DOCUMENT RESUME

ED 092 996

CS 500 693

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TITLE   Computerized Games and Simulations for Speech
              Communication.
PUB DATE   72
NOTE   20p.

EDRS PRICE   MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS   Class Activities; Communication (Thought Transfer);
              *Computer Assisted Instruction; *Games; Higher
              Education; *Literature Reviews; Secondary Education;
              *Simulation; *Speech; Teaching Methods

ABSTRACT
          The purposes of this investigation are to study the
uses to which computers have been put in the field of speech
communication, to discover the kind of computerized games and
simulations developed for use in speech classes, and to suggest some
games and simulations which could be computerized for use in the
communication classroom. Following a review of the literature in the
speech communication area on the use of computers, contents include a
variety of computer games and simulations either written for or
adapted for use in speech communication classes, and several examples
of computer games and simulations which could be developed for
appropriate use in the communication curriculum. Two lists of
references containing a total of 32 items are appended. (RB)

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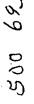Ed. 300

Computerized Games and Simulations for Speech Communication

by

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Computerized Games
and   BEST COPY AVAILABLE
Simulations for Speech Communication

There are few who would disagree that the potential and the
availability of the computer has had a substantial effect on modern
society. The academic world has been equally touched by this modern
wonder. There is scarcely an academic area which has not found some
use for some kind of a computer; the field of speech communication
is no exception.

The purpose of this paper is to: 1) investigate the uses to
which computers have been put in the field of speech communication,
2) discover the kinds of computerized games and simulations developed
for use in speech classes, and 3) suggest some games and simulations
which could be computerized for use in the communication classroom.

Speech Communication and the Computer

A search of the literature in the speech communication area
revealed interest in, and use of the computer in several areas.
Borden (1966) stressed the value of using computers for statistical
manipulations, electronic simulations, and information retrieval to
facilitate communication research. Others (Tucker & Koehler, 1969)
have not only given persuasive arguments for using the computer, but
have also explained the background and skills a speech researcher
would need in order to use computers. Clevenger (1970, p.464) re-
ported that the computer has been used in communication research in
much the same manner that it has been used in other academic areas.
The five areas of application he lists are: 1) numerical calculations,
2) computational linguistics, 3) information storage and retrieval,
4) analog-to-digital applications, and 5) simulations of complex

processes (p.464). Thus, the earlier accounts of the use of the
computer in the field of speech communication reflect an interest
in using computers primarily for general research purposes.

More recently, the literature in the communication journals
suggest that speech communication specialists are becoming increas-
ingly interested in the way computers can be used to facilitate
solving problems unique to their field. Merritt, Wheatley, & Cash
(1972) developed a program for using the computer in connection with
classroom activities. Their instrument is computerized so that the
program can be used in the basic speech class to assist the teacher
and students in analysing their audience (p.49). O'Malley and Kloker
(1972) have devised a program for use with elementary instruction in
speech science. Their computer aided instruction approach is a
computer based speech analysis and synthesis system (p.17). The
program uses an interactive command language which allows the student
to actively use the computer (p.17,21-22). They estimate that their
system will be fully operational in two years (p.23). Jandt (1972)
suggests using the computer for interpersonal communication research
and instruction. He provides a bibliography, in his article, and
suggestions for using the computer for CAI, the analysis of verbal
behavior, and simulations in the area of interpersonal communication.
Borden, Jenkins, and Stone (1972) describe how an information re-
trieval system was recently developed for the Speech Communication
Association. The system also contains a thesaurus for terms used in
the field (p.12).

Summary. A survey of the literature relevant to computers in the field of speech communication revealed several things: 1) most of the literature deals with general research uses of the computer, 2) there is increased interest in finding ways to use the computer for specialized concerns of the field, 3) almost all of the references used in the articles are from areas outside of the field of communication, 4) only one article could be located which dealt directly with computer simulations and games (Tucker, 1969), and 5) only four articles gave any consideration to the use of computer simulations and/or games (Clevenger; Jandt, 1972; Merritt et al; Borden, 1966). There are a number of articles in the speech communication literature about games (Gorden, 1971), game theory (Bostrom, 1968, 1970; Beisecker, 1970; Tubbs, 1971), and simulations (MacLean & Talbott, 1969; Jandt, 1971; Holder and Ehling, 1967).

Communication Computer Simulations and Games

As far as could be determined, there have been no computer games designed specifically for the speech communication classes. There are, however, a number of non-computerized speech games (Gorden, p. 30-31). Also available are a number of non-computerized games designed for other disciplines which could be computerized and would be appropriate for speech classes, and some non-speech computerized games which could be used in speech classes (Beisecker; Bostrom, 1970, 1968; Tubbs, 1971; Gorden; Davidson, 1961).

The state of computer simulations in the communication area is much the same as the state of computer games. There are some non-speech computer simulations which would be appropriate for use in speech classes (Hanneman, Carroll, Rogers, Stanfield, & Lin, 1969; Jandt, 1972; Bushnell, 1963); some computerized simulations designed for other disciplines which might be used in the field of communication (Davison, 1961); some communication simulations which one might be able to computerize (Holder & Ehling, 1967; Jandt, 1971; MacLean & Talbott, 1969); and a couple of communication computer simulations (Merritt et al; Brotman & Minker, 1957).

Before discussing games and simulations which are, or could be, computerized and used in communication classes a brief caution is in order. Cherryholmes (1966) synthesized information relevant to the effectiveness of educational simulations. The findings indicated that games and simulations do seem to increase student interest; however, there is little data to support the hypothesis that they are effective in increasing sudent knowledge or changing attitudes (p.6-7). One should remember that educational games and simulations are instructional strategies and therefore should be treated as such. The teacher should have behavioral objectives and evaluation items prepared before selecting games or simulations. Formative and summative evaluations should be conducted on the games and simulations in much the same manner that one conducts such evaluations on other instructional strategies.

Communication Games

Propaganda is a game for high school and college students which is designed to give them practice in persuasion (Gorden, p.31). Gorden indicates that the game is appropriate for classes in debate (p.31). The game is also appropriate for use in persuasion courses, and in the basic speech class during a unit on persuasion and propaganda. As I remember the game it could be easily computerized so that the sudent could "play against" the computer.

In-quest is similar in nature to Propaganda except that its emphasis is on scientific questions (Gorden, p.31). The game is built on the assumptions that man is prey to non-sequitur, wishful thinking, and emotionalism even though he usually seeks rational discourse (Gorden, p.31). It would seem that this game could also be adapted, with little effort, for use on a computer so the student could "play against" the computer, or play against other students. It would be an appropriate game for use in debate, persuasion, or discussion classes, or in the basic speech class.

Public Opinion Game makes use of role-playing techniques to illustrate how various factors play a part in how we form our opinions (Davison, p.210). It is ideally suited for use in the communication classroom, particularly in a persuasion course. It would also be appropriate for use in the basic speech and discussion classes. Part of the game is a simulation of how we formulate our opinions, (Davison, p.213). The game should adapt nicely to a computer so that the student could "play against" the computer, or play against his classmates.

Jotto, a computerized word game which was programmed at the
CAI Center of Florida State University, offers many possibilities
for the speech teacher. The game is easy to computerize using APL.
The student "plays against" the computer, but he could also play
against his classmates by setting time limits and competing against
the scores of the other students. The vocabulary of the game can be
modified to suit the particular communication course. For example,
in a communication theory, speech science, oral interpretation course
Jotto would provide a more interesting and novel means of helping the
student learn the vocabulary of the course. It could be used as a
novel means of the student reinforcing his knowledge of the termin-
ology.

Claim is a game developed by a Communication graduate student
for the purpose of testing or reinforcing knowledge of terminology
used in the area of non-verbal communication. This game could be
computerized rather easily so that several students could play to-
gether, or so the student could "play against" the computer. The
game is similar to Bingo in form. The primary difference is that the
student must be able to state the term which matches the definition
drawn at random.

Word Power is another vocabulary game (Gorden, p.30). Gorden
indicates that the game is challenging to college students (p.30).
It would seem that this game would also be relatively easy to com-
puterize, thus allowing the student to "play against" the computer,
or against classmates. It seems reasonable to assume that the

vocabulary of the game could be varied to suit the communication
terminology teachers require students to learn.

RORRIM was created by three Communication graduate students.
It is a variation of Insight, a game to help students become aware
of the various perceptions we have of one another (Gorden, p.31).
Although RORRIM is played with a series of pictures it could, with a
little effort, be adapted for use on a computer. One way of doing
this would be to combine the use of the computer with a booklet of
pictures. Again, this game could be adapted for use with several
students or for one student "playing against" the computer.

A Non-Verbal Happening was adapted from a classic classroom
perception exercise by two Communication graduate students. The
game is designed for use in connection with a unit on non-verbal
communication. The general objective of the game is to make students
more aware of how our selective processes affect our ability to in-
terpret and report things we see. By using a video tape recorder, or
film, in connection with a computer the student could play the game
by himself or in competition with classmates. If the game is used as
a group game it can be the stimulus for class discussion. If the
game is played by students on an individual basis, the game can still
be the stimulus for a composition or a self-analysis of the princi-
ples covered.

Wipe-Out is a variation of "It's A Mad, Mad Maze" (Fabun,1968)
which I adapted for use in a non-verbal communication class or in a
basic speech class to demonstrate the part non-verbal cues play in

oral communication situations where instructions or directions are being given. The game requires that the communicator explain a diagram to the audience so that they are able to reproduce the diagram. A series of six communication situations are used; various combinations of verbal and non-verbal cues are used in connection with varying degrees of audience feedback. This game can be used with a computer almost exactly as it was designed if a video tape or film were also used.

With a little effort the game could be adapted for use with only a computer. The emphasis of the game would shift from the non-verbal aspects of the original game to focusing on the effect of audience feedback on communicator effectiveness. The computer would be the communicator; naturally the channel in use would be the written word. The "audience" would be the student. The rules of Wipe-Out could be modified to allow the "audience" to ask questions--these questions would be regulated, by the rules, to progress from questions that could be answered by "yes" or "no" to questions which could be answered by pre-programmed sentences. The game could be played by one student "playing against" the computer, or by two teams of students.

Some Original Ideas for Computer Communication Games

A debate game could be developed, for use on the computer, which would accomodate one student "playing against" the computer, or for two students p ying against one another. This game would

provide good practice in: 1) logical thinking, 2) the effective use of evidence, and 3) the organization of arguments. It would be an appropriate game for use in debate classes. I would guess that it would be a much more effective means of giving students practice in the skills they need for debating than would the traditional teaching strategies.

The game would require that the student have a booklet of information relevant to the debate topic, and that the computer be programmed with arguments, counter arguments, questions, irrelevant statements, and illogical statements. The computer could be programmed with several opening arguments which would be selected at random and displayed to the student. The student would then select appropriate responses from his booklet and type in their corresponding number(s). The program would have to be written to consider not only the responses the student gives, but also the order in which he gives them.

Communication Simulations

Nine Men Plus is a communication game simulation of Supreme Court decisions (Gorden, p.31). It is designed to help students understand decisions relevant to freedom of speech or press (Gorden, p.31). This game has two parts: 1) information exchange to discover how the case was decided, and 2) a period where the student tries to persuade the other students to accept his judgment (Gorden, p.31). The first part of the game could be computerized without too much effort. The game could then be played by one student, or by

several players who compete for the highest score obtained by ask-
ing the least number of questions. It would be an appropriate game
for use in a communication theory course, or any speech course de-
siring to have students acquire knowledge of the laws regulating
our freedom of press and speech.

Computer Simulation of Innovation Diffusion in A Peasant Village
is a simulation designed to aid the researcher in predicting: 1) the
adoption of innovations in a particular village, 2) the adoption pat-
terns to be expected in villages similar to the village simulated,
and 3) "optimum strategies for change agencies to maximize the rate
of change and/or to minimize the cost and effort of achieving this
change," (Hanneman et al, p.36). Although this simulation was not
designed for use by communication students it lends itself to their
use for two reasons: 1) the area of innovation and the diffusion of
innovations is an area of concern to communications majors, and 2)
the concept of the flow of communication patterns is an area of study
for communications majors.

This simulation could be used by graduate students in communi-
cation without change. It would most likely be necessary to provide
the communcation major with a booklet containing technical informa-
tion relevant to the simulation. Some aspects of the simulation
might be slightly modified to accomodate the objectives of the comm-
unication course in which the simulation would be used. Another al-
ternative would be to use the basic format of this simulation with
hypothetical situations, or with communities familiar to the students.

Still another use for this simulation would be to modify it to accommodate principles of mass communication and their effect on information diffusion.

Classroom Simulator. The Center for Teaching Research at the Oregon State System of Higher Education has developed a classroom computerized simulation for training student teachers (Bushnell, 1963). The obvious use of this simulation would be of value in speech education or communication methods courses. However, the system might be modified for use in discussion and group dynamics courses. The computer could be programmed with data relevant to a particular situation, and with certain discussion variables. The student could feed in: 1) his observations of the situation, 2) his recommendations for modifying the behavior of the discussants, and 3) additional relevant information regarding the situation being simulated. The computer could be programmed (by careful anticipation of available alternatives) to respond to most of the data the student would feed in. In this manner the student could gain greater insight and practice in problem-solving group discussions. He would also have the opportunity of experiencing the effects of the principles of group dynamics if the simulation were programmed to respond to certain combinations of input variables.

Simulation of Community Referendum Controversies is a ". . . computer simulation of the diffusion of competing communications in a community referendum controversy which simulates the two-step flow of communication," (Jandt, 1972, p.27). This simulation model includes

the variables of: 1) exposure to mass media, 2) particularized channels of communication, and 3) the reinforcing behavior of others (Jandt, p.27). Students interested in opinion change can benefit from using this simulation. The simulation would be particularly appropriate for graduate courses in persuasion, communication theory, or the mass media.

Simulation of Human Interaction in Small Groups is a ". . . computer simulation based on the social exchange theory of George Homans which incorporates Bale's twelve-category system," (Jandt, 1972, p.27). Although this simulation is designed to simulate the decision-making behavior of labor union members (Jandt, p.27), the general principles used in the simulation are similar to those studied in graduate small group communication, and persuasion courses. This simulation should be of value to students of communication theory, persuasion, and small group communication. I would suspect that the program might be able to be used as a model for other simulations of decision-making procedures. The major factor in adapting the simulation would be knowledge of the decision-making variables present in the system being simulated.

Hare's Simulation of Group Decisions is a group decision-making simulation which has correctly predicted over 75% of the decisions made by real groups (Jandt, 1972, p.27-8). The simulation makes predictions based on sample responses from value-oriented questionnaires (Jandt, p.28). The value of this computer simulation to the field of communication is obvious.

Deutschmann Simulations. Deutschmann has produced three sim-
ulations of interest to graduate students in communication: 1) a
computer simulation of attitude change in a polarized community,
2) a computer simulation of information diffusion in a small commun-
ity, and 3) a computer simulation model for information and attitude
flow (MacLean, p.14). Although there are some questions regarding
the validity of the models Deutschmann uses (MacLean, p.9-11), they
would seem to have value in helping students become more aware of
numerous communication variables. The simulations might be used in
persuasion or communication theory courses.

Interactive Synecology is a simulation used to study conflict
and communication (Jandt, 1971). This simulation is designed as a
live role-playing simulation game. With some small changes it could
be converted to a computerized simulation. Making the change might
improve the simulation by making it more realistic. The players
would be able to obtain information, which would usually be available
to them by asking questions, by typing appropriate questions into the
computer. Then the simulation could be designed to allow the player
to make decisions based on the information he has, and what he can
obtain from the computer. He would then type in his decisions and
would receive feedback regarding how successful he was in achieving
his goals. A modification of this procedure would be to use the com-
puter up to the point that the student feels he has all the relevant
data he needs to be effective in achieving his goal. At that point
the student would join other students to complete the simulation
using role-playing techniques.

Information-Decision Model. Holder and Ehling (1967) describe a computer simulation of an information-decision model. This model enables the user to simulate "behavior" when a variety of inputs are used (Holder & Ehling, p.304). Each new input affects the decision-making process (p.307). The significance of this model is that it approximates the dynamic process of human decision-making through the use of the Markov chain process (p.311). The value of this simulation to the study of communication theory, discussion and group dynamics, and persuasion is obvious.

Audience Analysis Program. The computer assisted instrument developed for doing an audience analysis (Merritt et al.) would seem to lend itself to a number of classroom simulations. Students could begin to vary the audience input data and use the resulting analysis as input to one of the previously described simulations. By systematically manipulating the data from the audience analysis, the student may obtain insights into how audience analysis factors affect decision-making, etc.

Some New Ideas for Computer Communication Simulations

Intercultural Communication. A computer simulation for learning to become more aware of intercultural (or interracial) communication variables could be developed for use on the college level. The computer could present the student with a communication breakdown situation and the student would then be presented with a number of variables which may have caused the breakdown. He would select

the variables he feels are responsible for the problem; he receives
computer feedback about his decision. The student would also have
the option of asking questions of the computer to secure relevant
information needed to make a decision. If the student asks for in-
formation considered to be irrelevant (pre-programmed to be consid-
ered so), or if he neglects to ask for significant information he
would receive computer feedback so indicating. In the first case he
would be given a pre-programmed response indicating that the question
was not relevant to the current problem. In the second case he would
be told that he lacks certain necessary data and he will not be allow-
ed to continue the simulation until he discovers and asks for the
necessary data.

Public Speaking Preparation. For the basic speech course a
valuable simulation would be an extention of the audience analysis
computer program explained earlier in this paper. In addition to
what Merritt et al, suggest, a similar program might be written to
process the variables of time and location of presentation, occasion,
and certain speaker variables. Based on some tenative data available
in the communication field, a simulation might be written to indicate
the best choice of a topic, mode of communication, etc.

General Semantics. A simulation for use in connection with the
study of General Semantics could be developed to help the student de-
termine which variables are most likely accounting for a breakdown
in communication. The computer would present a communication situa-
tion in which certain principles of General Semantics are ignored.

The student would type in the necessary corrections and the computer would evaluate his results and give him corrective feedback. This would be appropriate for undergraduate courses in General Semantics or communication theory.

Rhetorical Style. Using the content analysis tool and the computer the student could learn to imitate the style of various famous speakers. To develop this simulation it would be necessary: 1) to use one of the several computer content analysis programs, 2) to use an information storage and retrieval system, and 3) to have several famous speeches in storage. Computer output, in typed form, would be a speech and the name of the author. The student would decide if the speech was written in the style of the author. If it were not the student would program the computer to make appropriate changes in the use of vocabulary or syntax so that the new speech was in the style of the author. This simulation would necessitate the student being reasonably sophisticated in the use of content analysis and computer programming techniques. An alternative procedure would be to provide the student with instructions and the necessary cards to insert in the computer content analysis program to facilitate substitutions of words and/or syntactic units.

Summary

This paper contains a summary of the ways computers have been used in the field of speech communication, a variety of computer games and simulations either written for or adapted for use in speech communication classes, and several examples of computer games and simulations which could be developed for appropriate use in the communication curriculum.

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Ms. Parks in an Associate Professor at Mansfield State College (Pa.).   This paper
was originally submitted in partial fulfillment of course requirements for a
course taught by Dr. Bobby Brown at the Florida State University, 1972.