EXPLORING MOTIVATION: USING EMOTICONS TO MAP STUDENT MOTIVATION IN A BUSINESS GAME EXERCISE

Ricardo R. S. Bernard
Universidade Federal de Santa Catarina
bernard@cse.ufsc.br

Hugh M. Cannon
Wayne State University
Hugh.Cannon@wayne.edu

ABSTRACT

The literature relating motivation to simulation game performance often laments the lack of on-going measurements for motivation during the course of simulation play. To be practical, such a measure must be very simple and convenient. Ideally, it would also be culturally robust to facilitate its use in research across the many cultures in which simulation research is now very active. This paper investigates the use of an emoticon-based instrument, supporting the investigation with a study involving undergraduate students in a capstone course in Brazil.

INTRODUCTION

The holy grail of simulation research is the discovery of what drives performance and learning. While the jury is still in the box, enough of the case has been made to conclude that motivation plays a key role. One of the problems, however, is that there is no consensus regarding what motivation is and how to measure it. From an operational perspective, effective motivation-related research calls for a metric that enables researchers to take frequent measurements throughout the course of a game without disrupting the natural flow of the simulation itself. Given the global scope of current simulation research, a measure should also be culturally neutral, to facilitate the accumulation of compatible findings independent of where the research is conducted.

We add an additional consideration – the proposition that motivation in the context of experiential learning is often strongly related to emotional involvement. Contrast this with conventional means-end participant calculations (extrinsic motivation). Yes, participants in simulation games and experiential exercises participate because they are part of a classroom assignment, or perhaps because they see them as a means to learning important skills. But these miss the essence of the more intuitive, holistic experience (intrinsic motivation) that makes experiential learning so powerful (Holbrook, Chestnut, Oliva, and Greenleaf 1984). Intrinsic motivation drives people to experience something for its own sake, to experience internal rewards, or states, described in terms such as “interesting,” “exciting,” “pleasurable,” and “enjoyable” (Calder and Staw 1975).

How, then, should we measure this kind of experiential motivation? One possibility is to build on a stream of research initiated by Morris in the early 1990s (Morris and McMullen 1993; Morris and Waine 1993; Morris 1995) in which he sought to capture a range of emotional responses to advertising through “self-assessment manikins” (SAMs). Morris draws on Mehrabian and Russell’s (1974) theory of emotional response in which emotions can be described in terms of three independent bipolar dimensions: pleasure-displeasure, degree of arousal, and dominance-submissiveness. He uses a combination of body imagery and facial expression to elicit responses along a *pleasant-unpleasant* (*pleasure*) and *calm-excited* (*arousal*) dimension.

Morris’ work appears related to the spontaneous emergence of emoticons as a global Internet and communications phenomenon associated with social networking. As more and more human interactions have moved to computer-mediated communications (CMC), people have spontaneously sought methods of communicating the feelings that were traditionally expressed through non-verbal cues. This is generally recognized as the driver of emoticons (Walther and D’Addario 2001; Krohn 2004; Peña and Hancock 2006; Provine, Park 2007; Spencer, and Mandell 2007; Dresner and Herring 2010). At the most basic level, they convey pleasure or approval (“smiley face”) versus displeasure or disapproval (“frowny face”). These have multiplied to express a very broad range of emotional responses, as illustrated by the thriving industry that has arisen to provide emoticons for use on Facebook, an example of which is shown in Figure 1.

While simulation games and experiential exercises do not necessarily constitute CMC environments, they often constitute environments in which non-verbal expressions are either costly or impossible to monitor through conven-

Figure 1
An Example of Simple and Complex Emoticons Designed for Use on Facebook

Source: http://en.wikipedia.org/wiki/Emoticon accessed November 28, 2010.

tional research methods. If our premise is correct, that motivation in an experiential learning environment is truly emotional in nature, emoticons offer enormous promise as a measurement tool.

This paper describes a pilot study in which emoticons were used to measure motivation in a series of undergraduate capstone classes in Brazil. It maps the motivational patterns observed in four classes over two semesters. It constitutes an exploratory step in the use of emoticons to measure experiential motivation.

IN SEARCH OF MOTIVATION

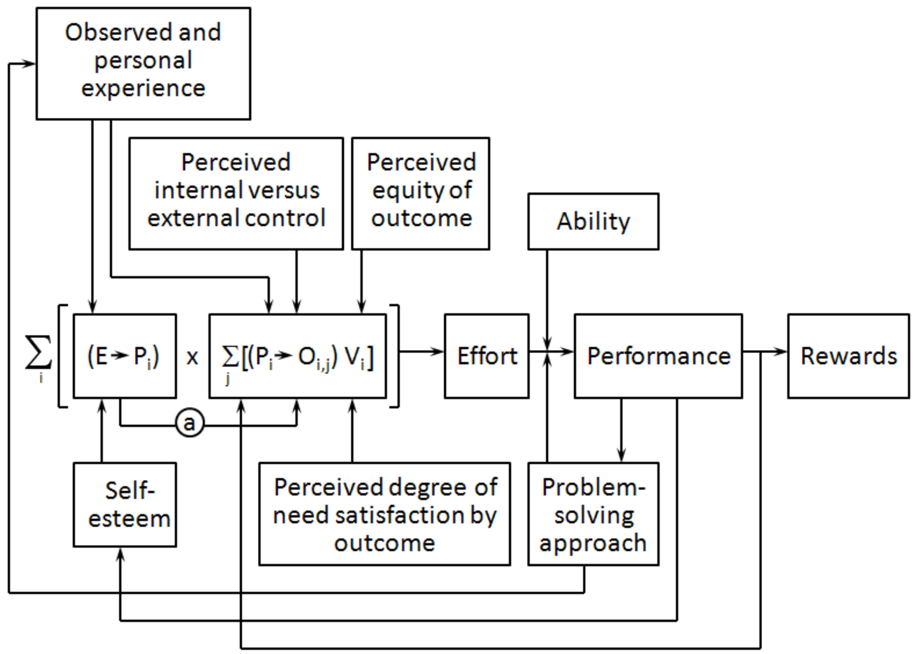
Schumann, Anderson, Scott, and Lawton (2001) suggest a four level framework for evaluating results from a business game or experiential exercise: the participants' reaction towards the experience (level 1), the achieved learning (level 2), the level of behavioral change participants experience (level 3), and the benefits that such experience provides later to the participants' workplaces (level 4). These levels can be mapped onto an integrative model proposed by Yakonich, Cannon, and Ternan (1997). The logic is captured in Figure 2. It builds on an expectancy-valence model of motivation, modified to accommodate the possibility of intrinsic motivation and other psychological phenomena. In the model, $E \rightarrow P_i$ represents the perceived likelihood that an effort will result in a given performance – for instance, that putting in extra time studying research data available in a better pricing decision. $P_i \rightarrow O_j$ represents the perceived likelihood that a given performance will result in a particular outcome. If P_i represented a high quality pricing decision, O_j might represent increased market share. V_j represents the value of the outcome to the simulation participant, or in our example, the value of increased market share in game performance. Line "a" represents the case of intrinsic motivation, where the mere act of trying to convert effort to performance represents a valued outcome.

Using Figure 2, we can see a more detailed picture of potential participant reactions to the simulation, thus providing a useful tool for determining what to measure (level 1 in the Schumann et. al. model). The various feedback loops represent the effect of the experiential learning process, again providing a tool for determining the kinds of learning that are taking place (level 2). The *performance* box represents the different levels of behavioral change the participants experience (level 3). The degree to which changes in *problem-solving approach*, *self-esteem*, *observed and personal experience*, and ultimately, perceptions of *performance→rewards* relationships generalize to the workplace determines the degree to which the simulation fulfills its destiny as an educational tool (level 4).

Again, our focus is motivation. The $(E \rightarrow P_i)$ x $\Sigma[(P_i \rightarrow O_j)V_j]$ relationships address the central motivational component of the model. Consistent with our premise that experiential motivation tends to be largely intrinsic, line "a" becomes crucial in our discussion. To the extent that intrinsic motivation is based on emotional responses, it provides a link to our study.

Cast against the background of Figure 2, it is much easier to see the problems associated with studying the impact of motivation on simulation performance. We will illustrate by considering several different motivational studies in the simulation literature. For instance, Gosenpud

Figure 2
An Integrative Model of How Motivation Works in Simulation Games



Adapted from David A. Yakonich, Hugh M. Cannon, and Amy Ternan. (1997). The energy factor: Building motivation in the simulation gaming environment. *Developments in Businbss Simulation and Experiential Learning*, 24, p. 330. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

and Meising (1983) used several different measures of motivation in order to determine their impact on performance. These included (1) a Likert question on desired course grade, (2) an essay question on continuing desire to play the game, (3) an essay question covering course goals, (4) and a forced choice question regarding whether they chose teammates on the basis of performance expectations versus friendship or proximity. Of these, 1, 3, and 4 were clearly extrinsic in nature. Number 2 (desire to play the game) was arguably intrinsic. As it turns out, it proved to be strong predictor of performance, whereas none of the other three yielded a statistically significant prediction.

Gosenpud and Meising note that, even for the third measure, the causal relationship is unclear because the measurement was taken in retrospect at end of the game, rather than during the game, when the motivation was actually driving effort. We see from Figure 2 that the various feedback loops tend to adjust the motivational mechanism, thus causing students to reinterpret their level of motivation. A contemporaneous measure of intrinsic motivation might have provided important insights for interpreting the results of the study.

In another study, Catalanello and Scheck (1991) find an interaction between students' primary learning style and motivation. Motivation has a greater effect on performance for students whose style involves abstract conceptualization and reasoning. Again, this is consistent with Figure 1, which posits a sequence where motivation (and consequent effort) interacts with ability to produce performance. Skills in abstract conceptualization and reasoning are presumably important to success in simulations and exercises relating to business policy (Cannon, Friesen, Lawrence, and Feinstein 2009). Upon further reflection, however, this begs the question of whether the motivation was intrinsic or extrinsic, emotionally or rationally based. Figure 2 would seem to suggest that it was extrinsic. However, complexity figures prominently in Holbrook, Chestnut, Oliva, and Greenleaf's (1984) theory of intrinsic game-playing motivation. Again, a measure of motivation based on emotional involvement would be useful in our interpretation of the results.

In a third study, Roberts and Page (1994) hypothesized that participating in a simulation would increase students' "motivation to manage," as conceptualized by Miner (Miner 1965, Miner and Smith 1982) and as measured by both self reports and independent observers. They also hypothesized that the motivational effect would be expressed in students' increased probability of completing their MBA program following completion of the simulation game. Neither of these hypotheses was supported by their study, using participants in the *Through the Looking Glass* simulation. The assumption, however, was that students would generalize whatever motivation generated to participate in the simulation to management in general, and ultimately, to complete their MBA. We could reason that either extrinsic or intrinsic motivation could have lead to support of the hypotheses. That is, a student might be motivated by a desire for professional success and monetary rewards, finding that she was an effective manager and that this skill was related to the kind of work environment for which an MBA was preparation. However, a more direct connection would be the intrinsic alternative, that the student found that she enjoyed managing and inferred that an MBA would provide a really enjoyable program. Again, a measurement of emotion-based motivational involvement would help interpret the results.

Gentry and his colleagues (Burns, Putrevu, Hongyan, Williams, Bare, and Gentry 2001; Gentry, Burns, Dickinson, Putrevu, Chun, Hongyan, Williams, Bare, and Gentry 2002) conducted two studies addressing Lowestein's (1994) curiosity-gap theory of learning motivation. The theory suggests that students are motivated by curiosity when there is a moderate gap between what they know and what they want to know. The curiosity gap model is particularly interesting, because it appears to be based on intrinsic motivation. As Lowenstein notes, "…the process of satisfying curiosity is inherently pleasurable" (p. 90). In both studies, Gentry and his colleagues infer motivation from performance rather than measuring it directly. The integrative model portrayed in Figure 2 posits a sequence where motivation leads to effort and effort interacts with ability and problem-solving approach to produce performance. If ability and problem-solving approach are not issues, and barring intervening factors (not discussed in Figure 2), then performance is a function of effort and effort reflects motivation. However, this does not appear to be the case. The performance measures appear to require ability and problem-solving approach. The studies would benefit from a series of relatively simple motivational measures to help test the hypothesized sequence of effects portrayed in Figure 2 to verify what was really happening between the curiosity gap and performance.

Finally, in a series of studies, Anderson and Lawton (Anderson, Lawton, and Wellington 2008; Anderson and Lawton 2009) investigated the relationship between the goal orientation of students ("performance" versus "learning") and simulation performance. Their theory posits motivation as a mediating variable. In terms of Figure 2, goal orientation would presumably affect the value of the expected performance outcomes, thus determining motivation. The motivation, then, would drive effort, and, assuming ability and an appropriate problem-solving approach, effort would drive performance. Anderson, Lawton, and Wellington measured motivation by means of an attitude scale that addressed such motivation-related items as "I'm really excited about participating in the stimulation" and "I think that participating in the simulation will be very worthwhile." This was administered before and after the simulation. Note that the goal theory assumes a kind of extrinsic motivation. One explanation for the failure of the hypotheses is that the motivational measures might be addressing intrinsic motivation. One way to test this would be to include a measure of motivational involvement, such as we are suggesting, to help establish the nature of the motivation being addressed in the study.

THE STUDY

Our exploratory study begins by measuring general motivation toward simulation effort. In order to test the approach's versatility, the measure was administered before and after each class period, providing specific information regarding the impact of individual decision periods and the attendant classroom activities. By replicating the measurements across four different classes (morning and evening across two semesters), we were able to compare motivational patterns. While the classes were each unique, they shared the same game, pedagogy, and classroom activity schedule. Assuming that the structure of each class period would have varying impact on motivation, one way to test the measure's reliability would be to compare the variations in motivation across class periods from one class to another. This would lead us to hypothesize that:

H1: The motivational patterns (variation in motivation by class period) at the beginning of each class

Characteristics of Classes
Table 1

Classes	Students	Teams	Simulated rounds
2009/2 – Morning	26	8	10
2009/2 – Evening	35	8	10
2010/1 – Morning	17	5	11
2010/1 – Evening	36	8	12

Table 2
Activities Developed in the Management Simulation Course

Day	Activities
1	Activities performed: (a) course presentation, (b) team assignment, (c) information about the simulation website, (d) information to download and to read the player manual of the simulated company.
2	Activities performed: (a) test to evaluate the team knowledge about the simulated companies and the market they are inserted based on the player manual. The three higher grades in the test received $ 90,000, $ 60,000 e $ 30,000 respectively in cash of the simulation company. (b) the teams were also asked to create names for their companies. The best company name received a $ 60,000 prized based on an election.
3	Activities performed: (a) test correction and winners disclosure, (b) 'Company Name Award' disclosure, (c) brief simulation company presentation, (d) trial round (definitive round 2 was performed on line)
4	Decision making process to round 3
5	Decision making process to round 4. Specific activity: 'Finance Management Award' given to the company with the best cash flow management.
6	Decision making process to round 5
7	Decision making process to round 6
8	Activities performed: (a) first shareholder general assembly and partial debriefing. (b) Written company reports deliver, (c) Teams reorganization (each CEO was asked to dismiss one director and to hire another).
9	Decision making process to round 7. Specific activities: (a) union negotiation simulation to raise wages (professor representing the employees union and students representing the companies union); (b) Disclosure of the written reports grades (professor asked to student to not consider the received grade as motivation assessment of the class).
10	Decision making process to round 9 (round 8 was conducted on line). Specific activities: (a) 'Sales Forecast Award' given to the company with the best forecasting. (b) Auction to purchase product D from the supplier using a single written bid from each company. More than one winner was possible in the auction.
11	Decision making process to round 10 (final decision). Specific activity: Auction to purchase product A from the supplier. Multiple oral bids were possible to each company. A single winner was declared based on the highest purchasing price.
12	Second shareholder general assembly and final debriefing.

period will be positively correlated across classes.

H2: The motivational patterns at the end of each class period will be positively correlated across classes.

Following the same reasoning, the motivational change within each class should depend on the motivational power of the activities conducted in that particular day. This would lead us to hypothesize that:

H3: The motivational patterns at the beginning and the end of each class period should be uncorrelated.

H4: The change in motivational patterns (variation in the difference in motivation from the beginning to the end by class period) will be positively correlated across classes.

Figure 2 suggests that motivation is related to the importance (valence, or V_j) of a particular outcome (O_j), or in the case of intrinsic motivation, a particular performance ($E \rightarrow P_i$). By querying students regarding the importance of various class-period activities, we can determine their importance. This should correspond to the level of intrinsic motivation associated with each session. Stated formally,

H5: The stated importance of class period activities will be positively correlated with the end-of-class motivational patterns (variation in motivation by class period as measured at the end of the class period)

H6: The stated importance of class-period activities will be positively correlated with the change in motivational patterns (variation in the difference in motivation by class period).

METHODOLOGY

The subjects for the study were 114 undergraduate students enrolled in a two-hour management simulation capstone course at a major Federal university in Brazil, during the semesters of 2009/10 and 2010/1 as shown in Table 1. A single professor taught in all four sections of the course over the two-year period. He used SIMCO (2009), a top management retail simulation game with more than 30 decision inputs per round. Such a simulation is considered to be complex according to Keys and Wolfe's (1990) definition.

The students were randomly assigned to four-member teams, and within the teams, were self-selected to functions: CEO, marketing, finance, and personnel. The classes were conducted during 10-12 simulated quarters, including a practice round. The decision making process was completed in the classroom. The results were available on a website and accessed by the students using an individual login. In the middle of the simulation, three activities were carried out: (1) a partial debriefing was conducted in a simulated shareholder general assembly; (2) the simulated company with the lowest accumulated earnings was closed and its students were randomly distributed to the remaining companies; (3) each CEO dismissed a participant and hired another to replace the dismissed participant. In the end, a final debriefing session was conducted to end the simulation. Table 1 summarizes the characteristics of each class. Each of the activities outlined above was designed to heighten the sense of working in an intense, highly competitive business environment. The result was a kind of "live fire" experience, stimulating a potentially high level of emotional involvement and motivation.

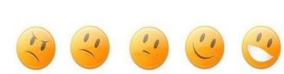
In each class period, the professor conducted specific activities related to the decision making process. Table 2 shows all activities developed in the management simulation courses of 2009 classes. The classes of 2010 had similar schedule excepted by: 'Finance Management Award' that was conducted in day 6 instead of day 5; 'Union negotiation' that was performed in day 10 in the place of day 9; and 'Sales Forecast Award that was conducted in day 9 instead of day 10.

At the end of each class period, the students were asked to indicate their level of motivation before and after the decision-making process, but before disclosure of results. Students used a 5-item, emoticon-anchored scale ranging from 'Highly Unmotivated' to 'Highly Motivated (Figure 3).

Finally, in the end of the course, students were asked to fill out a questionnaire to describe their impressions about their experience in the management simulation. The first question was posed to evaluate the interest in the ac-

Figure 3

Scale to Measure the Students' Motivation

Beginning of Class	**End of Class**
	
Highly unmotivated ____ ____ ____ ____ ____ Highly motivated	Highly unmotivated ____ ____ ____ ____ ____ Highly motivated

tivities performed during the simulation. The evaluation was made using a 5 item Likert scale ranging from 'Less important' to 'More important'.

RESULTS

Figures 4 though 7 map the patterns of motivation across the four classes using 12 days collected data. The student response rate ranged from 77.5% to 87.9% to the 4 courses analyzed.

Table 3 shows the correlations developed to address hypotheses H1 and H2. The lower left-hand side of the matrix contains the correlations of the beginning motivation scores with corresponding scores of the other classes. The upper right contains the correlations of the ending motivation scores with corresponding scores of the other classes. The diagonals contain correlations of the beginning with the ending scores for each of the classes.

Hypothesis H1 says that the lower left correlations should be positive and H2 that the upper right should be positive. That is, the pattern of motivation should be driven by the differences in activities scheduled for each class period. An extension of the same reasoning leads to hypothesis H3, which says the diagonals should be close to zero. As we can see, none of these hypotheses were supported. This suggests that the patterns shown in Figures 4 through 7 were not driven by differences in the motivational power of the classroom activities carried out each class period, but rather, by random factors for which we cannot account. The failure of H3 suggests one of two things: Either there was a method bias, where taking the measurement for both beginning and ending motivation at the same time obscured the changes in motivation resulting from legitimate classroom activities, or the same random factors that drove variations in the beginning of a class were also driving them at the end.

Table 4 presents the correlations among the patterns of differences in motivation (from the beginning to the end of each class period) across the various classes. According to hypothesis H4, the correlations should be positive, indicating that the change in motivation during any given class period is a function of that day's activities. Again, the results did not support the hypothesis.

Finally, Table 5 summarizes the results of the questionnaire administered at the end of the course to determine the relative importance of the different topics covered during the various class periods. The questionnaire response rate was 59.6% (68 out 114 students). Using the descriptions given for each class period's activities in Table 2, we were able to develop a separate assessment of the importance students placed on the various activities. Correlating these with the motivational data portrayed in Figures 4 trough 7, and summarized in Table 5, it is possible to examine the convergent validity between them, as suggested by hypotheses H5 and H6. The correlation between the questionnaire results and the end-of-class data for the four courses (H5), respectively, were -.363, -.187, -131, and .099. The correlations between the questionnaire results and the change in motivational data (H6) were -.503, .138, -.370, and .122. The hypotheses assumed that these correlations would all be positive. Once again, the hypotheses were not supported.

Figure 4
Motivation Map of Students from Morning Course – 2009/2

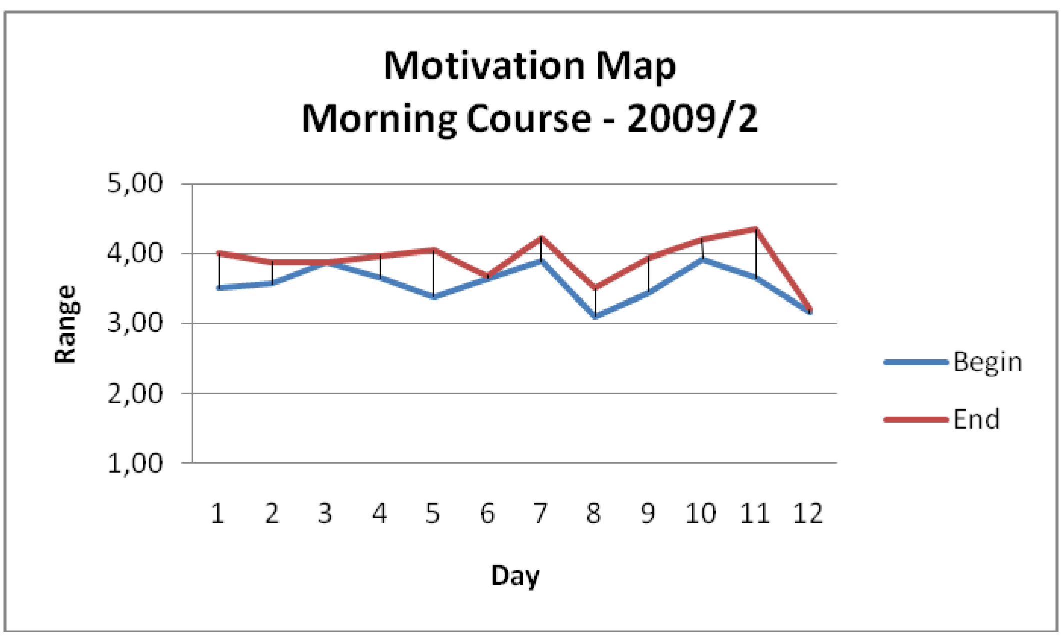


Figure 5
Motivation Map of Students from Evening Course – 2009/2

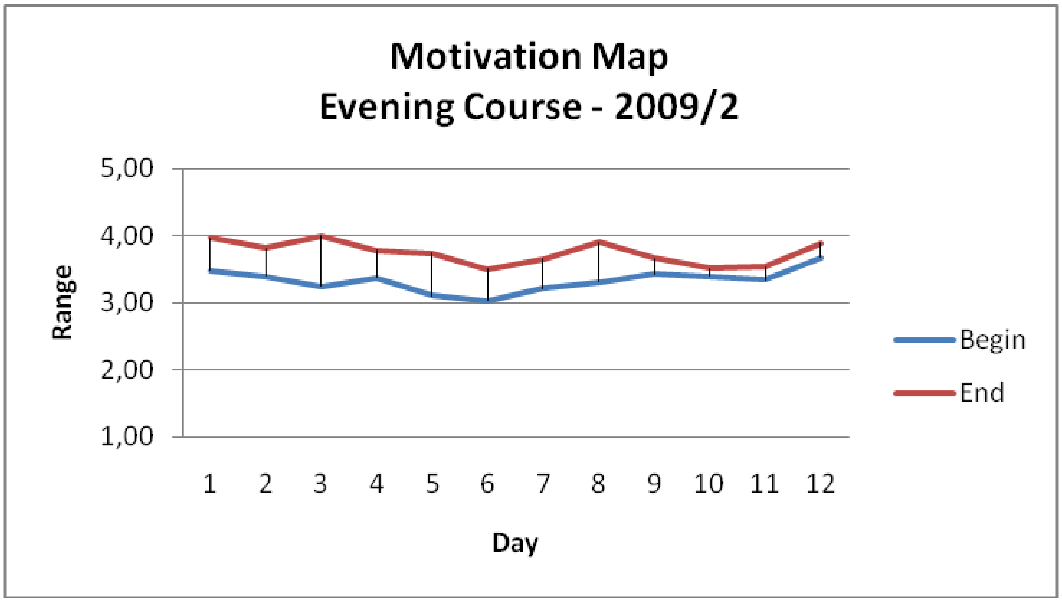


Figure 6
Motivation Map of Students from Morning Course – 2010/1

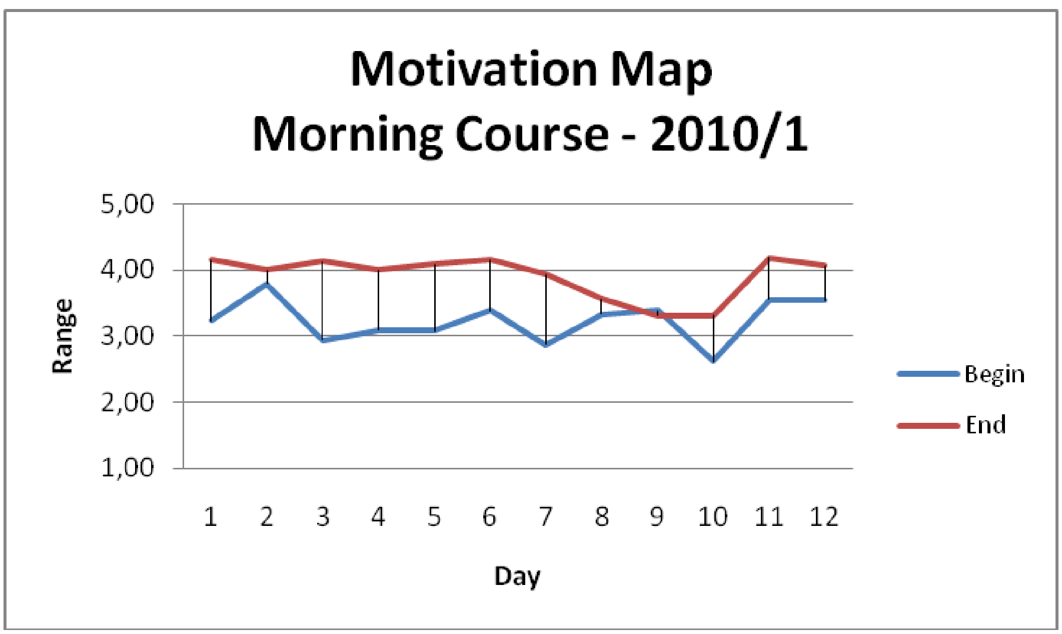


Figure 7
Motivation Map of Students from Evening Course – 2010/1

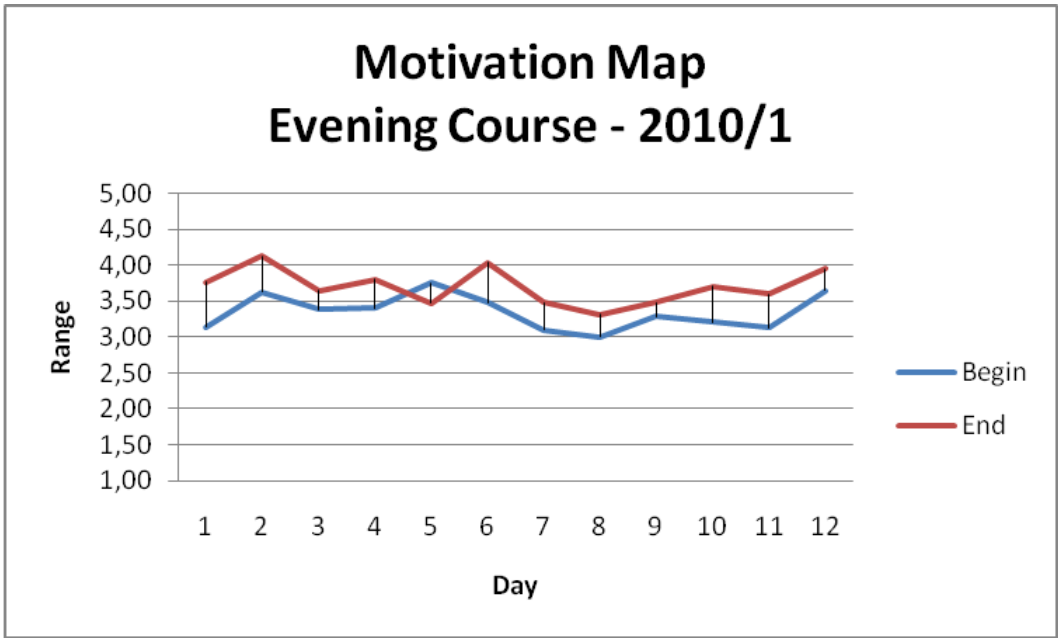


Table 3
Correlation of Motivational Patterns within and across Classes

		Morning 2009	*Evening 2009*	*Morning 2010*	*Evening 2010*
Morning 2009	0.659	0.417	-0.090	-0.151	
Evening 2009	-0.588	0.188	-0.333	0.245	
Morning 2010	0.351	-0.559	0.223	0.116	
Evening 2010/1	0.417	0.058	-0.058	-0.310	

Key:

	Correlations of beginning motivational patterns (H1 assumes they will be positive)
	Correlations of ending motivational patterns (H2 assumes they will be positive)
	Correlations of beginning with ending motivational patterns within classes (H3 assumes they will be close to zero)

CONCLUSION

The lack of lack of support for our initial hypotheses should not be discouraging. It is simply indicative of the ignorance that often accompanies early investigations of a relatively new phenomenon. Why the failure? We have already noted the possibility of measurement bias resulting from administering questions relating to both motivation at the beginning of the class period and the end of the class period at the end of the period.

Another possibility is that we under-estimated the significance – or at least the volatility – of emotional involvement in the experiential learning environment. It varies dramatically from individual to individual, group to group, and experience to experience within the course of the game. The "noise" created by these variations may overshadow the varying effects of the pedagogy that we assume drives educational effectiveness.

Table 4
Correlation of Patterns of Motivational Change within and across Classes

	Morning 2009	*Evening 2009*	*Morning 2010*	*Evening 2010*
Morning 2009	1.0000			
Evening 2009	-0.1730	1.0000		
Morning 2010	0.4860	-0.4781	1.0000	
Evening 2010/1	-0.1095	-0.2992	0.0549	1.0000

Emotional involvement and intrinsic motivation may indeed be volatile and overshadow the varying effects of pedagogy, but, this does not preclude performance and educational effectiveness. The relative volatility of motivation could signal just the opposite. The pedagogy of the class – the experiential component and attendant activities – could be relatively well designed and effective, so the variations in motivation are virtually all random.

Another possibility is that our use of emoticons was too simplistic for the purpose. This over-simplicity may take two forms: First, we have noted the distinction between the pleasure and arousal dimensions of emotion. We ignored this distinction in favor a global measure of experiential motivation. Taking this approach even farther, we should note that Mehrabian and Russell's (1974) PAD (pleasure/arousal/dominance) theory has three distinct, independent dimensions. Given its prominence in the literature, this merits much deeper attention.

The second form is very specific to our study. What is the specific object of experiential motivation – the behavior that becomes its own reward? We have seen that this might be the pursuit of curiosity, but it also might simply be "winning," or perhaps developing a sales forecasting model. Anchoring motivation to a specific behavior would certainly be consistent with the approach suggested by the model portrayed in Figure 2.

The final word is to restate that this was an exploratory study – one with enormous potential, but one that has a great deal of work left to be done. Fortunately, it is an approach that is relatively easy to research. Hopefully, then, it will generate interest in future research.

REFERENCES

Anderson, P. H., L. Lawton, and W. J. Wellington (2008). "Goal orientation and simulation performance." *Developments in Business Simulation and Experimental Learning*, 35, 330-335. Reprinted in the *Bernie Keys Library,* 11th edition [Available from http:// ABSEL.org]

Anderson, P. H. and L. Lawton (2009). "The relationship between goal orientation and simulation performance with attitude change and perceived learning." *Developments in Business Simulation and Experimental Learning*, 36, 75.82. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

Calder, B. J. and B. M. Staw (1975). "Self-perception of intrinsic and extrinsic motivation." *Journal of Personality and Social Psychology* 31:4, 599-605.

Cannon, H. M., D. P. Friesen, S. J. Lawrence, and A. H. Feinstein (2009). "The simplicity paradox: Another look at complexity in design of simulations and experiential learning." *Developments in Business Simulation and Experimental Learning*, 36, 243-250. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

Catalanello, R. F. and C. L. Scheck (1991). "Performance in the capstone business course – What is the effect of pedagogy learning styles and student motivation. *Developments in Business Simulation and Experimental Learning*, 18, 146. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

Dresner, E. and S. C. Herring (2010). "Functions of the nonverbal in CMC: Emoticons and illocutionary force." *Communication Theory* 20.3 (July), 249-268.

Gentry, J. W., A. C. Burns, S. Putrevu, Y Hongyan, L. Williams, T. Bare, and T. A. Gentry (2001). "Motivating students – An initial attempt to operationalize the curiosity gap model." *Developments in Business Simulation and Experimental Learning*, 28, 69-75. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

Gosenpud, J. and P. Meising (1983). "Determinants of performance in computer simulations." *Developments in Business Simulation and Experimental Learning*, 10, 50-53. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

Holbrook, M. B., R. W. Chestnut, T. A. Oliva, and E. A. Greenleaf (1984). "Play as a consumption experience: The roles of emotions, Performance, and Personality in the enjoyment of games." *Journal of Consumer Research* 11:2 (September), 728-.739.

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

Krohn, F. B. (2004). “A generational approach to using emoticons as nonverbal communication.” *Journal of Technical Writing and Communication* 34.4, 321-328.

Lowenstein, G. (1994). The psychology of curiosity: A review and reinterpretation.” *Psychological Bulletin* 116:1, 75-98.

Markus, P. M., Strang, D. R.. (2003). “A Brief on Debriefing: What it is and What it isn’t.” *Developments in Business Simulation and Experimental Learning*, 30, 177-184. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

Mehrabian, A. and J. A. Russell (1974). *An approach to environmental psychology.* Cambridge, MA: The MIT Press.

Miner, J. B. (1968). “The Early Identification of Managerial Talent.” *Personnel and Guidance Journal* 46, 586—591

Miner, J. B. and N. R. Smith (1969). “Managerial talent among undergraduate and graduate business students.” *Personnel and Guidance Journal* 47:10 (June), 995—1000.

Miner, J. B. and Smith, N. R. (1982). “Decline and stabilization of managerial motivation after a 20-year period.” *Journal of Applied Psychology* 67 (June), 297—305

Morris, J. D. (1995). “SAM: The self-assessment manikin. *Journal of Advertising Research* 35:6 (November/ December), 63-68.

Morris, J. D. and J. McMullen (1993). “Measuring multiple emotional responses to a single television commercial.” *Advances n Consumer Research* 21.

Morris, J. D. and C. Waine (1993). “Managing the creative effort: Pre-production and post-production measures of emotional response.” *Proceedings of the 1993 Conference of the American Academy of Advertising*.

Park, J. (2007). “Interpersonal and affective communication in synchronous online discourse.” *Library Quarterly* 77.2 (April), 133-155.

Peña, J. and J. T. Hancock (2006). “An analysis of socioemotional and task communication in online multiplayer video games.” *Communication Research* 33.1 (February), 92-109.

Provine, R.R., R. J. Spencer, and D. L. Mandell (2007). “Emotional expression online: Emoticons punctuate website text messages.” *Journal of Language and Social Psychology* 26.3 (September), 299-307.

Roberts, R. H. and D. Page (1994). “Managerial motivation mid realism among MBA students as viewed through “The Looking Glass, Inc.’ simulation. *Developments in Business Simulation and Experimental Learning*, 21, 92-95. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

Schumann, P. L., Anderson, P. H., Scott, T. W., Lawton, L. (2001). “Framework for evaluating simulations as educational tools.” *Developments in Business Simulation and Experimental Learning*, 28, 215-220. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

SIMCO – Retailing Simulation. Bernard Sistemas (2009). Florianópolis, Brazil: www.bernard.com.br

Walther, J. B. and K. P. D’Addario (2001). “The impacts of emoticons on message interpretation in computer-mediated communications.” *Social Science Computer Review* 19.3 (Fall), 324-347.

Yakonich, D. A., Cannon, H. M., Ternan, A. (1997). The energy factor: Building motivation in the simulation gaming environment. *Developments in Business Simulation and Experiential Learning*, 24, 329-335. Reprinted in the *Bernie Keys Library*, 11th edition [Available from http://ABSEL.org]

Table 5
Importance Given by the Students to Each Activity during the Simulation

Activity	Simulated company test	Company name award	Finance management award	Union negotiation	Sales forecast award	Auction with oral bids	Share-holder general
Courses of 2009	day 2	day3	day 5	day 9	day 10	day 11	day 12
Courses of 2010	day 2	day3	day 6	day 10	day 9	day 11	day 12
Survey Score	3.80	3.00	4.2	4.00	4.20	3.90	4.20
Morning 2009 (end)	3.88	3.88	4.04	3.95	4.20	4.35	3.20
Evening 2009 (end)	3.82	4.00	3.73	3.67	3.52	3.53	3.89
Morning 2010 (end)	4.00	4.13	4.15	3.31	3.31	4.18	4.07
Evening 2010 (end)	4.13	3.65	4.04	3.71	3.48	3.59	3.95
Morning 2009 (change)	0.32	0.00	0.65	0.50	0.28	0.70	0.05
Evening 2009 (change)	0.42	0.76	0.63	0.24	0.12	0.19	0.21
Morning 2010 (change)	0.21	1.19	0.77	0.69	-0.08	0.64	0.53
Evening 2010 (change)	0.50	0.26	0.56	0.50	0.19	0.47	0.30

Key:

(red)	Importance data from end-of-course questionnaire
(peach)	End-of class motivation data from emoticon scale
(blue)	Within class motivational-change data