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ABSTRACT

Guided design, an educational strategy based on the conviction that students are educated better by working through an ascending order of well-designed problems than by passively accumulating knowledge, employs small groups of students attacking open-ended problems. This paper describes guided design--its operation and advantages in the classroom--and the development of guided design minicourses at Portland Community College. Additional material includes an example of problem solving in a small, task-oriented group. (JM)

DEVELOPMENT OF SPEECH MINI COURSES USING GUIDED DESIGN

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Educators at all instructional levels are beginning to ask some penetrating and relevant questions. We are asking ourselves what, exactly, we believe to be the purpose in planning for instruction, developing course goals and objectives; modularizing or individualizing instruction.[1] We are asking if there is, indeed, a relationship between formalized instructional systems and increased student learning. And, assuming that a relationship exists, which of the many possible approaches is best for our subject matter area.[2]

For the Speech-Communication Department of Portland Community College, the search for an appropriate educational strategy with the desirable characteristics of modularized-individualized instruction, was crucial, because of the development of a new satellite campus which was to be fully individualized by the fall of 1977.[3] As a representative of the Speech Area of the Department, I was sent to the College and University Teaching Project (CAUT), at Oregon State University, during the summer of 1976, to obtain information about various teaching-learning strategies that might be adapted to our classes in speech-communication.[4]

Most of the methods at Oregon State University were already familiar to me; some were currently in vogue at the college. But I felt that any teaching-learning system which could be seriously considered for a speech course ought to satisfy a set of criteria unique to our discipline:

1. Flexibility: The system should have potential for adaptability to other areas within the department, such as writing, literature, drama.

2. Verbal: The system should be one which encourages student interaction, with minimal emphasis on independent, isolated study.

3. Inquiry Oriented: The system should allow students to develop problem-solving abilities, and encourage synthesis and application of subject matter content.

4. Open entry/exit: The system should provide for student enrollment at any time during a school year, enable them to obtain credit for completed units whether or not they finish an entire course.

It was this last criteria which led to the "mini-course" approach which is described in this paper. My experiences at the CAUT workshop convinced me that the system of instruction which most nearly satisfied all of the criteria, was a teaching method called "Guided Design."

DESCRIPTION OF GUIDED DESIGN

Guided Design, as a teaching strategy, was developed by Dr. Charles E. Wales, director of freshman engineering at West Virginia University, and Dr. Robert Stager of the University of Windsor, Ontario. Originally it was designed as a better way of teaching engineering, but within several years the system was being used for courses in counseling and guidance, history of drama, an interdisciplinary course on the nature of evidence, as well as other courses in the sciences, social sciences, and the humanities.[5]

> Guided Design is part system, part attitude. It reshapes the traditional approach to higher education from the ground up by having students, working in small groups, attack problems rather than masses of cold information. It is based on the conviction that the student can be taught to acquire whatever factual or technical knowledge he needs as he works his way through an ascending order of well-designed problems. The central idea behind all this is that the student who is actively seeking solutions to problems rather than passively assimilating knowledge will emerge not only better educated but far stronger intellectually.[6]

To those of us who have been teaching speech-communication for any period of time, these ideas are not new. What is new, is the personalized

yet programmed, manner in which the system moves a student through the decision-making stages, with open-ended problems.

Dr. Wales has said that a more accurate definition of the instructional system might be "Guided Decision-Making," because rather than teach students about communication, instructors who use this approach would be teaching them to communicate. It moves students across that vacuous chasm separating theory from practical experience; they are learning the theory at the same time they experience it in a life-like problem.

HOW GUIDED DESIGN WORKS

The learning process revolves around the student's efforts to devise solutions for a series of increasingly complex open-ended problems. While there may not be a single correct answer to any of the problems the student is given, each requires that they put into play certain kinds of information and skills in order to develop a feasible solution. The student learns to be creative, thorough, and, perhaps most important, responsible for the quality of his or her own learning.

Each problem is broken down into a sequence of decision-making steps. These steps are similar to the problem-solving or logical thinking stages of John Dewey.[7] Students are required to follow a particular pattern in their discussion:

1. They must deal with each step in the pattern in the order given and cannot move to a new step until they have adequately considered and dealt with the preceeding one.

2. They work in class (although once familiar with the process, this is not required) in groups of from four to seven members. It is as a group that the students formulate the plan for solving each step.

3. When the students have finished consideration of one step, they are given written feedback material. The material presents one or more possible solutions the group may have discovered at that point in discussion. The feedback also elaborates on strengths and weaknesses of solutions.

4. After the group has compared the strengths and weaknesses of its own decision and compared it to that of the next feedback page, they are allowed to advance to the next step in the problem.[8]

In addition to learning theory and practicing it simultaneously, the system has the added attraction of sound learning theory at its base. "Psychological learning principles" used by most educators in their teaching are the same principles which dictate the structure of guided design projects:

1. Instructor guided learning
2. Provisions for practice
3. Evaluation and corrective feedback
4. Motivation
5. Individualization.[9]

All too often "education is based on the promise that fails to be fulfilled within a meaningful time span."[10] While most speech-communication courses at the lower division level allow for practice, instructor guidance and feedback, individualization is frequently sacrificed because of time pressures, space limitations and simple logistics. If we manage to provide the student with enough opportunity for practice, theory may be neglected. On the other hand, if we insist that they become thoroughly familiar with the theory, little time is left for exercises which provide for utilization of theory. Again, guided design assures that students get a balance.

ADVANTAGES OF GUIDED DESIGN

The open-ended nature of this instructional system and the emphasis on group problem-solving, brings this approach closer to what students experience in the natural environment. Few problems they will face are susceptible to

a single, this-or-that, solution. In sum, students using this system not only acquire knowledge within the field and subject matter they are studying, but they develop their ability to think and learn independently, to think through a problem logically, to gather information which is necessary if they are to make high quality decisions, to make value judgments based on the information they gather and to communicate these ideas to others.

CLASSROOM OPERATION

The first few minutes of a course using the guided design system of instruction will not be much different than a traditional class. Introductions are made, instructions given, and a course syllabus distributed. At the conclusion of the introductory remarks, the instructor asks students to organize themselves into groups so that they can begin work on their first guided design project. This first project usually includes an introduction to the decision-making process.[11]

Students are then asked to read the first page of what will eventually become a notebook of written "Instruction/Feedback" pages. The first page, Instruction A, explains the problem and how the group is to proceed. When the group has indicated that they are finished, they receive the Feedback A/ Instruction B, page. This process is repeated with each step until they reach Instruction D, or the end of the period. (In an open entry/exit class, the end of the session will be dictated by different time considerations.) The purpose of the Feedback page is to provide group members with a summary of what an "expert" problem-solving group decided. It enables them to compare their reasoning with that of other groups. But they should not be made to

feel that they must accept the decisions described on the Feedback page.

A secretary presides in each group and records the decisions made by the group. When the group feels that it has completed the discussion and explored the problem thoroughly, the instructor moves to the group and checks their work or has the secretary take the record to the instructor. If the work is not acceptable, the instructor asks questions to stimulate further thinking.

At the conclusion of a project, or mini-course, each student should be able to demonstrate:

1. a command of a specific amount of new subject matter.
2. an ability to identify and justify specific value judgments.
3. an ability to perform certain steps in the decision-making process.[12]

DEVELOPING GUIDED DESIGN MINI-COURSES

Developing a mini-course or series of units with the guided design model is a high level creative task. A typical project is organized around a particular bit of subject matter, and begins, just as most systems of instruction begin, with stated learning objectives. Once the objectives and outcomes are specified, an open-ended problem situation is chosen that requires the student to think through, and collect information about, the issue. When a student has completed one mini-course, or unit, s/he has not only thoroughly learned the subject matter, but has learned to use a problem-solving sequence in its entirety, for possibly the first time in the student's educational experience.

Students are enthusiastic about the mini-courses now being used by the speech department at Portland Community College. An introductory unit on group process was field tested during the summer term, 1976. After working

through the project, students were asked to comment on, 1) clarity, timing, and vocabulary level of the written instructions, and 2) the perceived importance of project subject matter. They were also asked to express their reaction to this form of instructional system, i.e., to indicate whether they were neutral, bored, excited or interested in using this system again. Over eighty-five percent indicated that they were either interested or excited about the system, while none expressed boredom.[13]

As a result of the positive student response to the early guided design units, we have decided to continue developing new ones until a core of mini-courses which satisfy our basic course requirements have been created. The instructional system satisfies both sound "psychological learning principles," and the criteria we adopted in evaluating instructional systems which can be used successfully for our speech-communication courses.

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11/76

NOTES

[1] A series of articles on teaching strategies, including "modularized," and "individualized" instruction, may be found in Communication Education, vol. 25, no. 3, September, 1976.

[2] "Instructional System," refers to a non-traditional structure used to organize course content in any one of several patterns; for evidence on the relationship, see Communication Education, "Reducing Instructional Costs," William Brooks and Pamela Leth, p. 199, which reports research findings supporting the notion that student achievement is significantly higher when learning occurs in auto-tutorial systems compared to traditional approaches of lecture-testing-performance.

[3] Portland Community College's Rock Creek campus began operation in June, 1976, with eight career programs already fully modularized. It is expected that by the fall term, 1977, all of the college transfer courses located at the campus will be modularized, including courses in Speech and English.

[4] The College and University Teaching Project (CAUT), held at Oregon State University, was developed for the purpose of improving undergraduate instruction at Oregon colleges and universities. Phase I, a three week workshop, provided concentrated information to participants about methodological options.

[5] Teaching-learning systems introduced at OSU, included: (1) Resource based instruction, (2) Audio-tutorial, (3) Personalized System of Instruction (PSI), (4) Computer based instruction, and (5) Guided Design.

[6] C.E. Wales and R. A. Stager, Guided Design (1976), p. 1; the rapid development of courses using the system is due in part to grants made available by Exxon Education Foundation's IMPACT program. For additional information about grants, write IMPACT, 111 West 49th St., New York, N. Y. 10020.

[7] John Dewey, How We Think (Heath Company, 1910).

[8] For a sample of the "Group Process," project see Appendix I.

[9] Wales, p. 45.

[10] Ibid.

[11] Typically, a sequence includes: (1) Identification of the problem, (2) Statement of goals, (3) Information gathering, (4) application of constraints, (5) Possible solutions generated, (6) analysis, synthesis, evaluation, and (7) Implementation of decision.

[12] Wales, p. 102.

[13] Results of the field test may be obtained by writing: Department of Speech, 12000 S.W. 49th Avenue, Portland, Oregon 97219. For additional information about the development of mini-courses using Guided Design, write Charles Wales, Director, Freshman Engineering, West Virginia University, Morgantown, West Virginia.

AN INTRODUCTION TO
GUIDED DESIGN

INTRODUCTION

Guided design is a new educational strategy, part system, part attitude. It reshapes the traditional approach to learning by having the student work in small groups and attack open-ended problems rather than masses of cold information.

Guided design is based on the conviction that the student who works through an ascending order of well designed problems, the student who is actively seeking solutions to problems rather than passively assimilating knowledge, will emerge not only better educated, but far stronger intellectually.

HOW GUIDED DESIGN WORKS

The learning process revolves around your efforts to devise solutions for a series of increasingly complex open-ended problems. While there is no single correct answer to any of the problems, each requires that you put into play certain kinds of information and skills in order to develop a feasible solution.

Each problem is broken down into a sequence of decision-making steps. These steps are similar to the problem-solving or logical thinking sequences taught in science, logic, or mathematics classes.

You will be required to follow a set pattern:

1. You must deal with each step in order and cannot move to a new step until you have adequately considered and dealt with the preceding one.

2. You work in class in groups of from four to seven members, and it is as a group that you formulate your plan for tackling each step.
3. When the group has decided upon its action for the decision-making step under consideration, the group will be given written feedback material, prepared in advance. The material presents one or more possible decisions the group may have reached at this point in its discussion, elaborating upon the strengths and weaknesses of each.
4. After you compare the pros and cons of your decision with those of the professional, you are allowed to advance to the next step in the problem.

ADVANTAGES OF GUIDED DESIGN

The open-ended nature of Guided Design problems and the emphasis on group problem solving, brings this approach even closer to "real-life" experiences. Few problems are susceptible to a single, black or white solution. Many different opinions and values must be considered and reconciled in the decision-making process. In sum, students using this system not only acquire knowledge within the field they are studying, but also develop their ability to learn on their own, to think logically, to gather the information they need to make intelligent decisions, to make value judgments, and most importantly, to communicate these ideas to others.

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INTRODUCTION TO THE PROCESS

OF DECISION-MAKING

The material you are about to use is concerned with decision-making--a basic intellectual process which makes it possible for each person to face and solve new problems. This material presents a sample problem designed to introduced you to the basic steps in the decision-making process.

Decision-making sequence:

1. Identify the problem.
2. State the goals.
3. Gather information.
4. Generate possible solutions.
5. Apply constraints to each solution, assumption.
6. Analysis, synthesis, evaluation.
7. Implement decision.

The problem is one which was solved by a group of people who served on a student council. We suggest that before you read the first step in the problem, you visualize yourself as one of the people in that group, discussing how to work together better.

The printed pages in this project are organized in an "Instruction/Feedback" pattern so you can participate in the solution of the problem. Each instruction presents a question the group raised about one step in the decision-making process. We suggest that each member of your group read each Instruction, discuss it with your team, decide on a response, and then compare the decision with the printed Feedback which your instructor will provide. This Feedback provides a summary of what your group has probably

discussed and presents the decision made by the original group.

You should realize that the purpose of the printed Feedback is to allow everyone to compare their reasoning with that of other people. No one should feel that they have to accept any of these decisions.

The secretary in each group should record the decisions made by his or her teammates. When the group feels they have completed their answer to the Instruction, ask the instructor to come to the group to check the work or have the secretary take the record to the instructor. If the instructor believes the work is acceptable, the secretary will receive copies of the Feedback and the next Instruction to give to the group. If the work is not yet acceptable, the instructor may ask questions to stimulate further thinking.

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INTRODUCTION TO

TASK ORIENTED SMALL GROUPS

DECISION-MAKING

INTRODUCTION

This was the fourth time within a month that the members of Inquiry University Student Council had come together to try to work out their differences. During the month the group had come up with nothing constructive. They had only further extended themselves toward pursuing personal concerns and belittling one another's ideas. Whereas the discussion may have been of interest to the individual participants, it did not get them very far in considering how they might have been able to pull something worthwhile out of the time they had already committed to serving the student body.

Jim Jacobs, the President of student government, sometimes thought he was the only member of the group who had any hope remaining that this particular combination of individuals could find a productive way of working together. He had, because of this belief, invited a faculty member to sit in on the group's deliberations so that the faculty member might offer suggestions as to how they might improve the quality of their decision-making discussions.

Mr. Faculty Member watched the student government members argue, get increasingly farther away from the points under consideration, and finally, figuratively throw their hands into the air out of frustration. Finally Mr. F spoke, addressing the council president.

INSTRUCTION A -- OBJECTIVES

"It is apparent to me that everyone present is feeling hostile either toward someone else in the group, or antagonistic toward the ideas or lack of ideas of the other members. If I proceed from the assumption that you are all here because you chose to be on student council, then I must also assume that you would like to investigate and ultimately correct the source of your frustration." The council members voiced their agreement with this point of view.

Mr. F continued. "Someone once said that a camel is a horse designed by a committee. In a similar way, discussions often end unsatisfactorily, but the point I want to make is that they don't need to. I would suggest that, rather than having an outsider tell you what he thinks is wrong with your meetings, you tell him what you hope to accomplish through your discussion. Try to create a horse that looks like a horse. You tell me what you want to accomplish as a student government. What are your goals and/or objectives?"

Jim suggested the group "brainstorm" this question. Any idea could be expressed, but no criticism.

FEEDBACK A

Here is a list of the goals and/or objectives generated by the student council:

1. To satisfy the needs of the student body.
2. To represent students in negotiating with the administration.
3. To assist the students in disputes with faculty.
4. To lobby for lower tuition and fees with the state legislature.

INSTRUCTION B -- ANALYZE OBJECTIVES

Mr. F pointed out that the brainstorming technique had succeeded in preventing the group from becoming hopelessly mired in controversy. However, he felt that having come up with a list of potentially valid goals and/or objectives for student government, the group could now proceed to determine whether the items on the list had anything in common.

FEEDBACK B

Looking over the list they had compiled, the group agreed that advocacy of student interests was the premise underlying each item. Thus, even though the way they saw their goals differed, the end result was the same. Their goal was to speak for the student body.

INSTRUCTION C -- GATHER INFORMATION TO IDENTIFY PROBLEM

Jim reacted to what they had done, with this thought. "If we all agree on the function of our council, why is it then that we have so much difficulty in reaching agreement?"

Mr. F suggested that the group try to improve on their ability to agree. "You've seen one way to improve problem-solving ability--brainstorming. Let's try another."

Jim thought about this and suggested to others that a secret ballot might be a way of doing what Mr. F had suggested, but with one modification. "How about each one of us writing down the three major barriers to effective group functioning that we privately feel is most important? Then we can mix up the cards and redistribute them. When we are finished, each of us will have three cards with three barriers, but the items on the cards won't be ours. Then we can talk about the items named on the cards from a more objective position."

Mr. F agreed that this was an excellent idea, and reminded them of their present Task and the Technique they were to use.

> Task: To identify three barriers to effective group discussion.
>
> Technique: Not group discussion. As individuals, identify three barriers to effective discussion. Put only one barrier on a card. Write the barrier on the card in a simple, declarative sentence.

FEEDBACK C

When the group had finished, these were typical of the items on their cards.

Nobody listens to anyone else.
The leader doesn't lead.
Nobody will give up the floor.
There is an atmosphere of defensiveness.
We have no procedures to follow.
There is not enough time to work.
People are too quick to take sides.
We have no agenda or agreed upon meeting procedures.
There is too much shouting.
People get off the point with little reason.
Personalities are attacked.
Majority votes cause hard feelings.
People come unprepared to participate.
There are too many different attitudes.
No one wants to compromise.

INSTRUCTION D -- IDENTIFY THE PROBLEM

Even though there were more ideas on the cards, the statements tended to be similar to those given on page 7. For example, nearly everyone in the group felt that poor listening was a problem. Another complaint that showed up on a number of cards was the problem of too little time, and the absence of procedures to guide the meetings.

"The list is fairly complete," said Mr. F, "and from what I can see, it looks like the kind of list our state legislature of our faculty senate might compile. The question now is, what do we do about them? Which of the complaints listed on the card is most crucial?

"Task: shuffle the cards. Redistribute them so that you now have three cards containing someone else's statements.

"Look at the cards you are holding. Decide which of them includes a barrier that is, 1) crucial, 2) important, or 3) merely interesting. Place the cards on the floor under the category in which you think the idea falls. Explain to the group why you put the statement in the category you did. Put CRUCIAL on the left, IMPORTANT in the middle, and MERELY INTERESTING, on the right. After each of you has had an opportunity to place the cards, you may rearrange them, but only after you have explained your reason."

FEEDBACK D

It took some time, but when the student council members finished, they had three rows of cards. Not only were the cards containing the barriers sorted, but the group had a good understanding of each other now, and the reasons why their discussion efforts often failed.

The cards, arranged on the floor according to priorities assigned them by the group, looked like this:

CRITICAL	IMPORTANT	INTERESTING
Nobody listens.	Too much conflict.	Everyone shouts.
No one provides leadership.	Defensive climate.	Personalities are under attack.
No one comes prepared.	Limited time.	Too much voting.
Nothing is organized.	Different attitudes.	Getting off the point.
	Members take sides.	

INSTRUCTION E -- GENERATE POSSIBLE SOLUTIONS

Mr. F said, "What you've just done is to prioritize these barriers. In other words, you have assigned a value to them and said four are more important than four others. Note that you were able to calmly consider which of the complaints was most severe. Now you have a starting point, and what is even better, you have experienced many minutes of orderly decision-making discussions.

"Now let's consider each item in the 'critical' category," Mr. F said. "Which of the complaints is of greatest importance to everyone in the group? Note that almost all of the critical barriers is phrased negatively.

"Let's begin working on these problems by turning the negative statements into positive ones. If we do this, in effect we change the problems into possible solutions. For example, we can change 'nobody listens,' into 'we should listen to each other.'"

FEEDBACK E

Rephrased, the statements looked like this:

1. We should listen to each other.
2. We should share responsiblities of leadership.
3. We should become knowledgeable about discussion topics.
4. We should possess skills in how to organize and conduct meetings.

Mr. F said, "If I guess right, your problems as a council stem from the fact that you have not all had formal training in how to do each of the four critical skills you've listed above. My suggestion at this point should be obvious. You can improve the group ability to reach consensus, as you improve your own abilities to make decisions, as you develop leadership characteristics, and as you learn how to organize meetings, conduct them, and lead them into fruitful conclusions.

"These are ambitious goals. But there are very few areas in our society in which the group decision-making process does not operate. You are entitled to expect that learning more about how the process works will help you and the quality of decision-making in groups in which you are a member."

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