SOLVING THE PROBLEM OF PROBLEM-SOLVING: THE CASE OF LIVE CASES VS. COMPUTER SIMULATION

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ABSTRACT

The need for marketing students to enhance their problem-solving skills to meet the challenges they will encounter in their careers is addressed. As a means of improving the ability of students to develop their talents in this area, the steps of the creative problem-solving (CPS) process are identified as measures of learning effectiveness for future marketers. Using the CPS process, the live case method is analyzed against the computer simulation method to theoretically compare which experiential learning technique is better equipped to improve student capacity to creatively solve problems. It is proposed that computer simulations can better develop student talents in this respect due to its more qualified ability to provide unambiguous outcomes that demonstrate if problems were solved.

INTRODUCTION

A large number marketing students will ultimately use their degrees to begin careers as marketing practitioners, either in the private or non-profit sectors. Accordingly, in addition to the supplying the most relevant knowledge on the profession through college curriculums, marketing instructors should integrate skills that address the needs of marketing employers.

This study examines one skill that seems to stand out as a requisite for a successful marketing career and one in which marketing majors appear to be deficient when they enter the workplace: problem-solving. The marketing literature has identified this shortcoming (Kennedy, Lawton and Walker 2001; Titus 2000; Scott and Frontczak 1996; Arora and Stoner 1992; Deckinger, Brink, Katzenstein and Primavera 1990) and was adeptly summarized by Chapman and Sorge (1999):

> "Not only do students need to know the theories and concepts, but they need to know how to apply the theories, concepts, and skills to business problems. Students simply do not have enough exposure to making business decisions in uncertain and ambiguous environments." (p. 225)

It is therefore apparent that the pursuit of problem-solving should be one of the key learning objectives pursued by marketing instructors.

CREATIVE PROBLEM-SOLVING

For marketers, it has been argued that the ability to solve problems is not enough in the marketplace because one must also be creative in order to succeed (Levitt 1986; Scott and Frontczak 1996) and that "a lack of creativity has been observed in the classroom and workplace alike" (Titus 2000, p. 225). Therefore, Philip Titus (2000) recommended that the creative problem-solving (CPS) process be emphasized in marketing classes, which involves six steps: (a) problem identification; (b) problem delineation; (c) information gathering; (d) idea finding, (e) idea evaluation and refinement; and (f) idea implementation. The following description explores briefly each step in the CPS process.

Problem Identification

Before you can solve a problem, one must be adroit at identifying if one exists. "The ability to identify unmet consumer needs is a hallmark characteristic of marketing...marketing requires the constant monitoring of the environment for changing trends that provide...opportunities" (Titus 2000, p. 227).

Problem Delineation

An often overlooked aspect of problem-solving is the understanding of the nature of the problem (Cougar 1995). The textbook example of the consequences of failing in this area occurred when railroad companies believed the problem to be solved was how to compete in the railroad industry. Their misdiagnosis became evident when *all* railroads began to lose market share to the burgeoning airline industry, indicating that the actual problem was how to compete in the *transportation* industry.

Information Gathering

The collecting of information is the final step in the problem finding stage and is highly relevant to the marketing process itself. As part of the total understanding of a problem, most vital in this step is

the need to delineate factors that are causing the problems (Fogler and LeBlanc 1995). According to Titus (2000), "success at this stage requires a working knowledge of what information to gather, how to gather it, and from what sources" (p. 228).

Idea Generation

This step is often the most recognizable part of marketing and is reflected in the development of the marketing mix. Here, creative solutions must be developed that address the consumer problems identified in the previous steps.

Idea Evaluation and Refinement

Before solution implementation can begin, ideas must be examined and nurtured to address the many circumstances impacting its successful development. "The purpose of this evaluative process is not to kill off ideas but rather to assess their strengths and weaknesses as viable and creative solutions" (Titus 2000, p. 228).

Idea Implementation

The final step in the CPS process is the most critical because solutions to problems can only be defined as such after verification that they actually worked. Marketers do not know if they are indeed problem-solvers until after they take the risk of implementing their ideas and can evaluate the results.

This requirement further complicates the issue because if implementation is to occur, the designers "must gain support and acceptance for their strategic plans. The importance of gaining the support and acceptance of proposed solutions is at the heart of...idea implementation" (Titus 2000, p. 229).

ADDRESSING THE CPS PROCESS IN STUDENT LEARNING ENVIRONMENTS

In his analysis of classroom applications, Titus (2000) felt that traditional marketing instruction was lacking in five of the six steps of the CPS process: (a) problem identification; (b) problem delineation; (c) idea generation; (d) idea evaluation and refinement; and (e) idea implementation. The lone area where traditional instruction seems to meet the needs of the CPS process is in information gathering. "Marketing instructors have exposed students to a wealth of concepts and issues concerning marketing theory and practice" (Titus 2000, p. 231).

Since the majority of classes are still taught using the traditional (i.e., passive lecture) method (Daughtrey 2003) and this pedagogy only seems to satisfy one of the six steps in the CPS process, it is easy to understand why research indicates that marketing students are inept at performing one of the most significant skills in their chosen profession—how to creatively solve problems.

As summarized by Chapman and Sorge (1999), "to deliver future employees with strong problem-solving and decision-making skills to the workplace, we must adopt an educational process that improves and cultivates these abilities" (p. 226). Therefore, the intent of this study is to venture beyond analyzing the CPA process through traditional teaching methods and enter the realm of experiential learning. Specifically, a theoretical comparison will be made between two experiential learning techniques—live cases and computer simulation—as a foundation in determining whether one is more effective than the other in enhancing the ability of learners to problem-solve creatively.

EXPERIENTIAL LEARNING

Within the realm of teaching in higher education, there is a growing trend from passive-teaching to active-leaning pedagogies in the classroom (Bobbit, Inks, Kemp and Mayo 2000; Daughtrey and Frontczak 2002; Kennedy, Lawton, and Walker 2001; Wright, Bitner, & Zeithaml 1994). The primary reason behind this switch is that research indicates that when students become active participants in knowledge creation, they learn more (Cross 1987; Johnson and Johnson 1993).

Experiential learning is a form of active learning and although many definitions for the concept exist, Frontczak (1998) noted that "experience plus reflections on that experience" is a common theme (p. 26). Two common experiential learning techniques are live cases and computer simulation. Both are examples of loosely structured experiential activities (Shakarian 1995) in that, in comparison to other active learning techniques, they (a) take longer to complete, (b) are more complex, and (c) are most ambiguous (Hamer 2000). These traits address the expectations of the employers, who desire new hires who can solve problems that are complex and ambiguous (Chapman and Sorge 1999; November 1993; Scott and Frontczak 1996). Accordingly, an examination of live cases and computer simulation represents a viable comparison.

The Argument for Live Cases

How do teachers determine which discipline-specific environments will provide the proper learning environment for students? To answer this question, teachers must ask themselves *who*, not *what*, has the answers. Books and handouts available inside the university cannot keep pace with constantly changing environments in the private sector, and therefore, most collateral material is woefully behind the realities of practice. Teachers must discover and explore how businesses create and transmit knowledge on a day-to-day basis. According to Checkoway (1996), "It is unrealistic to expect...instructors to facilitate learning when they have not had these experiences themselves" (p. 605). Consequently, it makes sense for practitioners to teach both students and teachers in the workplace classroom. In this experiential setting, students become committed to learning when they apply the ideas they study in "real" circumstances, when they link theory with practice and when outreach complements teaching (Gamson 1995; Hirsch 1996).

One means of creating this experiential construct is through live cases. In this study, live cases can be defined as a form of experiential education in which students engage in activities that address the needs of a client-organization. The service-learning pedagogy is similar to this definition, except that it is most commonly understood to mean student involvement with non-profit organizations. Frequently cited benefits for students who are involved in live cases/service-learning include the following (Checkoway 1996; Conrad and Hedin 1991; Erlich 1995; Jacoby 1996; Kendall 1990):

- Higher grades and higher student satisfaction
- Substantive knowledge and practical skills
- Habit of critical reflection developed
- Deeper comprehension of course content
- Theory integrated with practice
- Enhanced cognitive and personal development
- Heightened understanding of human difference and commonality
- Sharper abilities to work collaboratively

The Argument against Live Cases

Although it is evident that taking students out of the classroom and allowing them to learn in the workplace has tremendous benefits, this technique may still be insufficient in the development of problem-solving skills. It has been identified that the use of "live cases" provides students with "the challenge and satisfaction of grappling with and solving real business problems" (Kennedy, Lawton and Walker 2001, p. 147). But in the majority of live case scenarios, how do students know if they ever solved the problem? For instance, many live cases in marketing center around the development of some sort of plan for the organization (e.g., marketing plans, promotional plans, etc.). However, because of the time constraints inherent with either a semester or quarter teaching calendar, how many students actually have the opportunity to witness the implementation and subsequent evaluation of their projects? Only then would they learn truly whether they solved the problem they were asked to fix.

The Argument for Simulation

In select studies that included learning objectives related to problem-solving and aspects of the workplace, simulation has fared well. In two studies that measured performance in a simulation against performance on mathematical problems, a measure that is problem-solving defined, a relationship existed (Faria and Whiteley 1990; Whiteley and Faria 1989). Studies have also shown that the decision-making styles of successful executives and successful simulation participants to be similar (Babb and Eisgruber 1966; Wolfe 1976) and that business game performance is correlated to later career success (Wolfe and Roberts 1986, 1993). Based on these findings, one could suggest, as Wellington and Faria (1996) did: "that successful simulation performance is related to good...decision-making skills....good business managers are those who make good decisions" (p. 52).

The next logical step is that if managers can make good decisions, they are good at solving the problems that their businesses face every day. Therefore, students who perform well in simulations are effective problem-solvers. This rationale is also supported by Wellington and Faria (1996):

> "...marketing simulation games require skill and abilities, presumable managerial decision-making skills and abilities, that are different from those developed and measured by traditional academic instructional approaches, including the use of cases, term projects, and field projects ...Since good marketing managers are those who make good decisions, simulation games may be measuring what we really want students to acquire in our marketing courses." (p. 59)

Studies indicate that simulations are not only adept at helping students learn about complex problems (Doyle and Brown, 2000), but, despite its more structured environment in the classroom and the computer, it represents one of the most realistic methods by which students learn (Nel, Pitt, Berthon and Prendergast 1996; Wolfe and Roberts 1993).

The Argument against Simulation

A significant portion of the literature reviewing the performance of simulations at achieving course objectives has found this teaching methodology to be, at best, inconclusive, and at times, ineffective. In a review of 68 studies that compared simulation effectiveness with other teaching methods, Randel, Morris, Wetzel and Whitehill (1992) reported that 56% of the tests of simulation were inconclusive, less than one-third (32%) of simulations were more effective, and 5% of the studies demonstrated that traditional instruction was more effective.

Additionally, Kennedy et. al. (2001) took issue with computer simulations in that they "do not require students to identify and obtain relevant information from the marketplace" (p. 147). This inherent artificialness in a learning pedagogy that stresses "real world" application would seem to be a valid reason why experiential instructors opt not to use this technique.

COMPARING LIVE CASES AND SIMULATION IN THE CPS PROCESS

The Verdict

Based on the arguments posed, it is apparent that both the use of live cases and computer simulation can satisfy many of the stages of the CPS process where traditional instruction falls short. To leave the construct of passive-teaching and enter the world of active-learning is to guide learners in a role where they begin to teach themselves and the instructor becomes a facilitator. In so doing, students learn to identify and delineate problems, generate ideas, as well as evaluate and refine those ideas. Live cases and computer simulation address each of these areas based on the expectation that students must first recognize the problems of actual clients in the community, or fictitious ones within the framework of a software package.

It would seem that neither live cases nor computer simulation would be the proper pedagogy to satisfy the information gathering step. Since both of these techniques focus on the application of theoretical concepts, it is understood that students must already have sufficient knowledge before it can be applied. It is in this step that other active learning techniques and traditional classroom instruction would be better suited.

However, computer simulations alone consistently satisfy the step of idea implementation. Only when this step is actualized do students receive unambiguous right or wrong answers, and consequently, learn whether they solved the problem. This reality has a boomerang effect on live case methodology, where all of its preceding steps, save for information gathering, will be left open to questioning as to whether the presumptions made were correct in the first place. If, as noted earlier, student reflection is the common thread among all experiential learning techniques, are we asking students to reflect on information that could be wrong when they think it is right? On the issue of estimating their skill at diagnosing and solving problems, will students leave the experience with false self-impressions?

For instance, in the stage of idea evaluation and refinement in the CPS process, projects are commonly assessed by independent judges, a subjective measure (Finke, Ward, and Smith 1992). Without implementation and seeing results, the opinions of these judges, whether they are teachers or client managers, could be simply wrong. Possibly the scariest notion is that, in most circumstances, no one will ever know. Hypothetically, a student could leave their live case experience with a great deal of confidence commensurate with a job well done, without ever knowing that his or her decisions would have actually had a negative impact on the fortunes of the client organization.

In respect to the extensive literature regarding the inconclusiveness of computer simulations in achieving course objectives, the true problem may not reside in simulation as a pedagogical tool, but in the learning objectives by which we are measuring it. Many studies have measured simulation success against (a) grade point average (Faria 1986; Gosenpud 1987; Gosenpud and Washbush 1991; Hsu 1989; Norris and Niebuhr 1980; Wellington and Faria 1995; Wolfe and Keys, 1990; Wolfe and Chanin 1993), and (b) final examinations (Anderson and Lawton 1992; Washbush and Gosenpud 1993; Wellington and Faria 1991; Whiteley 1993). While these measures of success are common, they do not necessarily address the issue of whether these students can solve problems. Based on traditional methods of instruction and evaluation, students

could conceivably be at the top of their class in examination scores and GPA without having any real sense of how to diagnose and solve problems in their field.

Thus, it seems that simulation, far from being ineffective, actually could provide powerful benefits. Even in its artificial setting, computer simulations could provide the most realistic advantages for students who need to learn how to effectively and creatively solve problems. According to Fripp (1993):

- Simulations can offer a risk-free environment at both the individual and organizational level.
- Participants can deliberately try out new behaviors that they would not readily attempt at work, or take business decisions which would not be possible in reality for fear of failure.
- Simulations can provide quick and unmistakable feedback and allow people to see the consequences of their decisions in (multiple) dimensions.

In summation, it appears that this study can agree with Vaidyanathan and Rochford (1998) that enough evidence exists to conclude that simulations can be valuable in encouraging the development of analytical, thinking, and problem-solving skills.

Table 1 provides a summary of each experiential technique under consideration and whether it would be effective in satisfying the steps of the CPS Process.

TABLE 1.

CPS Process	Live Cases	Computer Simulation
Problem Identification	Yes, but is it correct?	Yes
Problem Delineation	Yes, but is it correct?	Yes
Information Gathering	**NO**	**NO**
Idea Generation	Yes	Yes
Idea Evaluation and Refinement	Yes, but is it correct?	Yes
Idea Implementation	**NO**	Yes

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