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GAME ADMINISTRATION: A LIFE CYCLE ANALYSIS

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ABSTRACT

What does the life cycle of the simulation user look like? Why is the method adopted, why is its usage continued, why do some teachers drop this method? The intent of the research presented in this paper is to answer these questions.

INTRODUCTION

From the time that the first business simulation game was designed and implemented in a classroom situation, the primary focus of most research efforts has been on justifying the simulation game as a meaningful learning tool. Simulation usage is not new to our contemporary educational setting. The business simulation has been around for 25 years or more now [7] . However, it still remains unique with respect to traditional teaching/learning methods. As such, the current research emphasis plods on and on in an attempt to justify simulation gaming as a meaningful adjunct to the educational system. To date, reams of material have poured into various conferences and journals highlighting the educational experience via simulation usage. In light of all this research, it is surprising that no conclusive results have been obtained indicating that simulation gaming is a teaching tool superior to any of the normally used, more traditional methods, or even an adequate teaching tool.

One simply has to scan the material, examine the research that's been performed, read the analytical sections of most papers, and view the results obtained to realize that most authors cannot reach valid conclusions as to the relative merits of simulation gaming. Table 1 summarizes the methodology and results of a number of more scientific studies devoted to a comparison of simulation gaming and other teaching methods. As can be seen, the results are highly inconclusive. One wonders if, in fact, we haven't been beating our heads against a brick wall for the last 10-20 years trying to measure something that is non- measurable. Even in light of these inconclusive research findings, however, the business simulation has become a very important element within the curriculum of many business schools. A survey conducted eleven years ago, in fact, among university members of the American Association of Collegiate Schools of Business reported that 94 percent of these universities utilized business simulation games somewhere in their program [1]. That was eleven years ago; certainly simulation usage has increased since that time.

A NEW RESEARCH FOCUS

It is obvious from speaking with many faculty members who have utilized simulation gaming as a teaching tool, that simulation users are thoroughly convinced as to its value in generating participant enthusiasm and creating an atmosphere of meaningful experience. Their satisfaction alone leads one to believe that perhaps we may be wasting our time trying to measure that which requires no measurement. Those of us who use simulation gaming regularly are thoroughly convinced that it is an excellent method for accomplishing our educational objectives. Perhaps it may be intuitive, but we who utilize simulation gaming do so because we feel it is a superior teaching tool. Past research aimed at determining whether or not the simulation technique is a superior, or even useful

TABLE 1
SELECTED STUDIES OF THE EDUCATIONAL
MERITS OF SIMULATION GAMING

Author*	Comparison Mode	Testing Method	Findings
McKenney [5]	Cases vs. game and cases	Case analysis	Game and case better
		Multiple-choice exam	No difference
Strother [10]	Simple game vs. lecture	Essay test	Game class better
	Complex game vs. lecture	Essay test	Game class better
Raia [8]	Cases vs. cases and simple game	Cases, problems, and exam	Game class better
	Cases vs. cases and complex game	Cases, problems, and exam	Game class better
Moore [6]	Game vs. cases	Multiple-choice exam	Case class better
		Essay exam	No difference
		Case analysis	No difference
Evered & Pearce [2]	Game vs. cases	Ability to formulate strategies	Case class better
Wolfe [11]	Game vs. cases	Essay test	Game class better

* Complete citations are given in references.

teaching tool has concentrated on the student (simulation participant), rather than the game administrator or the primary simulation user. To this end, perhaps it is time to reorient our research efforts and begin to examine the motives and attitudes underlying simulation usage by faculty members and businessmen alike to further their educational objectives. We no longer care to debate the point that simulation gaming is a superior tool to the lecture or the case study methods, it appears to be a moot point. Let us examine our own motives, our own feelings, our own rationale behind simulation usage and try to portray these as convincing arguments within the academic and business communities.

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The purpose of this article is not, as it may appear, to make an attack on all previous research regarding simulation and the learning experiences derived therefrom. The fact that we feel much of the research represents wasted effort cannot be ignored. However, the major purpose of this article is to suggest a possible new avenue of research in order to expand upon the results of past research. In a paper entitled, Experiential Learning: Conceptualization and Definition," Jay Duane Hoover indicated that experiential learning is a highly qualitative concept and cannot be properly regarded within a rigidly defined theory of learning [4] . In his paper, Dr. Hoover recognizes the contributions made by Carl Rogers, who conceptualized experiential learning by defining it as a quality of personal involvement with the whole person in both his feeling and cognitive aspects being involved as part of the learning event [9] . To the extent that the game administrators' participation has long been recognized as a stimulant to the simulated experience, we feel that Rogers' definition may be expanded to include the game administrator within the "whole person" involvement aspect of the simulation environment.

The success or failure of a simulation competition within an academic framework can, in many instances, be traced to the abilities and enthusiasm of the game administrator. A highly enthusiastic, participative administrator typically enhances the simulation and stimulates the participants. On the other hand, those administrators who sit back and allow the computer to do their work usually find the participants adopting attitudes which are similar to their own [3]

THE SIMULATION ADMINISTRATOR

As indicated, we feel that there has been adequate research efforts directed at the simulation participant. It is time to focus on the simulation administrator. We would like to answer such questions as:
Where did the simulation user learn of this technique? Why did he start to use this technique? What does he expect from simulation gaming? What satisfactions and dissatisfactions does the simulation user experience? Why have some teachers become simulation game dropouts? Why have the rest of us continued to use simulation gaming?

With these questions in mind, a mail questionnaire was designed to be administered to university teachers. A stratified sample of approximately 300 university teachers was selected. About half of the sample was comprised of known simulation users (membership in the Association for Business Simulation and Experiential Learning was taken as an indication of simulation usage), while it was unknown as to whether the remainder of the sample were or were not simulation users. The reason for selecting at least half of the sample from known simulation users was to ensure the fact that adequate returns were received from simulation users who were the main interest in this study.

In total, 212 usable returns were received. This represents 70.7 percent of our mailing. This would have to be considered a good return given the length of the mail questionnaire (four pages) and the time it took to answer some of the questions (many were open- ended). This may be taken to indicate a strong interest in simulation gaming. There is no reason to suspect that those not returning the questionnaire were, in any significant regard, different from those returning. Furthermore, our interests were more in the realm of getting general indications from our sample rather than statistically significant results.
Due to space limitations, the questionnaire used will not be shown here. However, anyone interested in the questionnaire can acquire a copy from either of the authors. The following

analysis will summarize the responses to each of the 17 questions posed to the respondents. Appropriate comments will be made about the responses to each of the questions, but the reader is encouraged to draw his/her own conclusions on the data presented.

Survey Findings

The following is a question by question analysis of the returns from the mail survey.

Question 1: In your current teaching activities, what percentage of your time is devoted to:

lectures	48%
cases	20%
simulation	23%
other	9%

The average from all of the responses is shown above. As would be expected, more time is devoted to the lecture method than any other. This is the oldest and most traditional method of instruction. It is interesting to note, however, that nearly one-fourth of the teaching time of all respondents is devoted to simulation gaming. The amount may be inflated due to the manner of sample selection but this still represents a significant amount of time. It would be interesting to have comparative figures from five and ten years ago. A logical assumption would be that the time devoted to simulation gaming would be much less at these earlier periods. Certainly, we should seek comparable information in the future to monitor trends.

Question 2: Have you ever used a simulation exercise of any variety in your classroom teaching?

yes	194	(91.5%)
no	18	(8.5%)

Our initial concern in the sample selection process was to make sure that simulation users were adequately represented. As can be seen, this was achieved. As expected, it would seem that the ABSEL members surveyed were simulation users. In addition, it would seem that a heavy percentage of the 150 members of the sample whose simulation usage habits were unknown were also simulation users, either currently or at one time.

Question 3: Have you ever considered the use of a simulation exercise?

yes	16
no	2

This question was to be answered only by those respondents (18) who answered 'no' to Question 2. Of the 18 respondents who had never used a simulation exercise, only 2 claimed that they have never considered the use of a simulation exercise. This, of course, would indicate that knowledge of, and general acceptance of, simulation gaming is very high.

Question 4: Is there a primary reason why you have not used or not considered the use of a simulation exercise?

This question again was to be answered only by the 18 respondents who have never used a simulation exercise. The responses to this question fell into the following 4 categories:

a. Not familiar with any simulation exercises that fit courses taught.
b. Don't have time to get simulation exercises into the course.
c. Very new to teaching.
d. Simulation games (generally) are not appropriate for the courses taught.

It is encouraging to note that no respondents indicated that their reason for not using simulation gaming was because simulations were inappropriate teaching tools. The responses to Question 4 did not indicate anything unfavorable towards simulation gaming.

Question 5: What might encourage your usage of a simulation exercise?

Again, this question was to be answered only by respondents who had never used a simulation exercise. The 18 responses to this question could be grouped into the following 3 categories:

a. Finding a game that is appropriate for the courses I teach.
b. Don't know.
c. Nothing.

Only two respondents answered that nothing at all could encourage their use of a simulation exercise. Why nothing could encourage their use of simulation gaming was not indicated. These are the only responses that could be taken to be strongly negative to simulation usage.

Question 6: Would you classify yourself as:
a. A regular simulation user   132   (68.0%)
b. An occasional user   46   (23.7%)
c. A previous user who has
   discontinued usage   16   (8.3%)

This question brought us back to the 194 respondents who had previously used a simulation exercise. As can be seen, almost 70 percent of the respondents to this question consider themselves regular users while only 16 previous users (8.3%) have stopped usage. Again, this is a very favorable indication. Very few people adopting simulation usage abandon it. There must be something about simulation games that teachers like.

Question 7: Is there a primary reason why you have discontinued simulation usage?

This question was directed at the 16 respondents who indicated in answer to the previous question that they have discontinued simulation usage. The responses to this question fell into the following 6 categories:

a. My classes got to be too large.
b. Most simulations are too advanced for the level of courses that I teach.
c. Lack of adequate support facilities.
d. Grew tired of simulation usage.
e. The courses that I teach have changed to some in which there are no suitable games.
f. Changed schools and courses.

Only one of these responses, Crew tired of simulation usage,' would be a statement that is negative towards simulation usage. Only two respondents to the survey indicated this as their reason for discontinuing simulation usage. The other respondents indicated reasons that were neither positive nor negative towards simulation games, but were factors apart from any attitudes about simulation games.

Question 8: How did you first become aware of simulation exercises?

This question was directed at the 178 current simulation users. The responses in their order of importance were:

a. Used as a student - 68 mentions
b. Colleagues - 58 mentions
c. Conferences - 18 mentions
d. Book salesmen - 14 mentions
e. Journal articles - 8 mentions
f. Advertising - 4 mentions
g. Other - 14 mentions

The other category included such things as pioneered my own games, invited to join a simulation competition, and assisted a simulation user as a graduate student.

Most (over 70%) current simulation users became aware of simulation gaming through use as a student or through colleagues. As simulation gaming is increasing, more students are being exposed to simulation gaming and more of our colleagues are using simulation exercises. As such, this would seem to indicate the potential for a continued growth in simulation gaming.

On the other hand, the various associations (ABSEL, NASAGA and NGC) through their conferences, representatives of book companies publishing simulation games, and advertising messages about simulation games might not be doing an adequate job of exposing teachers to simulation gaming as the above results would show.

Question 9: Approximately how long have you been using simulation exercises?

The number of respondents by five year intervals were:
Even though simulation gaming is relatively new, the average user has utilized this method for almost eight years. Several

0- 5 years	67	(37.7%)	Mean	= 7.65
6-10 years	96	(54.1%)	Median	= 7.00
11-15 years	10	(5.7%)	Mode	= 7.00
16 and over	4	(2.5%)		

respondents surveyed here have used simulations for almost 20 years:

Question 10: What was the primary reason that you began to use a simulation exercise?

This question, of course, brought a wide variety of responses. Ten response categories with each receiving at least five mentions from respondents, listed in their order of importance, were:

a. To give students a realistic experience.
b. The student enthusiasm and/or interest achieved.
c. Saw this as a more effective way of teaching.
d. Moved into a course where this was the traditional method of teaching it.
e. Thought that I would like this as a teaching method.
f. To get away from cases and/or lectures.
g. Saw this as an innovative teaching method.
h. Wanted to improve my teaching effectiveness.
i. To add variety to courses.
j. Saw great value in simulation as a teaching method.

Most of these responses were what could be called very positive responses, i.e., positive towards simulation gaming as a teaching method. Only the responses of "Moved into a course where this was the traditional method of teaching and "To get away from cases and/or lectures" were reasons that were not positive towards simulation gaming as a teaching method. These were not

negative responses, but were reasons for adopting simulation games other than because of any merit to the use of simulations.

Question 11: Have you developed definite objectives that you hope to accomplish through the usage of simulation exercises?
yes   160   (93.0%)
no   12   (7.0%)

As can be seen, the great majority of simulation users feel that they know what they want to accomplish from simulation usage.

Question 12: What are your objectives?

This question was directed at the 160 respondents who answered 'yes' to Question 11. There were, as would be expected, many responses to this question. The many responses were grouped into the following 8 categories listed in order of importance.

a.   To integrate various business concepts.
b.   To prepare students for the real world.
c.   Motivate students to learn by getting them involved.
d.   Teach specific problem-solving techniques.
e.   Get students into group decision-making situations.
f.   To give students skill in problem solving.
g.   To give students a chance to apply textbook principles.
h.   Make students think.

Although 160 respondents stated that they had specific objectives which they hoped to accomplish through simulation usage, many respondents had difficulty specifically stating what these objectives were. In many cases, liberal interpretations of general statements had to be made in order to categorize the responses. However, many respondents were able to specifically enumerate their objectives and for many others, we feel, the asking of this question caused the respondent to give careful thought to this issue, maybe for the first time.

Question 13: How successful do you feel that you have been in achieving your objectives?

The respondents were asked to circle a value from 1 (very unsuccessful) to 10 (very successful). The responses to this

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10 - 34 responses    (25.0%)
 9 - 28 responses    (20.6%)
 8 - 50 responses    (36.8%)
 7 - 12 responses    ( 8.8%)
 6 -  6 responses    ( 4.4%)        Mean   = 8.35
 5 -  4 responses    ( 2.9%)
 4 -  0 responses    ( 0.0%)        Median = 8.00
 3 -  0 responses    ( 0.0%)        Mode   = 8.00
 2 -  2 responses    ( 1.5%)
 1 -  0 responses    ( 0.0%)
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question were;
As shown, most simulation users feel that they are accomplishing their objectives. This is encouraging and would provide one indication as to why most simulation users continue to be simulation users.

Question 14: Have you experienced any aspects of simulation usage that you find dissatisfying?
The major responses to this question are probably familiar to most simulation users. The major categories of responses. in their order of importance were:

a.   Takes too much of my time.
b.   Computer center problems.
c.   It is difficult to evaluate performance and assign a grade.
d.   There is much work in game administration.
e.   Students don't get involved enough.
f.   Most simulation exercises are not realistic enough.
g.   Problems with colleagues.
h.   Students try to beat the game.

Several of these dissatisfying aspects of simulation usage (such as 'Computer center problems") may be things that the user is just going to have to live with. Others (such as Takes too much of my time") may simply be inherent to doing a good job with the simulation game. However, other problems (such as 'It is difficult to evaluate performance and assign a grade) may be issues that further research and discussions at conferences can clear up or shed some light on.

Question 15; What do you find to be the most rewarding aspects of simulation usage?

There were two parts to this question. The first part asked the respondents what were the most rewarding aspects of simulation usage for themselves while the second part asked what were the most rewarding aspects of simulation usage for their students. The responses to each part of this question listed in order of importance were:

A.   Rewarding for yourself

    a.   The learning seen in the students.
    b.   Getting through to the students.
    C.   Increases my interest in the courses E teach.
    d.   A feeling of accomplishment.
    e.   The interest and enthusiasm seen in the students.
    f.   Gets me out of lectures.

B.   Rewarding for students

    a.   They enjoy their course for a change.
    b.   Better preparation for the real world.
    c.   A break from the class routine to something more exciting.
    d.   The challenge.
    e.   The students get to see the results of their decisions.
    f.   The students get to know and work with other students.
    g.   The opportunity for a 'C' students to beat an 'A' student.

The rewarding aspects of simulation usage both for the teacher and the students revolved around statements such as interest, enthusiasm, learning, challenge and a sense of accomplishment. These are all very positive statements. Furthermore, these are statements that it would be hard to imagine being associated with lecturing or even case analysis. Simulation gaining would seem to have a more dynamic aspect to it than the more traditional methods of teaching.

Question 16: On a scale of 1-10 (with 10 being high), rate each of the following teaching methods.

The average responses to this question will be shown by simulation user versus non-user.

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	Users	Non-Users
Lectures	5.56	6.89
Cases	6.38	6.44
Simulation	8.44	5.89

As would be expected, simulation users rated this technique very high while non-users rated it much lower. However, non-users did not rate simulations that far below lectures and cases, the methods that they are using. Therefore, even non-users do not express a particularly low regard for simulation gaming.

Question 17: This question asked for certain demographic information which will be summarized very briefly here.

	Users	Non-Users
Average age	39.9	41.3
Average years teaching experience	10.2	10.6
Rank:		
Full Professor	42 (23.67.)	8 (28.6%)
Associate Professor	90 (50.6%)	8 (28.6%)
Assistant Professor	34 (19.1%)	10 (35.7%)
Instructor	12 (6.7%)	2 (7.1%)
Highest degree held:		
Ph.D.	144 (83.7%)	12 (42.9%)
M.B.A.	26 (16.3%)	16 (57.1%)

In general, the simulation game user tended to be slightly younger than the non-user, had slightly less teaching experience, tended more towards the Associate Professor rank and tended to have a higher degree.

DISCUSSION

What does the life cycle of the simulation user look like? The specific cause for adopting this method of teaching is overwhelmingly use of the method as a student and suggestions from colleagues. The reasons for adopting this method revolved around the enthusiasm of students, the realism of the method, the effectiveness of it as a teaching tool and the innovativeness of the technique.

What are the characteristics of the maturity stage? The average user tends to be an Associate Professor with a Ph.D., approximately 40 years old with 10 years of teaching experience, who has been using simulations for about eight years. The user has continued with this approach to teaching as it gives him/her a feeling of accomplishment, creates interest and enthusiasm in the student, gives the students a better preparation for the 'real' world, and provides an appropriate learning environment. In addition, the user has continued in spite of the fact that this technique is time consuming, there are often problems at the computer center, and it is difficult to evaluate performance. The objectives that the user has for this technique are to integrate various business concepts, motivate students, teach specific problem-solving techniques, and to get students into group decision- making situations.
What about the decline stage? Usage of this technique generally stops because classes get too big, there is a lack of support facilities, the teacher is no longer teaching courses where appropriate simulations are available, or the teacher

simply grew tired of the method.

CONCLUSIONS

The intent of this paper was to provide a general overview of the simulation user with particular reference to why he/she is a simulation user. This has been accomplished in a general fashion. What is needed now is more specific and detailed information. Also, it would be very nice to have information about simulation users over time to get indications of changing patterns or trends. This remains for future research.

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