic marketing course	Simulation served as inspiration for the draft of a new domain specific simulation
Markstrat version	3 (on-line vendor controlled)	2 (off-line teacher controlled)	2 (off-line teacher controlled)
Course hours	40	80	40
Course location	Lille – France	Bucharest – Romania	Lille – France

From the 25 French students enrolled in the "collateral" course, 21 formed one Markstrat industry and were organized in 5 groups (teams, companies) with 4 or 5 members. From the 87 Romanian students enrolled in the "dual" course, 79 were organized in two industries, with five groups of 6 to 10 members each. The "simple" course with 55 French students enrolled, as mentioned before, used an on-line vendor controlled version of the Markstrat simulation, that couldn't be embedded at the same extent as the off-line version used for the other two courses. Therefore the student interaction recorded by the e-learning platform doesn't reflect all student activities and will not be considered in the following discussion. As can be seen from table 1 the dual course had more activities and/or resources available on the platform, as the simulation based strategic marketing part represented only half of the syllabus, the rest being an analytic marketing (data analysis) course that took most of the in class teaching time and the final exam. As the Markstrat simulation was mainly played as a distance learning activity while the teacher was in France, the Romanian students had to log more frequently on the platform. The total views of the course activities are correlated to the number of activities each course offered and to the fact that Romanian students had less in class activities and more distance learning contacts with the teacher who was based in France.

Table 2: Observed behaviour statistics of French and Romanian students on the e-learning platform

Course	Participation				Views				
	Enrolled	Team members	Activities	Logs	Total	Communications	Documents	File exchange	Evaluation
dual	87	79	52	8677	6229	423	1322	1378	3106
colateral	25	21	17	1999	990	75	188	465	262
simple	55	53	17	1908	1577	142	200	440	795

The activities available in each course have been grouped in four categories. Communications include forums and chats. Documents include all course support material available from static pdf or html files to multimedia files (video, audio etc.) or even highly interactive web applications. The exchanged files were mainly files produced by the simulations and downloaded or uploaded on the platform but also the short reports explaining adopted strategies that had to be recorded on the platform after each decision round. Evaluation included all activities to be graded like the participation in our simulation, all quizzes and the workshop that allowed for peer assessment. The use of these categories of activities differed among the first two courses. The most significant difference is that in the dual course evaluation is the most frequent type of activity while in the collateral course it is the file exchange. The explanation is that the collateral course focused only on simulations whose output files had to be exchanged. Romanian students engaged more actively in peer assessments and had several quizzes, a mock-exam and a final exam on data analysis topics that were intensively used by feedback seekers. They also had to view additional course material, which explains why on-line documentation and file exchange had similar usage frequency.

Some interesting results from *self and peer assessments* within Markstrat teams are available. Less motivated and less numerous, French students in the collateral course showed unsatisfactory participation in the peer assessment activity, in three groups they were too few to participate (2 or less) in the remaining two their assessments were too similar. Romanian students showed good participation and , there where their assessments had been thoroughly done, a clear correlation between their grading and the number of times students had logged on platform pages could be observed. This shows that student self and peer assessment can be objective and that its implementation, the workshop, which is the moodle platform's most complex tool worked rather well. This is an encouraging result as such evaluation techniques are considered of great importance in the creation of a learning environment and when

involving large classes their implementation with traditional methods seems to be difficult or even impracticable (Gehringer, 2001). The final grade assigned to every student considered both the grade given to his submission/participation (70 as highest grade), and his performance as evaluator (30 as highest grade). In some cases when two students received close evaluations from peers, grading grading reversed the ranking resulting from peer grading.

As concerns *simulation results*, in the individual simulation, that counted 15% of the final mark in all three courses, results seem to be proportional to the pressure and motivation induced by the course organization and the performance control instruments used. Romanian students in the dual course performed best. They were followed rather closely by French students in the simple course, while students in the collateral course hanged far behind (see Table 3). Romanian students in the dual course were generally motivated because high marks were equivalent to low school taxes. Additional motivation came from the incertitude concerning the marketing analytics exam. This motivation appeared clearly from the fact that 77 out of 87 students enrolled finished the individual simulation and some repeated the simulation several times using their names (20) or undisclosed identities (9). Only a motivated part of French students in the simple course 29 out of 55 finished the individual simulation. None of them repeated the game. For them the fact that the simulations were the focal subject of the course represented a source of motivation. The students in the collateral course seemed the least motivated. Although many of them finished the individual simulation 16 out of 25 and three repeated the game, they probably considered that performance in simulation weighted much less than the creative work in the final assignment.

Table 3 - Ranking and Net Marketing Contribution of students doing the individual simulation

Course	Players			Rank			Net Marketing Contribution		
	completed	repeated	unidentified	average	low	high	average	low	high
Dual	77	20	9	76,73	1	159	9873,51	6517	15162
Simple	29	0	0	79,96	5	148	9656,3	6877	15109
Collateral	16	3	1	89,94	15	155	8977,12	6584	13717

A previous study (Authors, 2010) using the same simulation showed that the number of pages visited and the time spent to read the market information available in those pages positively affected players' ranking. For the Markstrat simulation such comparisons between courses are not possible as student teams play against each other in a null sum game.

3. Observing student knowledge acquisition and the theory of Generative Learning

Student learning progress during the simulation can be monitored by collecting and analysing student reports and/or other assignments. Their analysis in the light of relevant educational theories can lead to better measures of knowledge acquisition. The relevance of the educational theory of Generative Learning for Business Simulations has been pointed out by Zantow et al. (2005) and in this section we present a first attempt to apply this theory to marketing simulations.

Generative learning can be defined as: "(a) the process of generating relationships, or a structure, among the components, or parts, of the information one is trying to comprehend, and (b) the process of generating relationships between one's knowledge and the information one is trying to comprehend" (Wittrock , 1985,p. 124).

As a pedagogical strategy it implies that students rather than professors should be engaged in actively understanding course content through assignments that incite them to develop connections between course content and their experiences and knowledge. A revision of empirical literature supporting generative learning techniques can be found in Grabowski (2004). Initiated by Wittrock generative strategies have evolved towards pedagogical approaches based upon conceptual frameworks like the ones developed by Barba & Merchant (1990) or Johnsey et al. (1992). As to Zantow et al. (2005) Jonassen (1988) provides the most direct framework for applying generative strategies. He suggests four categories: recall, organization, integration, and elaboration that we apprehend as learning stages.

Recall is memorization of facts for later restatement. *Organization* occurs when imposing one's own structure on content and material. *Integration* is connecting new content to one's existing knowledge and experiences or in other words integrating the new with the familiar. Restating an idea with one's own words or connecting new content with own direct experiences are both integrational. As to Zantow et al. (2005) business internship favours integration by helping students connect abstract ideas from a textbook reading with their experiences in a corporate setting. *Elaboration* connects new content to extended information. It occurs when learners draw their own conclusions, infer consequences, describe examples, or create analogies (Jonassen, 1988).

Simulations in general and business or marketing simulations in particular offer unique settings for the application of generative learning strategies. The latter involve students in

managing a virtual company or a marketing department in competitive situations.

Zantow et al. (2005) delineate the simulation experience into three phases: the conceptualizing and planning phase, the implementation phase, and the postperformance phase and discuss how generative learning strategies of organisation, integration and elaboration intervene in each phase.

In this section we use the framework mentioned above in order to interpret student team reports and assess knowledge acquisition during the Markstrat simulation. The texts that could be analysed in the spirit of the generative learning theory were the periodic team reports for all three courses and for the collateral course the final assignment which was deemed to foster creativity and should have generated some "elaborative" learning by forcing students to extend knowledge acquired through classical marketing simulation towards new direct marketing contexts and to develop analogies.

3.1 Conceptualisation and planning phase

In the conceptualisation phase students make "real" the information provided in the simulation manual, which in the case of Markstrat is a good introductive strategic marketing course. Students realise the role of a marketing department in an industrial company they embody. At this stage an organisational chart and a strategic plan can be formally required. Students engage in recall, organisation, integration and elaboration as generic learning categories.

Recall. Recall reduces to being able to restate manual content, or to remember where particular useful information is located within the text in order to be more efficient in strategic planning activities.

Organisation. Organisation occurs as a part of the planning process, team members formally or virtually produce organisational charts, attribute roles to team members according to their perceived talents. Information is organised for integration with "collectively obtained knowledge" of marketing.

In our simulation students didn't have to organize all details, as most of the organizational tasks (like naming teams, deciding on team composition, choosing the number of decision rounds) were already fixed by the teacher or by the rules of the Markstrat simulation.

All of them seemed to understand that the goal of the class is to learn how to make correct

decisions, but the actual decision process is consequently rather diffuse: no one really takes on responsibilities, except for secondary tasks, like writing decision reports or keeping morale up. The groups are definitely making decisions but the fact that their organization needed to be linear suggests that they had difficulties getting to a consensus, and that getting there might be the result of chance. Attributing different roles to members of the group was limited to appointing a representative to write the report, while the simulation decisions were taken collectively.

The following is an extract from a team report, which is representative for the organization and decision making process of all teams:

"*We all have agreed to small changes in budget at every stage of the simulation process. Overall everyone was involved in decisions*".

Planning forms provided in the Markstart manual, for example, were used and enhanced by students when examining their business and decisions performance.

Integration. Preparing for competition within the simulation obliges students to apprehend the situation and express their evaluation with their own words and examples. They can be oriented to use SWOT analysis as an integrational tool combining previously acquired knowledge of market environments with the information coming from the current market and brand situations.

Most of the students perceived the game as realistic and acted as if they were competing in the real world. Most of them learned and used the rules of the Markstrat simulation and studied its manual. They combined that information with knowledge they had acquired previously and with data from market studies that they chose to purchase. They used information about other teams' strategies and tried to speculate on perceived opportunities (like using the market created by other teams' products to sell their similar ones) or correct some of their business weaknesses.

Elaboration. SWOT analysis can engender also elaborative thinking, as students might be obliged after evaluating existing capabilities to elaborate on their potential development. Planning the strategy of the firm and its brands involves mission statements, fixing major goals and objectives. Student imagine through elaboration the impact of their actions combined with those of the competitors on brands and markets.

The team strategies are mainly changed as a result of external factors – especially sales. In some cases firms tended to position their brands proactively by anticipating moves of their competitors. The need of a mission statement and major goals became apparent when the

simulation evolved and students became aware of their reactive attitude and the need to better plan their strategy.

To exemplify the above statements, we cite the following paragraph from the reports of French students enrolled in the "simple" marketing course, which tells us that students understand their mission and are preparing for competition seriously:

"First, we must make an assessment of the current situation. In order to accomplish this goal, we study market factors at our disposal, which will further help in making decisions.

Next, according to the elements of the current situation, a strategy will be chosen for the coming period.

In addition to the analysis of our situation and market research, we are particularly concerned with every step of the following checkpoints:

Brands' positioning map

Analysis of competitors (R & D budget, sales force, advertising)

Evolution of ideal points by segment

Evolution of the size of different segments."

3.2 Implementation phase

Implementation of firm and brand strategies takes place on a regular bases through decisions at corporate level like sales force decisions and market and brand decisions. The letter implies brand portfolio management, pricing, promotion and distribution decisions. Generative learning activities at this stage are organisational, integrational and elaborative.

Organisation. Understanding how different marketing mix policies combine and how to manage them requires organisation. Decision forms and budget sheets help the organisation of information.

Virtually all teams have drawn a budget sheet and decided on future spending using Excel sheets, for example. The Markstrat simulation provided templates for a pro forma budget and imposed restrictions on spending over the allocated budget.

Integration. Decision-making demands integration of strategic and operational marketing concepts. Students must understand interactions between marketing mix ingredients, causes of changes of segment demand, timing aspects concerning R&D, brand launching or brand abandonment decisions. Periodic reports they have to write in order to justify their decisions are useful artefacts.

Changes in game reality triggers prompt reactions from each team, and they have to

understand essential concepts in order to justify their actions in their periodic reports. Reducing production when inventories pile up or when they perceive a change in consumers' behaviour, or deciding on R&D budget in order to differentiate their products, are examples of decisions that need to integrate strategic marketing concepts, with operational decisions and prior experience or knowledge.

As mentioned before, students in the "dual" course were more motivated than the other students and consequently their reports are more complex. This can be observed in the following excerpt from a periodic decision making report concerning one brand (this gives us on ides of the complexity of the overall report and it also shows that students understand interactions between marketing mix ingredients, causes of changes of segment demand, timing aspects concerning R&D, brand launching or brand abandonment decisions).

"Regarding the product VADA in the vodite market, we opted for a production of 50 units, because this market is not yet well developed.

This production level was chosen so that it can provide a competitive price for this product on the market, compared to other competitors. Therefore the price set at $ 654 is the minimum price that we can practice without being subjected to accusations of dumping. To ensure that we sell both previous stocks and also the new production, but also to increase our market share, we have decided to invest the amount of $ 3076K for the advertising of this product. Vada's perceptual objectives are respectively 10 and 1. We have also decided to change the characteristics of the product that we have already launched on the market (Vada), due to results of market analysis studies, which showed that our product (in terms of maximum frequency and the base cost) exceeded ideal points of the targeted market segment. For R&D expenses regarding this project, a budget of $ 2000 K has been allocated."

In order to have an idea of the significant difference between the more elaborated and better documented reports produced by teams in the "dual" course and the ones from teams in the "collateral" course, we provide some fragments extracted from team reports of the latter course, regarding similar decision making situation (decisions taken in one period of the game involving one product):

Fragment 1

"We have decided to increase the production of Sonite".

"We have increased the number of vendors to continue to have good results with the product SULI".

"We have increased the price of SULI in order to position this product in an "upscale" segment and we have reduced the price of SUSI in order to make it accessible and increase its

notoriety".

" For Semi, we increase the production to 120 because we sold 118,000 units of this product in the previous period".

Fragment 2

"For SELF, we keep the same production".

"For VEP2, we increase the production to 350 because of hopes to sell up this product".

"For SEPV, we increase the production to 300".

In this case reports are obviously very superficial. Most decisions are "anchored" on previous results. In most cases no justification or explanation is given. No positioning strategies, no analysis of segment evolution or analysis of the competition can be found.

Similar conclusions can be drawn from two final reports. In the first one R&D is misused. Instead of seeking differentiation the team invests in a similar new product. It seems that students are not aware that they waste resources and incur cannibalisation risk for existing brands:

"We have launched the product SOOL, which we studied during the last session. The eventual success of this product relies mainly on its appearance, as it was in this respect that we have invested heavily.

To exploit the market to the maximum, following the strategy of brand management, we invested 2,000 Euros in research of a new product. The characteristics of this product are similar to the ones of our product SOLD, which has already achieved a large market share.

Depending on what market research reveals, we are ready to increase the sales force and advertising budget by 20 percent in order to gain more notoriety.

We found that all stocks were empty during the last session, so we increased the production volume for each product taking into account the sales forecast for the next session."

The second final report is even more succinct and the "strategy" used is based on anchoring, equal repartition of resources and diffuse positioning:

"• We have repositioned our products on different areas while rebalancing the share of advertising by product;

• In addition we have launched our new product on segment 2 in order to be present on all segments. We invested a lot of money to support our new product.

• We have also positioned ourselves on the circuits 2 and 3 in a try to regain market share".

The teams enrolled in the "simple" marketing course have done an "intermediate" job, as can be seen from the following excerpt: their reports are more elaborated than those from the "collateral" course, but less extensive and documented than those from the "dual" marketing

course.

Elaboration. Facing competition during the implementation phase requires continual elaboration in order to anticipate and counter competitors' actions. Comparing achieved results to own predictions is instrumental in an adaptive elaborative learning process.

Most of the knowledge the students derive seems to originate in the perceived "mistakes" they have made on previous stages. They seem to react promptly to errors in estimates or to errors generated by the lack of estimates. At each stage some become aware of errors they have committed or the "misfortune" they had on some particular stage. However they are able to recognize strategic advantage and are willing to do their utmost in order to improve their results.

For example, one team from the "simple" marketing course makes the following observation: *"We have once again failed to improve sales on brand SALT; we have only little stocks of brands SALY and SAMA"*. After becoming aware of these mistakes in their strategy, they propose the following:

"a. Product Launch:

Making changes for SAMA and SALY. NB: we decide not to replace VALA by a new version resulting from the successfully ended R&D project PVALU because of the large current stock of VALA on one hand, and because VALA is well positioned in relation to its competitors, on the other hand,

Increase prices of VALA in order to increase our margins;

b. Production Plan:

SAMA and SALT: increasing production because we have changed the products with the aim of increasing our market share;

We are expanding our sales force to push VALA and the other two modified products. Optimization effort in the distribution of vendors by channel based on the buying habits of our target."

It seems clear that students react promptly in order to anticipate and counter competitors' actions. In addition, they make predictions regarding the evolution of their company or the future strategy of competitors and change their strategy accordingly.

The same team observes:

"- SAMA is attacked by SIBI which repositions itself on the market;

- The high income segment will lose one point during the next period (forecast);

- Firm O must be monitored: strong presence on the Vodite market, could regain its leader position".

To respond to the current situation, they consequently make the following decisions:

"Resize our sale force (not large enough in previous stages); our competitors have higher levels for equivalent products: SYCA has 65 sellers and SOLD has 132 (our sale force = 32).

R & D for Vodites: we made an error in positioning during period 5. We decided to target the followers. As it is not possible at this stage to make any changes in this respect, we decided to continue funding.

Advertising Budget: Reposition of product SALY by advertising effort (including advertising research); Accompany the launch of the change on the product SAMA (including advertising research)."

Another example, taken from the report of a "dual" course team follows. It illustrates the fact that students monitor the situation on a continual basis and make anticipations regarding the future evolution and counter competitors' actions.

"We decided, first, a substantial increase in the production of both products in our portfolio. Production from the previous period was completely sold, which shows an increased interest for our products. Also, from the analysis of market research studies we have seen a market growth forecast of 26%, which basically supports our decision to boost production by about 30%. In the same reasoning we have increased the number of sales agents.

We decided to introduce a new product, SUTI, with an advertising budget of 1000 K$. We have allocated 15% of the budget for research, a normal percent for a newly introduced product. Initial production was set out to 20,000 units. We have assumed the risk of not being able to sell the entire production and to keep some of these products in stock, in the hope that the product will be successful and will sell very well".

3.3 Postperformance phase

The postperformance phase usually consists in a final report, inherently generative, in which student teams make a critical evaluation of their achievements as managers of a firm. In our collateral course we demanded a less orthodox final report in which students were asked to suggest a draft for a new simulation adapted to the domain of direct and interactive marketing, which was their master program specialisation. In this case besides ideas for more specialised

marketing simulations we hoped to stimulate elaborative aspects in a generative process.

Organization. Firm and market experiences as well as available information need to be organised in a synthetic text with clear illustrations (tabular and graphical)

Teams in all courses had some kind of performance presentation, although some of them were more creative and less formal in their synthesis. The stages of the simulation were in most cases clearly delimited, with the main decisions, reasons and results outlined. Most teams organized available information around the main decision making tasks but rarely used illustrations (tabular and graphical) probably because they haven't been formally requested.

Integration. Integration occurs when analyzing team results compared to planed and competitor results combined with concepts from coursework and own experiences.

Many students seemed to have gained a clear and concise perspective of marketing; some gained more insight by spotting mistakes their teams (or themselves) had done during the simulation.

Elaboration. Allowing students to elaborate on their experiences, and speculate on alternative courses of action that could have been taken is an important aspect of their report.

Except the collateral course in the two other courses students were not asked to write a final report in which to assess their achievements as managers of a firm. Thus, final reports were similar to intermediate reports and students just presented and justified their strategy during the last phase of the simulation. Due to the nature of the last report, the students' conclusions are rather direct and self-explanatory, as they generally seem to understand the virtues and merits of the simulation course. For some the perceived mistakes made in the beginning of the simulation were probably the most remembered. Those who were more motivated and continued it in spite of a bad start, got to make more "mistakes" and sometimes correct them, but anyway remember them.

In the demanded final report from teams in the collateral course students were asked to suggest a draft for a new simulation adapted to the domain of direct and interactive marketing. This is an inherently elaborative task. Students combined their knowledge of the specific field of direct marketing and catalogue sales with the acquired experience of a classical marketing simulation. They suggested product lines (textiles, clothing, consumer electronics) that are convenient for catalogue sales and the use of seasons as timing for decision periods. In some

of their reports they clearly elaborate on the difference between classical transactional marketing and relationship marketing operations, that are represented here by direct marketing mailing campaigns.

"In order to sell his products, the player has to launch direct marketing operations. While advertising has the mission to make the product known or to make the brand attractive, direct marketing allows to compute precisely the profitability of actions done, as the firms know for each announce that has been diffused, or for each mailing, the exact number of orders finally obtained, and the net margin that has been achieved."

4. Conclusion

The aim of this paper is double. It tries to assess the impact of marketing simulations on knowledge and skills acquisition by mobilising adapted educational theories and to put forward some of the advantages of document based simulations. On that occasion the capabilities of new xml based document technologies and of a document based development framework introduced by us in a previous paper are underlined.

The paper presents the concept of document based business simulations and shows how such spartiate simulations can be enhanced by using document transformation standards and evolving web browser technologies. Embedded on e-learning platforms our simulations exploit additional interaction and collaborative work facilities. The application of our approach with the same professor, the same two simulations, similar courses but different course arrangements and different business schools and countries (France and Romania) resulted in positive learning experience.

We showed that different arrangements of knowledge control instruments for the same simulation based strategic marketing course can influence motivation and progress in learning by taking the individual performance in simulation as an indicator. Additional indicators of student motivation have been obtained by exploiting the e-learning platform's student behaviour tracking facilities.

Mobilising relevant educational theories can lead to better measures of knowledge and skill acquisition through marketing simulations. Faculty members could also improve their pedagogical and curriculum decisions if they were able to understand and explain the underlying educational theories (Zantow et al., 2005). We illustrate this by applying the generative learning theory while analysing student team reports and other written assignments.

The managerial implications of this approach are linked to the improvement of marketing

simulations as educational tools for managers. Their development, integration with e-learning platforms and evaluation of learning performance they provide is facilitated.

Future applications of generative learning approaches in the same context besides free reports should use new and evolving xml document technologies in order to organise more structured assignments that are able to progressively test assimilation by students of specific strategic marketing concepts.

We believe that strategic marketing simulations not only enhance subject specific learning but also can improve learning achievements in marketing analytics courses dealing with statistics, data analysis or data mining. A future research objective is to empirically prove the positive impact of a realistic strategic marketing simulation on student achievements in an analytic marketing course. As from our experience, courses in marketing analytics that deal with classical statistical data analysis techniques applied to survey data or newer data mining techniques applied to customer databases are often difficult to understand for students. Many of them lack motivation to do the necessary effort, as they don't realise the narrow connection between the results offered by these techniques and strategic and operational marketing. Therefore using a strategic marketing simulation as Markstrat, in which an important managerial task is to order and interpret marketing surveys, consumer and distributor panels, market experiments and forecasts, to precede a marketing analytics course as we did in our dual course should help students realise the immediate applicability of those techniques and motivate them to acquire the necessary skills.

References

Arbaugh J.B., Benbunan-Finch R.l, (2006), An Investigation of Epistemological and Social Dimensions of Teaching in Online Learning Environments., *Academy of Management Learning & Education*, 5, 4, 435-447

Barba, R. H., & Merchant, L. J. (1990), The effects of embedding generative cognitive strategies in science software. *Journal of Computers in Mathematics and Science Teaching*, 10, 1, 59–65.

Clarke I., T. B. Flaherty, and M. Yankey (2006), Teaching the Visual Learner: The Use of Visual Summaries in Marketing Education, *Journal of Marketing Education*, 28, 3, 218-226.

Geddes D. (2009), How Am I Doing? Exploring On-Line Gradebook Monitoring as a Self-Regulated Learning Practice That Impacts Academic Achievement. *Academy of Management Learning & Education*, 8, 4, 494-510

Gehringer E. (2001), Electronic peer review and peer grading in computer-science courses. SIGCSE Bulletin, 33, 1,139-143.

González C.S. and Blanco F (2008), Integrating an educational 3D game in Moodle, *Simulation & Gaming,* 39, 3, 399-413

Grabowski, B. L. 2004. Generative learning contributions to the design of instruction and learning. In D. H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (2nd ed., 719–743). New York: Simon & Schuster Macmillan.

Ives, B. and Jarvenpaa, S.L. (1996) Will the Internet revolutionize business education and research? *Sloan Management Review*, 37, 3, 33- 41.

Johnsey, A., Morrison, G. R., & Ross, S. M. (1992), Using elaboration strategies training in computer-based instruction to promote generative learning. *Contemporary Educational Psychology*, 17, 2, 125–135.

Jonassen, D. H. (1988), Learning strategies in courseware. In D. H. Jonassen (Ed.), *Instructional designs for microcomputer courseware*: 151–181. Hillsdale, NJ: Lawrence Erlbaum Associates.

Keating B., (1979), Simulation Gaming in the Managerial Economics Course, *Journal of Economic Education*; Spring79, Vol. 10 Issue 2, p65-67

Keys, B. and Wolfe, J. (1990) The role of management games and simulations in education and research. *Journal of Management*, 16, 2, 307–336.

Larréché, J-C. and Gatignon, H. (1990) *Markstrat 2 - A Marketing Strategy Simulation.*

Instructors Manual., The Sceintific Press, Redwood City;

Martins, L.L., Kellermanns, F.W. (2004) A Model of Business School Students' Acceptance of a Web-Based Course Management System., *Academy of Management Learning & Education,* 3, 1, 7-26

Restivo M., Mendes J., Lopes A.M. Silva C.M. And Chouzal F. (2009) A Remote Laboratory in Engineering Measurement, *IEEE Transactions on Industrial Electronics,* 56, 12, 4836-4843

Rosenberg, M. (2001), *E-learning strategies for delivering knowledge in the digital age.* McGraw-Hill, New York, NY.

Wittrock, M. C. (1985), Teaching learner generative strategies for enhancing reading comprehension. *Theory Into Practice*, 24, 2, 123–126.

Zantow, K., Knowlton, D.S. and Sharp, D.C. (2005), More Than Fun and Games: Reconsidering the Virtues of Strategic Management Simulations. *Academy of Management Learning & Education*, 4, 4, 451-458