DOCUMENT RESUME

ED 090 936 IR 000 545

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TITLE Student and Teacher Affective Perception of Simulation-Gaming as a Pedagogical Technique.
INSTITUTION Ball State Univ., Muncie, Ind.
PUB DATE Apr 74
NOTE 8p.; Paper presented at the American Educational Research Association Annual meeting (Chicago, Illinois, April 15 through 19, 1974)

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS Classroom Participation; *Educational Games; Educational Research; Grade 11; *Participant Satisfaction; Perception; Secondary School Students; Secondary School Teachers; *Simulation; *Student Attitudes; Student Participation; *Teacher Attitudes; Teaching Techniques
IDENTIFIERS Indiana

ABSTRACT

A research project investigated the effect which experience with simulation techniques had upon students' and teachers' affective perceptions of the teaching-learning process in which they were involved. Two hundred ninety-five eleventh grade students from Indiana public schools were divided into experimental and control groups for instruction in a five-week United States history unit. The former were exposed to simulation techniques and the latter to traditional instruction. Posttest results showed that the experimental group experienced growth in positive attitudes toward schooling, as evidenced by marked increases in: classroom participation, interest, conceptualization, enjoyment of class, and cooperative learning with peers. A return to traditional instruction revealed marked decreases in these variables over time. Teachers' perceptions were positive, and it was concluded that simulations were sound pedagogical tools which fostered self-expression and divergent thinking. (PB)

Student and Teacher Affective Perception of Simulation-Gaming As A Pedagogical Technique

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AERA Annual Convention
Chicago, Illinois
April, 1974

Session No.: 13:24

Introduction

During the winter and spring of 1973, 294 students and six teachers participated in a project[1] which attempted to measure the effect of simulation on students' and teachers' affective perceptions of the learning experience. The primary purposes of the study were:

1. To determine, in a field testing environment consisting of twenty-five hours of treatment, what effect the use of simulation had on students' affective perceptions of the learning process in which they were involved.
2. To determine what effect simulation had on participating teachers' affective perceptions of simulations as pedagogical tools for learning.

The investigation utilized a multivariable technique to determine what effect simulation had on students' affective perceptions of the learning experience. In addition, a multivariable technique was utilized to determine the participating teachers' perceptions of simulation as a pedagogical tool.

Discussion of Previous Research

Significant problems were apparent in previous studies pertaining to simulation and its effect on the affective processes. First, many of the studies had confined themselves to laboratory settings rather than field testing situations: therefore, the environments were carefully controlled by the researcher. Second, many researchers had used self-designed simulations or "pet games" to test their hypotheses concerning simulation and processes of learning. Third, researchers had used participants who were above average in academic achievement. Fourth, the experimental treatment period was not sufficiently long enough to justify the results. Fifth, the researchers taught the control and experimental classes rather than using the classroom teachers. Sixth, a significant number of research designs did not incorporate a delayed interval post-test. Those studies that did, allowed too short a time between the post-test and delayed interval post-test.

Research studies conducted by Boocock (1963), Cherryholmes (1963), and Robinson, Anderson, Snyder, and Snyder (1966) found that simulation participants demonstrated more interest in simulation exercises than in traditional learning activities. These researchers concluded that participants did demonstrate a high degree of interest and reacted very positively to simulations.

Hall and Shirts (1961), Anderson (1966), Cherryholmes (1966), and Boocock (1966) concluded that students demonstrated a significantly higher degree of motivation when taught by the simulation method. Edwards (1971) and Harpstrite (1971) reported that the use of simulation increased the motivation level of students who were enrolled in a normal

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[1]This paper is a brief description of the research conducted. Additional data and information is available from the authors.

school environment. Harpstrite also concluded that teachers who used simulation techniques perceived simulation as being an innovative teaching method and an important pedagogical tool.

Methodology

The subjects who participated in the study were eleventh grade students attending five high schools in Indiana. The subject population at the inception of the study consisted of 294 students of which 158 were females and 136 were males. One hundred forty-two students were enrolled in the control classes and 152 were enrolled in the experimental classes. The subjects in the twelve classes (six control classes and six experimental classes) had a mean I.Q. score of 106 and were grouped as general ability students.

To obtain a socially diverse subject sampling, three socially different school populations were selected. Four classes consisted of students whose environment was categorized as rural-small town. These subjects lived primarily on farms in towns with a population of 10,000 or less. Four classes consisted of subjects whose social environment was categorized as medium size city population. The socio-economic background of these subjects was lower class to middle class, and they lived in a city with a population of 85,000. The remaining four classes consisted of subjects who lived in a major metropolitan area within the State of Indiana. These subjects came from a lower class to upper middle class socio-economic background. They lived in a city with a population of over 170,000.[2]

Twelve classes in the five high schools were chosen by the researchers to participate in the study. Six classes were randomly assigned as control classes and six classes were randomly assigned as experimental classes.

The study was structured around a five-week (25 classroom hours) experimental treatment period. During this period of time, the experimental subjects were taught United States Domestic History (1870-1915) through the use of simulation games.[3] The control subjects were taught the identical period of United States Domestic History through the use of a lecture-discussion teaching format. Both the control and experimental classes were assigned the normal textbook readings as a supplement to the teaching methodologies.

Each of the six teachers involved in the study taught a control class and an experimental class. This procedure was utilized by the

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[2]This aspect of the data has not been analyzed at the time of this writing.

[3]Three commercially packed simulations were utilized in the experimental classes. The three simulations were: "The Game of Farming," High School Geography Project: Manufacturing and Agriculture (Toronto: The MacMillan Co., 1969); "Promotion," American History Games (Cambridge: Abt Associates, Inc., 1970); and The Cities Game (Del Mar, California: Communications, Research, Machines Inc., 1970).

researchers as a control for the teacher variable. Prior to the beginning of the experimental treatment period, each teacher received instruction in the use of the three simulations. This in-service training consisted of working through the procedures for playing the games, the goals of each simulation exercise, and the utilization of debriefing sessions at the conclusion of each simulation.

The teachers were instructed to assign the students in the experimental and control groups the normal textbook readings. The lectures in the control classes were derived from readings and the textbook material. This procedure was a normal pattern for the control classes during the five weeks. The experimental classes spent the entire period using the three simulations and debriefing them. During the period of the delayed interval, each teacher was instructed to return to their normal classroom procedures and not to utilize the simulation technique.

For the purpose of testing the stated objective of the study, two null hypotheses were developed. The hypotheses were stated as follows:

1. At the conclusion of a five-week experimental period, there will be no marked difference between experimental and control groups on a measure of affective perception.

2. Following a delayed interval of ten weeks, at the conclusion of the experimental period, there will be no marked difference between experimental and control groups on a measure of affective perception.

The testing procedure consisted of a pre-test, post-test, delayed interval post-test sequence. The Student Affective Perception Instrument consisted of twenty-eight response items. These questions were designed to measure the experimental and control students' affective perceptions of the two teaching methods. The rationale for the creation of this instrument was identical to the rationale utilized in the creation of evaluation instruments by the Ball State University Curriculum Evaluation Team. This evaluation model suggested that "an evaluation must be based on a description of what pupils and teachers and other professional personnel think is happening in schools."[4]

The Teacher Perceptions of Students and Teachers Behaviors Instrument consisted of thirty-six response items. These questions attempted to measure the teacher's perception of the student and teacher behaviors in the experimental and control classes.[5]

Fifteen percent of the total number of students in the experimental and control classes were personally interviewed by the researchers and their verbal responses recorded. The questions utilized were parallel to

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[4]Richard C. Kunkel and James H. McElhinney, "A Rationale for the Evaluation of Curriculum," (Unpublished paper, Ball State University, 1970), 5. All instruments were developed by the authors and field tested prior to their use in the research design.

[5]The rationale for the creation of this instrument was identical to the rationale utilized in the creation of the Student Affective Perception Instrument.

those included in the Student Affective Perception Instrument. The ten questions in this interview instrument allowed the randomly selected students to verbalize their perceptions of the classroom activities which occurred during the treatment period.

Twelve administrative and guidance personnel were asked to observe the control and experimental classroom activities. The observers were not told which groups of students were participating in the experimental or control group activities. Each observer was requested to attend the class sessions in his building at least twice during the treatment period and to record his observations on the In-Classroom Observation Instrument continuum.[6]

For the collected data regarding Hypotheses One and Two, frequencies and percentages were used in order to facilitate the description of modal responses, such that potential differences between the groups being compared might be readily identified and localized. A difference spread between groups of ten percent or more was judged to be a meaningful index of marked difference.[7]

Because of the insignificant number of computations required on the Teacher Perceptions of Student and Teacher Behaviors Instrument, the researchers tabulated these responses manually. The data collected on the In-Classroom Observation Instrument were tabulated and all frequencies of responses reported. The verbal responses collected on the Student Interview Instrument were summarized and the most frequent responses reported.

Affective Pupil-Teacher Results

It was evident from the data collected on the twenty-eight item Student Affective Perception Instrument that Hypothesis One was rejected for sixteen response items. Each of these items revealed a marked difference between the control and experimental groups of ten percent or greater and the data for each of the sixteen items favored the experimental group.

The data supported the following conclusions. Students in United States History classes where a simulation method is used report:

1. Markedly more active classroom participation than do students in United States History classes where the traditional lecture-discussion method is used.
2. No marked increase in their time spent preparing for daily classroom activities.
3. Markedly more interest toward the subject of history than do students in United States History classes where the traditional lecture-

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[6] A minimum of twenty observations were necessary for this instrument.

[7] Each item on the Student Affective Perception Instrument was dealt with individually. Hypotheses One and Two were supported or rejected for each item at a difference spread of ten percent or greater. Such a difference was considered to be a marked difference sufficient to reject the hypothesis.

discussion teaching method is used.

4. No marked increase in their use of library materials.

5. Markedly more positive attitudes toward the teaching method being used than do students in United States History classes where the traditional lecture-discussion teaching method is used.

6. More marked attitudes favoring learning useful knowledge by working together in peer groups than do students in United States History classes where the traditional lecture-discussion method is used.

7. No marked increase in their reading of outside materials related to the topics studied in the class.

8. Markedly increased enjoyment of working with the classroom materials; whereas, students in United States History classes where the traditional lecture-discussion method is used do not.

9. Markedly increased positive opinions that they have acquired a variety of historical information upon which to base their judgments; whereas, students in United States History classes where the traditional lecture-discussion method is used do not.

10. A more marked increase in the exchange of ideas and information with their peers than do the students in United States History classes where the traditional lecture-discussion method is used.

11. A more marked increase in their active participation in their own learning process than do students in United States History classes where the traditional lecture-discussion method is used.

12. Females and males perceive differentially some aspects--such as learning useful knowledge from peers, classroom participation, enjoyment of history, and interest--of the learning experience.

It was apparent from the data collected on the Student Affective Perception Instrument that Hypothesis Two was rejected for twelve response items. Each of these items revealed a marked difference between the control and experimental groups of ten percent or greater and the data for each of the twelve items favored the experimental group.

The data supported the following conclusions. Students in United States History classes where a simulation method is utilized report:

1. Markedly decreased active classroom participation upon return to the traditional teaching method.

2. Markedly decreased interest toward the subject of history upon return to the traditional classroom methods.

3. Markedly more negative attitudes toward traditional teaching methods being used upon return to such methods.

4. A marked decrease in attitudes favoring the traditional teaching methods upon return to the experience of the traditional methods.

5. Markedly decreased enjoyment of working with the classroom materials upon return to the experiences of the traditional methods.

6. Markedly decreasing their exchange of ideas and information with their peers upon return to the experiences of the traditional methods.

7. Markedly decreasing their active participation in their own learning process upon return to the experiences of the traditional methods.

Analysis of the data collected from the six teachers on the Teacher Perceptions of Student and Teacher Behaviors Instrument supported the following conclusions:

1. Teachers of United States History classes who use the simulation teaching method perceive simulation as a valuable pedagogical tool.

2. Teachers perceive more about the varied educational abilities of their students.

3. Teachers perceive the simulation method as one which allows students a better opportunity for self-expression and divergent thinking than does the more traditional method of lecture and discussion.

It was evident from the data that the simulation teaching technique was a useful pedagogical tool for motivating content interest, classroom participation, problem-solving, and self-expression. Simulation activities allowed students to internalize through realistic situations their learning experiences. These realistic situations created environments in which students did practice decision-making and problem-solving skills. The simulation technique assisted in creating a more personalized environment within the classroom; it was evident from the data collected in this study that both sexes benefitted in the affective domain from the utilization of classroom simulations.

Summary and Conclusions

The findings of the present study concerning student motivation and interest supported previous findings of Boocock, Cherryholmes, Robinson, Anderson, Snyder and Snyder, Hall and Shirts, Edwards, and Harpstrite. It was apparent that students exposed to simulation activities were more willing to participate in classroom activities and to increase markedly their responses to teacher asked questions than were traditionally taught students. The students exposed to simulation demonstrated a marked increase in positive attitudes towards the teaching method being used in their classroom. The students exposed to the simulation teaching method reported that learning in peer group situations was important and that useful knowledge could be learned from their peers. The findings also supported the conclusion that students involved in simulation activities increased their interest in classroom activities, increased their enjoyment of classroom activities, and increased their interest in subject matter and content. In addition, the researchers found that participating teachers perceived simulation as being a valuable pedagogical tool and innovative teaching method.

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