Insights into Experiential Pedagogy, Volume 6, 1979

GAMING AND ATTITUDINAL CHANGE

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ABSTRACT

This pedagogical experiment took place during the 1978 Spring Semester at the University of Louisville School of Business. During the semester one Business Policy section discussed ethical cases in the traditional case-study fashion. The other section inputted a solution to the ethical cases as an integral part of a business simulation, along with the usual business decisions.

An analysis of the pretest-posttest scores between the experimental and control group on an attitude questionnaire and on a debriefing questionnaire indicated there was a significantly greater (positive) change in attitudes of the experimental group (i.e., the group using simulation). It is hypothesized the reason for the greater change was due to the dynamic nature of the reinforcement process provided by the simulation game.

BELIEFS, VALUES, AND ATTITUDES

Attitudes, beliefs, opinions, and values are very close in meaning. Some distinctions need to be made. An attitude is a general disposition which stands behind our evaluations and feelings, while beliefs are more specific propositions with which we can agree or disagree. An opinion is a belief which is overtly stated. The worth of a particular attitude or a group of attitudes is a value. One's affection for Louisville is an attitude. The view that Louisville is a good place to live is a belief. The overt expression of that belief is an opinion. The extent or degree of the Louisville is a good place to live attitude is a value.

Attitude Change

Attitudes start to develop in early childhood as a result of experience. formal learning, and interaction with others. Attitudes continue to develop, change, and assume new priorities throughout life. Two types of attitude change have been described by Krech, Crutchfield, and Ballachey [141. A congruent change occurs if the change is in the direction of the existing attitude. An incongruent change occurs if the change is in the opposite direction of the existing attitude. These authors feel that it is easier to produce congruent change than incongruent change. In addition, they feel that attitude modification Is a function of (1) the characteristics of the attitude system (strength, centrality, stability); (2) the individual's personal traits; and (3) group affiliation and relationship.

A different view of attitude change is held by Bloom [1]. He holds that modification is related to the manner in which the attitude was acquired and its relation to one's self. Thus, attitudes toward fairly unrelated objects or subjects are easier to change than are those which may take the form of prejudices or are based on early home and/or religious training. Attitudes based on self-perceptions are also relatively stable and difficult to change.

Change in the Cognitive Component

Since an attitude consists of many components, a change in the cognitive component may change the attitude. This is accomplished through communication of new and different information concerning the object or subject. A study by Hoviand, Lumsdaine, and Sheffield suggests that presentation of only one side of the argument is most effective in strengthening an individual's attitude which is congruent, while a two-sided communication effort is more effective in reversing an individuals position [9]. Lumsdaine and Janis found that the two-sided message produced much greater resistance to 'counterpropaganda" [17].

Change in the Affective Component

Many everyday attempts to change attitudes (e.g., modern advertising messages) are based less on changing beliefs and values but more on relating a pleasant or unpleasant condition to the object. Sellers of goods are counting on the expectancy of pleasure from a given object or situation that will result in modified behavior (i.e., a purchase).

Rosenberg, in a study of attitudes toward a wide range of social problems, found that a change in the affective component of an attitude did change other related components of the attitude [20]. The use of fear in changing attitudes (e.g., social rejection due to bad breath) has been found to be effective in changing attitudes if simple, explicit action to reduce the fear is suggested as part of the message [16].

Change in the Behavior Component

Being involved in various situations that are related to an attitude may change an original attitude. There is evidence that contact with a member of a minority group may alter the individual's attitude toward that group. Janis and King found that more attitude change was effected In a group which was asked to give a talk on a subject than in the group that listened to the talk [10]. This could be useful in an educational setting in asking students to prepare written reports and talks on a subject in which the instructor wanted to influence an attitude shift.

Requiring an individual to become very involved in behavior pertaining to the attitude has been found to be very effective in causing attitude change. Janis and Mann found that smokers who were involved in a role- playing situation concerning cancer reported significantly less smoking in an eighteen month period following the experiment than those in a passive control group [11]. Hammer reports the success of role-playing in changing attitudes of judges and policemen required to play the role of a convict [5]. The strong effect of group influences in changing an individual's attitude has been shown in a study by Kelley and Woodruff [12]. Stating publicly a commitment is an effective method of stabilizing an attitude change [9]. This is probably a factor in the success of weight control groups.

J. D. Halloran has summarized the following conclusions concerning attitude change [4]:

1. It is possible to change attitudes.

2. In order to produce change, a suggestion for change must be received and accepted.

3. Reception and acceptance are more likely to occur where the suggestion meets existing personality needs or drives.

4. The suggestion is more likely to be accepted if (a) it is in harmony with valued group norms and loyalties, (b) the source of the message ts perceived as trustworthy or expert, (c) the message follows certain rules of "rhetoric" regarding order of presentation, organization of content, nature of appeal, etc.

5. A suggestion carried by mass media plus face-to- face reinforcement is more likely to be accepted. than a suggestion carried by either one of these alone, other things being equal.

6. Change in attitude is more likely to occur if the suggestion is accompanied by change in other factors underlying belief and attitude.

To summarize, the weight of the research in this area would indicate the following: There is a hierarchy of concepts in regard to beliefs, values, and attitudes with beliefs resting as the foundation for the other two and fairly well entrenched in the individual's learned predispositions. Values are second in the hierarchy, are less permanent than beliefs, and are the result *of* beliefs and the individual's environment. As the third level on the hierarchy, attitudes are the result of beliefs plus values and are the most flexible of the three concepts. Thus, it is more likely that attitudes can be changed as compared to values and values are more likely to be changed than beliefs. It appears that attitudes can be changed, and to a lesser extent, that values can be re-ordered as a result of an individual's experience. The objective of this research project was to provide the experiences for business students within the educational framework that will maximize the opportunity for experiential activities designed to explore attitudes and value systems. If the educational experience is successful in this regard, the change in attitude must be measured.

It should be noted that the weight of literature would tend to substantiate the findings of Shaw and Wright that Likert-type scales (the method of summated ratings) are the most popular in measuring attitudes [21]. The ease of construction, reliability, and simplicity of scoring has contributed to its popularity. Lemon points out that this type scale makes fewer assumptions than other scaling models [15]. For these reasons, a Likert-type scale was chosen to measure attitudes and attitude changes of students involved in this research experiment.

GAMING AND ATTITUDE CHANGE

While there seems to be conflicting evidence concerning the effect that gaming has on cognitive learning, many educators believe gaming has extensive possibilities in the affective domain. The feeling is that active involvement in the learning process will have greater opportunity to affect attitudinal change. There is empirical evidence for attitude change induced by games [2]. One writer says, "With the present emphasis in curriculum development on teaching of values, values clarification, and values analysis, the effect of simulations in this area is of particular interest [6]. One study conducted with business students indicated the simulation did change beliefs [19]. One researcher, though, is not too convinced: "It is my observation that simulations help people to see themselves better; I'm not sure that this will change values or attitudes. Certainly simulations will cause most participants to examine their values" [7]. If value analysis is an important key in ethical behavior, then gaming does seem to hold promise of (at least) encouraging (or requiring) the student to examine his value system.

It appears gaming is in its infancy in terms of meaningful research, but has reached a sort of maturity' as a discipline. Keys notes the evidence of this in•the fact that "strong critics with valid criticisms are beginning to take the business gaming field to task, and their complaints are causing redirection in the field" [13]. In spite of the variability of adequate research, there seems to be substantial evidence that gaming does add meaning and enrichment to the classroom learning experience.

A business simulation in which problems of business ethics and decisions concerning socially responsible actions are included would appear to be an effective method of impressing on the business student the micro and macro effects of such decisions on the individual business and on society. Whether the technique of simulation is more or less effective than other teaching methods is the major focus of this research effort.

Most, if not all, of the courses involved in business ethics and social responsibility are taught in the traditional lecture/case study method. Experience with the case study method indicates the case method is not as effective as one might think. Students write what they think the instructor wants to read. The lecture method is of questionable value in developing in the student a social and ethical awareness, because the lecturer is attempting to express his value system to the student. These observations lead to the hypothesis of this research thrust:

There is a significant difference between the methodologies of lecture/case study and lecture/simulation gaming in changing student attitudes toward the social responsibility of business.

THE RESEARCH DESIGN

The design selected for this experiment is one of three true experimental designs currently recommended in methodological literature [3]. The design used was the Pretest-Posttest Control Group Design recommended by Campbell and Stanley. This particular design adequate- ly controls for all eight sources of internal invalidity. The design features a random selection of subjects into two groups, one control group which was taught in the more traditional method of lecture combined with cage discussion and an experimental group which was taught using lecture combined with gaming simulation. The attitude questionnaire was administered to both groups on the first and last day of class.

DESIGN OF AN INSTRUMENT

An instrument was designed to measure the extent of socio-ethical attitudes, and was subjected to pretesting before being administered to 359 students majoring in business administration at the graduate and undergraduate levels.

The questions were answered by checking off a five point Likert-type scale ranging from Strongly Agree (scored as one) to Strongly Disagree (scored as five).

The point scores were not shown on the scale, and the first two questions (not shown) were “dummy” as were eleven additional questions randomly distributed through the instrument.

In an attempt to elicit honest responses, the test was untitled and required no names or identifying marks by the respondent. Both the dummy questions and negatively worded statements minimized the tendency of routinely checking off answers without consideration of the statement. This forced" the respondent who was socially responsible to disagree with the statements by wording such as: “The current concern by some people about business having too much power is an overreaction.

Demographical data was gathered in terms of the respondents work history, age, sex, education, political and religious affiliation. After the test was administered, the data were scored, factor analyzed to ascertain major dimensions, and then subjected to discriminant analysis. Reliability estimates (coefficient alpha) of the four a priori dimensions were computed from three similar independent groups. A stable pattern of reliability estimates emerged, ranging from .51 to .89 with a median of .83.

Subjects

One large (n = 83) class of Business School seniors participated in this research. The course selected for the experiment (Management 441) is required for graduation of all business students, so it should fairly represent the universe from which like students would be drawn. There is normally a balanced mix of males/females, employed/non-employed, bright/average students in this required course.

Conduct of the Experiment

The students registered for the course all reported to a large lecture hail on the first two days of class. The attitude questionnaire was administered the second week of school in order to allow for the usual add-drop activity. During the first and second class periods, the instructor completed the random assignment procedure described earlier and advised students to which of the two lab sections they had been assigned. Students were informed that they could change lab sections if they desired to do so; however, no student requested such a change. During the fifteen-week semester, all students were exposed to the same lecture material, as both sections met together once weekly for the lecture (this occurred at 11:00 on Wednesdays). On Mondays at 11:00 one section (the control group) met and made the usual financial decisions for the business simulation. In addition, this group had a case discussion of the business ethics case assigned that week. On Mondays at 12:00 the other section (the experimental group) met and was involved with the simulation game also. How- ever, the teams in this section were required to make a decision regarding the business ethics case and input this decision along with their financial decisions into the computer simulation. The same cases in business ethics were used by both groups. Whereas the teams in the control group discussed the case in a usual case- study fashion, the teams in the experimental group integrated the case as a functioning part of the computer-based simulation game. In the first instance the case use could be described as static, while in the latter, as dynamic. The same instructor handled both lecture and labs. Since the instructor has had equal experience In both case study and gaming methodology, students should not have been able to detect any favoritism on the part of the instructor which would set up a “Hawthorne" effect. Since the instructor normally varies instructional techniques from semester to semester and/or within a semester, students should not have been aware that anything “special’ was occurring. To ascertain if students did, in fact, detect any differences between the two sections, students were asked to agree or disagree with the following statement on the debriefing questionnaire: Outside of minor differences, Section A seemed to be doing about the same thing as Section B.” Ninety-three percent of the students in the class agreed with this statement, while five percent neither agreed nor disagreed, and two percent disagreed with the statement. It is evident that the vast majority of students did not perceive any (major) differences in the two sections.

The two instructional methods continued for twelve weeks. After that period the Posttest-questionnaire was administered. It was not given along with any other graded assignment to reduce the possibility of a student forgetting it was an anonymous, non-graded questionnaire and committing the attitude testing error of ‘faking good in order to impress the instructor. After the Posttest was administered, the data was analyzed.

Results

An analysis of the pretest-posttest scores between the experimental and control group on the attitude questionnaire (See TABLE I) and on a debriefing questionnaire indicated there was a significantly greater (positive) change in attitudes of the experimental group (i.e., the group using simulation). It is hypothesized the reason for the greater change was due to the dynamic nature of the reinforcement process provided by the simulation game.

TABLE I
COMPARISON OF POST-TEST QUESTIONNAIRE SCORES
FOR EXPERIMENTAL AND CONTROL GROUPS

	Mean Score	Standard Deviation	Standard Error of The Mean	t	Probability
EXP.	171.46	14.38	2.25	2.45	.047
CON.	160.81	24.01	3.71		

As a check against the parametric technique described above, a nonparametric technique, the Mann-Whitney U Test, was also used to analyze the results. This test is frequently employed in place of the t-test [18]. It is based on the theory that if scores of two similar groups are ranked together, there will be much intermingling of the rankings of the two groups; however, if one group is significantly different than the other, then most of the superior group’s rankings will be higher than those of the lower group. TABLE II summarizes the results of this test. Again, the pretest equality of the two groups is proven, and the posttest superiority of the experimental group is also shown.

TABLE II
COMPARISON OF GROUP PERFORMANCE USING
MANN-WHITNEY U TEST

PRETEST	N	Mean Rank	U Value	Probability
Experimental	41	43.27	809.0	>.05
Control	42	40.76		
POSTTEST				
Experimental	41	52.67	423.5*	<.05
Control	42	41.58		

*Significant at the .05 Level

IMPLICATIONS FOR BUSINESS EDUCATION

The results of this study point toward some exciting possibilities in business education. Currently, a majority of business schools and colleges are using simulation techniques in one or more courses. This technique has been found to be very effective in integrating the various functions of business--accounting, finance, marketing and management--into a viable learning experience. However, most commercially published simulations do not have the capability of processing some of the more subjective decisions that must be made in the business world. Business simulation games could be made more "real world", and could be used to provide a medium for ethical analysis if simulation writers would begin to program such subjective material into these pedagogical devices. If students could be helped to understand that the same rational decision-making model used for financial and marketing decisions is appropriate and efficient for ethical decisions, it is probable that decisions in the socio-ethical areas of business would improve.

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