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AUTHOR Ross, John A.
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ABSTRACT

An instructional program to improve adolescent student mastery of real-life decision-making skills produced very positive results in terms of teacher comfort with the program and increased student performance. Five core skills for decision-making were the basis of the program: identification, selection and assessment of decision criteria, information summary and self evaluation. These skills were operationally defined and ordered into performance hierarchies. Detailed, virtually scripted lesson plans and student learning material were constructed. Field testing identified program deficiencies, and revisions were made. Seventh and eighth grade instructional packages for classroom use in remediation and reinforcement were implemented by two boards of education in Eastern Ontario after inservice sessions were presented. The results of student perfcrmance data provide positive evidence of effectiveness. (Author/CM)

Adolescent Decision-Making

John A. Ross

Final R&D Report (Project #80-4033)

The Ontario Institute For Studies In Education

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1. Abstract

An instructional program to improve adolescent student mastery of real-life decision-making skills produced very positive results in terms of teacher comfort with the program and increases in student performance. Deficiencies identified in the program evaluation were remedied in a revision of the instructional materials undertaken by the principal investigator in collaboration with a small group of classroom teachers, using teacher and student feedback on the original program.

Inservice sessions were provided to teachers in two boards of education in Eastern Ontario. Both boards adopted the curriculum materials into their formal Guidance curricula. A self-report survey provided evidence that the materials are being implemented by teachers. Student performance data derived from a random sample of classrooms provided evidence that the curriculum materials are having a positive effect on students.

2. Instructional Materials Revision

One of the basic aims identified by the Ministry of Education for the Intermediate Division is the development of decision-making skills. The Physical and Health Education Guideline of the Ministry (1978) states that a fundamental goal of the program is to:

> . . . provide opportunities for Intermediate students to solve problems and make personal decisions related to their intellectual, social, physical and emotional development. (p. 5)

So too, the Guidance Guideline (1978) states that one of the basic aims of the Intermediate program is to:

> . . . develop increased skills in personal decision-making and problem-solving. (p. 4)

The latter guideline further states that:

> The school should provide experiences that will assist students in the Intermediate Division to: learn to solve problems in a methodical fashion in order to arrive at appropriate decisions; . . . become involved in decision-making activities affecting their daily lives; develop the evaluative criteria needed to test the appropriateness of decisions. . . . (p. 25)

Similar statements about the importance of developing decision-making skills can be found in the English, Geography and History Guidelines produced by the Ministry of Education for the Intermediate Division.

Previous research (Ross, 1981a) suggests that these goals are not being met. Even though almost all Intermediate teachers reported that each of the decision-making skills identified in the project was taught in their classrooms, the level of performance on all test items was relatively low. Significantly, there was no growth in student performance

through the Intermediate Division, with grade 10 students scoring no better than grade 7 students. This suggests that more effective programs are required.

The Nature of Adolescent Decision-Making

Wise and compassionate decision-making involves three distinct components: knowledge, affect and skill.

The knowledge component involves knowledge of the decision context, the acquisition of appropriate bodies of information sufficient to ground decision-making in real-life experience. In order to act wisely students must be conscious of viable alternatives and their probable consequences. Existing Guidance programs attempt to provide students with appropriate knowledge banks at critical decision points in their lives to meet this need. Knowledge is typically disseminated tc students in units organized around central concerns like alcohol, drugs, human sexuality and career choice. This dimension of instruction is not without its problems: the information banks are often not assimilated by students because the information is excessively complex or incomplete, or because the data is not delivered at times when students are making relevant decisions. But by and large, schools tend to be successful in providing students with the knowledge competencies requisite to effective decision-making.

Schools also make an heroic effort to inculcate appropriate affective dispositions. Good teachers, especially in the elementary panel, give a high priority to beliefs and attitudes that sensitize students to the needs and rights of others while instilling a sense of personal control and responsibility. Schools are clearly not as successful in

this domain as parents would hope; given the intractability of human disposition and the inability of schools to influence the out-of-class experience of students, it is remarkable that there is any progress on this dimension at all.

The third set of competencies requisite to effective decision-making is a group of information processing skills. These are cognitive strategies involving the development and application of procedures to organize, select and interpret information within a decision context. They do not receive the same amount of instructional attention as the knowledge and affect dimensions. Typically these skills are taught indirectly, if at all, and because there is evidence to suggest that there is little growth in these skills through grade 7 and 10, these information processing skills became the focus for the project.

Instructional Design

Existing published programs to improve adolescent decision-making skills (Carkhuff, 1973; Cassidy & Kurfman, 1977; Coombs & Meux, 1971; Evans & Applegate, 1974; Fraenkel, 1976; Zingle, et al, 1968) suffer from a number of deficiencies. Most notable among these is a failure to define the existing cognitive structures that students bring to the classroom and a failure to specify the instructional acts that are intended to develop more sophisticated cognitive behaviours. Equally serious from the perspective of potential curriculum consumers is the absence of evidence testifying to the effectiveness of these programs. A series of unpublished programs developed in Ontario (Dufresne, 1974; Follis, 1978; Kehoe & Robinson, 1976) have aroused considerable interest on the part

of teachers in parts of the province but these programs also have deficiencies, especially in their failure to respond to the needs of student groups with a wide range of ability levels.

A review of these published and unpublished programs reveals considerable hetereogeneity in the skills addressed and substantial confusion between teaching skills and desired student outcomes. Despite the variety of labels and category schemes used to organize the skills there is consensus that effective decision-making requires the mastery by students of a minimal set of skills: (a) identifying a set of alternative courses of action, (b) selecting appropriate criteria, (c) assessing alternatives by criteria, (d) summarizing information about alternatives, and (e) self-evaluation. This minimal set of five core skills became the basis for the development of the program described in this study.

The initial focus in the development process involved three interrelated steps: a careful analysis of the task embodied in each skill as performed by sophisticated decision-makers; specification of the unsophisticated approximations of each skill by untrained learners; and the development of a sequence of simplified routines of increasing complexity that bridge the gap between the existing cognitive states of the learners and the desired performance.

These initial steps were operationalized by applying curriculum development procedures developed by Robinson (1979) and by Ross & Maynes (1982, forthcoming). Instances of mature and immature attempts to perform each decision-making skill were collected from the literature

and from observation of adolescents. These instances were ordered into hierarchies of performance to produce a picture of growth. Each level describes a strategy, an outline of procedure, for performing one of the skills.

The remaining elements of the instructional design involved the construction of very detailed, virtually scripted, lesson plans containing directions for teachers and student learning materials. This set of lesson plans was intended to serve as a worked example--as an exemplary operationalization of a set of principles for teaching decision-making skills.

The instructional package contained 10 lessons, each requiring about one hour of class time for a total of 10 hours. The first lesson consisted of a pretest and a teacher-directed analysis of a typical problem designed to identify the five steps (skills) of decision-making. Two lessons were devoted to each of the first three skills and one lesson was given to each of the remaining skills. The ninth and tenth lessons consisted of a review of the five skills and a posttest.

The entire program was a large group instructional unit. The basic strategy involved a teacher-directed sequence in which students were presented with a series of procedures for dealing with a particular step in the decision-making process. The teacher successively focussed on pairs of procedures in each case. In addition, the higher levels of each skills were demonstrated by the teacher with a careful articulation of the cognitive actions required to perform the higher levels. This reflective approach combined rationale building and modelling to encourage students to select the most appropriate procedure for each step (skill) in the decision-making model.

In every case the teacher activity was followed by student exercises in which there was opportunity for practice on each skill. All of these exercises provided feedback for students through self-marking or through taking up the assignments in class. Although these exercises could be completed as homework assignments, teachers were encouraged to have students work on them in class time so that remediation and reinforcement could be provided. There were 25 short exercises in the program.

All the materials for the program were developed in close collaboration with a small group of classroom teachers who provided a vast number of practical suggestions for improving the classroom utility of the materials.

Initial Field Test Results

The effects of the program were evaluated using a series of multiple choice instruments to measure student performance (Ross, 1981a) in three independent studies involving a total of 586 grade 7 and 8 students in the treatment conditions (Ross, 1981b). Two of the studies employed quasi-experimental designs and the third was a true experiment (Solomon Four Group Design, Campbell & Stanley, 1963, design 5). Inservice sessions were conducted for teachers participating in the field trial.

The program evaluation indicated that (a) even though parts of the program were difficult to understand, teachers felt comfortable using the materials and could follow the directions; (b) students found the program to be interesting and personally meaningful; (c) student performance increased substantially on four of the five skills (Table 1 shows that the mean effect sizes, using Glass' 1978 formula, ranged from .47 to .91); and (d) student performance declined on the skill of selecting criteria.

Table 1: Student Performance Results from Initial Field Test: Effect Sizes from Three Studies

Skill	Study 2			Study 3		Mean of 3 Studies
	Study 1	Grade 7	Grade 8	Pre and Post	Post Only	
(a) Identifying alternatives	1.33	0.66	0.66	0.38	0.88	0.78
(b) Identifying criteria	−0.10	0.21	0.05	−0.52	−0.38	−0.15
(c) Assessing alternatives	0.96	0.76	0.76	1.02	1.05	0.91
(d) Summarizing information	1.10	0.61	0.03	0.67	1.89	0.86
(e) Self-evaluation	0.56	0.46	0.17	0.91	0.27	0.47

Source: Ross, J. A. Improving adolescent decision-making skills. Curriculum Inquiry, 1981b, 11 (3), 279-295.

The success of the program was attributed to four factors. First, the program addressed students at their existing level of competence thereby providing an opportunity for meaningful learning (Ausubel & Robinson, 1969). Second, students were required to articulate the cognitive strategies they pursued; by making covert processes overt, metacognition was fostered (Bereiter & Scardamalia, in press). Third, students were required to contrast these strategies with a series of more sophisticated procedures that differed only marginally from what students were already able to do. As students recognized the greater power of the new procedures they gradually assimilated more complex cognitive structures (Case, 1978). Fourth, the program provided extensive opportunities for practice with feedback to consolidate and reinforce the learned behaviours.

A series of hypotheses were developed to explain the unexpected failure of the program to produce growth on the skill of selecting criteria (Ross, 1981b).

Program Revision

In May 1981 a program revision committee was formed to collaborate with the principal investigator to improve the instructional materials. The teacher feedback forms from the original program evaluation were analyzed to identify areas for review. This led to an extensive rewriting of the program involving three major changes as well as the correction of minor difficulties.

1. The initial program limited the number of decision contexts addressed by students. The original program focussed very heavily on a single adolescent problem in order to make it easier for students and teachers to follow the pattern of development. An unintended consequence of this curriculum choice was that students became bored with the repetition in the program. In the revision a broad array of decision contexts (identified in an informal survey of students) was used. These decision contexts were intended to stimulate student interest in the activities and to make it easier for teachers to integrate the decision-making materials into their Guidance program.

2. Some teachers reported that the original program was too long. Unless teachers were willing to truncate student discussions, the activities consumed too large a component of the available time for Guidance instruction. In the revision the program was divided into two portions: one segment for grade 7 and a second for grade 8. This entailled the development of additional review material at the grade 8 level so that each component was self-contained.

3. The instructional strategies developed for the skill of identifying criteria were ineffective in the original program. In the field test it

was evident that students tended to be confused by the concept of a general principle. Appeals to the maxims and precepts of folk tradition as examples foundered when it became apparent that contemporary students do not share a common heritage of conventional rules and unwritten prescriptions. Attempts to introduce elements of principled discourse were equally unsuccessful. This segment of the original program confused students and teachers alike.

In the revision two major changes were made in the criterion section. First, the idea of criteria was combined with the skill of generating alternatives in an integrated instructional sequence outlined in unit 2 of the grade 7 version as a basic decision-making strategy. Second, the section on constructing principles to use as criteria (level 5 of the skill) was dropped from the program on the grounds that this step is beyond the capacity of all but a very few grade 7 and 8 students. It was observed that level 5 of this skill corresponds to the highest level of the Kohlbergian programs and that this performance has never been consistently developed in adolescents, even at the senior secondary school level. However, the process of testing principles was retained as the highest level of self-evaluation in the grade 8 program.

The resulting materials were informally tried out in the classrooms of teachers collaborating in the revision. After further refinement the final drafts were circulated to teachers.

3. Instructional Materials

3.1 Personal Decision-Making

Condensed Version

Grade 7 Guidance Unit

Produced by

Dr. John A. Ross, OISE Trent Valley Centre
Deryk Boutilier, Brighton Public School
Sandy Gutteridge, Dale Road Public School
Peter North, Murray Centennial Public School

Contents

Introduction to Teachers

This unit was developed and field tested in the Northumberland and Newcastle Board of Education. It is designed to help students become better decision-makers by improving mastery of five skills:

.identifying choices
.selecting criteria
.assessing alternatives
.summarizing information
.self-evaluation

There are two versions of the program. This is the condensed version for teachers and students who have not taught decision-making before. There is an advanced version that addresses higher levels of each decision-making skill. Both versions are based on an earlier program. The response of teachers in two boards to the earlier program was very positive and students who participated in the field test showed very substantial performance gains. The field test teachers made a number of suggestions for improving the materials and these have been incorporated into this revision.

There are test items associated with the units. Teachers who would like to try out the test items and/or who wish to comment on this package are urged to call Hugh Grant at the Northumberland & Newcastle Board of Education Consultant's Office (416) 372-2223.

Teachers may find it helpful before beginning the program to show the video tapes from the Trade-Offs series, lessons 1, 2 and 3 (especially lesson 2). These tapes, and the teachers' guide for them can be obtained from the Board Resource Centre, catalogue numbers 149101, 149102 and 149103.

These units use as examples real-life decisions which were identified by grade 7 students and their teachers as being difficult and important issues to deal with. Teachers using the materials may find it helpful to introduce into discussion other issues of particular relevance to the students in their own classroom.

The distinguishing feature of this unit lies in the importance attached to the cognitive development of students. Each decision-making skill has been broken down into levels of student thinking. Each unit provides carefully sequenced activities to move students up the "growth scheme" for each skill. A summary of the skills is contained in the chart below--the units give a more detailed description of the meaning of each level.

		PERSONAL DECISION-MAKING SKILLS				
		Identifying Alternatives	Selecting Criteria	Assessing Alternatives	Summarizing the Information	Self-Evaluation
CONDENSED VERSION	Level 1	single alternative	no criteria	justification of single alternative	eyeball summary	rationalization of choice
	Level 2	a small list of alternatives	good things and bad things	advantages and disadvantages	best alternative on most important criterion	repetition of decision-making process
	Level 3	brainstorming alternatives	self-referenced criteria	positive and negative signs	additive rule	introduction of time dimension
ADVANCED VERSION	Level 4	constructing alternatives by classifying	criteria refer to other people	rank ordering	elimination of alternatives by criteria	different decision rule
	Level 5	constructing alternatives using criteria	criteria are general principles	interval scale	multiplicative rule	testing of a principle

An Overview of Student Decision-Making Performance

UNIT 1: INTRODUCTION TO DECISION-MAKING

Purpose: - To collect pretest data on students.

- To distinguish between important and routine decision-making problems.

Strategy

1. To collect pretest data administer one of the six multiple-choice tests OR present students with a simple decision-making problem and ask them to solve it. The multiple-choice tests can be computer scored or marked by hand using the answer key. The open-ended item can be assessed using the growth schemes for the five decision-making skills.

2. Everyday we make all kinds of decisions. Some decisions we handle routinely --others require a great deal of thought before deciding what to do. E.g., deciding what colour shirt to wear is a routine decision; deciding whether to get an after-school job is a thinking decision. Ask the class to give examples of each type and write them on the board. If there are disagreements about which list a particular example should go into, arrange a quick vote.

3. When there are about half a dozen examples of each type, ask students to compare the categories. E.g.,

	"Routine" Decisions	"Thinking" Decisions
Amount of time required to make choice	very little	could be a great deal
Difficulty	easy	very difficult
Consequences of poor choice	personal inconvenience or none	oneself or others could be hurt
Thought process required	very simple strategy	complex strategy

4. Summarize the discussion by emphasizing that "consequences of a poor choice" is the most important factor that distinguishes the two types of decisions. Tell students that the unit is concerned with the "thinking" type, i.e., decisions that require a great deal of thought, are difficult to make, etc.

5. Students should complete Worksheet 1. Teachers may find it helpful to do the first couple with the class to make sure that students are using the factors in section 3 to distinguish between routine and thinking decisions.

UNIT 2: BASIC DECISION-MAKING STRATEGY

Purpose: To provide students with a basic decision-making strategy that involves:

- a brainstormed list of alternatives (level 3)
- formal criteria (level 3)
- assessment of positive and negative values of each alternative (level 3)

1. Present students with this situation:

> There has been a lot of vandalism in Elmdale Senior School. The principal has announced that if acts of vandalism continue "action will be taken". Later the same day a student sees a very close friend in the washroom. The friend is scratching a particularly nasty four letter word into the wall.

2. Ask students what they think this student should do. Write the suggestions down on the board. When students propose a course of action ask them to give some reason why it would be a good idea. Make a chart on the board to record the suggestions. For example:

LIST OF CHOICES

	Hope you don't get caught	Try to cover up mess	Report friend to principal	Persuade friend to confess	Scratch in your own word
Reasons	friend will be glad you didn't squeal	principal won't be so mad	principal will be happy culprit is caught	vandalism will be reduced	friend will be impressed

3. Teacher: Imagine that the student in the story is given all these ideas. What can the student do to reach a decision?

   Students: Pick the suggestion with the best reason under it.

   Teacher: That sounds sensible. But our chart just looks at the good things about each suggestion. Only the advantages are considered. Wouldn't we be wise to look at some of the disadvantages of each suggestion?

With the students, enlarge the chart to include the disadvantages of each suggested alternative course of action. Change the label "reasons" to advantages. Add a new row to the chart labelled disadvantages. If the class is slow to identify disadvantages ask supporters of one position to give the disadvantages of other positions; e.g., ask those who want to report the friend to the principal what's wrong with scratching in your own word, etc.

The new chart should look something like this:

	Hope you don't get caught	Try to cover up mess	Report friend to principal	Persuade friend to confess	Scratch in your own word
Advantages	friend will be glad you didn't squeal	principal won't be so mad	principal will be happy culprit is caught	vandalism will be reduced	friend will be impressed
Disadvantages	you might get blamed for the damage; wall is still damaged	there will still be a mark on the wall	friend will be mad at you	friend might get into trouble	there will be even more damage to the wall

Teacher: Now how should the student decide what to do?

Students: Pick the suggestion with the strongest advantages and least important disadvantages.

4. We can do more to improve our chart. For two of the possible choices something is recorded about how the principal will react: circle these phrases and link them with a line.

Is there anything else in the chart that is similar? E.g., there is something about how the friend will react to most of the possible choices: circle these phrases and link them with lines. Continue to identify common features and link them with lines. The result should be a very confused looking chart with criss-crossed lines.

We could make a better chart to show whether a possible choice is good or bad when you consider each of the important factors. Then we could transfer the information. Here is what the first part would look like if we use a plus (+) to show that the possible choice is a good idea when you consider the principal's reaction and a minus (-) if it's a bad idea.

	Hope (do nothing)	Cover-up mess	Report Friend	Persuade friend to confess	Add to the mess
Principal's Reaction		+	+		

Students should notice that there is information missing. If they do not notice, direct their attention to the fact that the previous chart said nothing at all about the principal's reaction to some of the possible choices. Is this fair? Stress that <u>each</u> of the possible choices should be judged by the <u>same</u> set of factors. Students should complete the chart on the board. First, fill in the first row of the chart to show how each choice does when you consider only the principal's reaction. Then transfer the remaining information about advantages and disadvantages to the new chart, adding any information that may be missing. The resulting chart should look something like this:

Things to Consider	Possible Choices				
	Hope (do nothing)	Cover-up mess	Report Friend	Persuade friend to confess	Add to the mess
Principal's reaction	-	+	+	+	-
Friend's reaction	+	-	-	+	+
Effect on wall	-	+	-	-	-
Effect on school vandalism	-	-	+	+	-

5. Teacher: How do we know which choice to select?

   Students: Choose the one with the most +'s and fewest -'s.
   In this case, the best choice is to persuade the friend to confess.

6. Students should complete worksheets 2 and 3 as a class or as individuals.

   Teacher Note: If students have trouble with the notion of a decision-making chart, they may find the video-tape for Trade-Offs (No. 149102), lesson 2, helpful.

UNIT 3: DEVELOPING CRITERIA

Purpose: To improve student performance on the skill of developing criteria

.to reinforce the development of explicit criteria (level 3)
.to develop criteria referenced to other people (level 4)

1. In the previous lesson we used the phrase "things to consider when making up your mind". Ask the students for other words or phrases that express the same idea. Tell students that the best term is criteria. This word was used in worksheets 2 and 3 and will be used in the remaining units.

[Optional: Some teachers might wish to tell students that the singular of criteria is criterion.]

2. Students should complete exercise 4. If individual students have difficulty with the task, have them circle and link with a line things which are in common in the old chart before transferring them to the new. Some students might find a step by step procedure helpful, e.g.,

- .fill in the possible choices in the columns across the top of the new chart;
- .transfer one piece of information, e.g., friend will like Pete, to the first row of the new chart under the appropriate choice;
- .locate other advantages or disadvantages that have something in common with the piece of information;
- .place these in the same row of the new chart in the appropriate column;
- .invent a name that describes what it is that the items in the row have in common;
- .take up exercise 4.

[Optional: Have students fill in the empty cells in the new chart. Convert the information in the cells to +'s and -'s.]

3. How many people are involved in the problem exercise 4?

Student: Pete, the friend, the teacher, other students, etc.
[The teacher should probe students to ensure that they realize that this problem does not involve Pete alone.]

Which of the criteria refer to Pete? (all of them except for whether friend will learn math)

Which of the criteria refer to other people? (whether friend will learn math and whether friend will like Pete)

Would it be a good idea for Pete to use criteria that apply only to himself when making decisions?

Student: No, that would be selfish. When we make decisions we should consider what other people think, especially people who will be affected by our decisions.

Teacher Note: There will likely be some students who argue that you should just look out for yourself. This position is best dealt with by the other students in the classroom. If this argument appears to be gaining support you might ask the students: What would happen in the world if everybody made decisions considering only one's own self-interest?

4. Students should complete exercises 5 and 6. The teacher may find it helpful to discuss the problems with the class beforehand to identify possible choices.

5. Optional: Students should make up decision-making charts for exercises 5 and 6 and pick the best possible choice in each situation.

UNIT 4: SELF-EVALUATION

Purpose: To improve student performance by introducing self-evaluation strategies.

.repetition of decision-making process (level 2)
.introduction of time dimension (level 3)

1. Demonstrate to students that there is a need for self-evaluation by providing students with situations in which individuals made obviously poor decisions. Ask students to add new situations that show obvious mistakes in decision-making, e.g.,

.notebook assignments are due on Monday; David hasn't done his so he decides to steal Sandra's; he will erase Sandra's name and hand it in as his own;

.a book review is due; Jim decides to copy the review from the book jacket even though the teacher has a copy of the book;

.Christine has decided to take the top level of a subject in high school, a subject which she has never been able to pass in elementary school;

.Janice is babysitting; she decides to leave the children unattended for 20 minutes or so while she talks to friends down at the corner;

.a student has a knee injury and has been told by the doctor to stay out of sports for a month; the student decides to participate in a basketball tournament the very next week.

2. Obviously sometimes people make mistakes when making decisions. What can we do to make sure that we don't make a bad choice? How can we evaluate a decision once it has been made so that we don't repeat our errors? Present this problem situation to the students:

> Billy and Mary worked on a joint science project. Mary did almost all the work. When the project was handed in Billy told the teacher that he did all the work and Mary did hardly anything. What should Mary do?

Mary made up the following chart which showed that she should deal with the problem by deciding to beat up Billy.

Criteria	Choices: Beat up Billy	Do Nothing
the mark Mary will get	-	-
trouble Billy will get into	-	-
What Billy will think of Mary	-	-
getting even with Billy	+	-

One of the simplest ways to evaluate a decision is to check the thinking that has taken place. Mary could check her chart in terms of the adequacy of the list of choices, the list of criteria, the judging of the choices and the adding up of the information. Any one of these might have been done incorrectly. Looking at Mary's chart, what would you say is the difficulty?

[Level 2]
repetition of
decision-making process

Students should recognize that these are too few choices and the ones selected are not very good. The solution is to come up with better choices. Students might suggest choices like tell the teacher Billy is lying, show the teacher the rough work that proves Mary did the project and try to persuade Billy to confess.

3. Sometimes when we check our work it is not possible to see the error. E.g., when you read over a story that you have written you might not see the spelling errors. It is the same in checking decision-making. One additional thing you can do is check your work while thinking about long term consequences that might not have been considered. What would be the long term consequences for Mary if she responds to people who annoy her by beating them up? Students are likely to answer: she will get a reputation as a bully and will lose friends; it could influence other students to deal with conflict with violence, etc.

[Level 3]
time dimension

4. Ask students what they should do if they make a mistake in decision-making. In the ensuing discussion students should see that if you make a decision you have to fix it. If you discover your mistake after having taken action to carry out your unwise decision it may not be possible to clean up the damage. But if you discover your mistake before taking action (through a self-evaluation strategy) you can avoid the negative consequences by choosing again (e.g., construct a better choices and criteria chart).

5. Complete worksheets 7, 8 and 9.

Teacher Note: There are more sophisticated procedures for evaluating a decision: these are contained in the advanced version of the program.

ADDITIONAL PRACTICE IN DECISION-MAKING

The condensed program provides students with a basic structure for making decisions. Teachers may find it desirable to continue with the program by introducing issues of particular relevance to their classes throughout the year. A more advanced program is also available that teaches higher levels of performance.

WORKSHEET 1

1. Which of the following situations calls for a "routine" decision and which calls for a "thinking" situation.

   1. What would be the best way to get to Ottawa?

   2. Should you allow two of your friends to copy your math notebook to complete homework they could not do themselves?

   3. Your parents have forbidden you to go to a movie with a friend who they feel is a bad influence.

   4. What colour shirt should you wear to school?

   5. Your friends at school want to get you to try smoking.

   6. Should you have toast or cereal for breakfast?

   7. Should you go to a community college or a university after graduation from secondary school?

   8. Should you take a part-time job while going to secondary school?

   9. Should you tell your teacher that you saw a fellow student tearing pages out of a school textbook?

   10. Should you play basketball or watch television after school tonight?

   11. Should you allow two classmates that you know use drugs to come to your party this weekend?

   12. Which type of novel should you read next for a class report?

2. What is the difference between a problem that calls for a "routine" decision and one that calls for a "thinking" decision?

WORKSHEET 2

1. List 5 winter sports.

2. In a chart list the advantages and disadvantages of each of the sports you identified.

3. Study the advantages and disadvantages. Make a list of the criteria or things to consider when deciding which sport is the best.

4. Create a chart for your choices and criteria. Complete it by giving each alternative a plus (+) or minus (-) on each criterion. Which is the best winter sport?

WORKSHEET 3

Carole is a student who is trying to decide if she should start to smoke cigarettes. Her best friends want her to smoke. But one of her friends is allergic to cigarette smoke. Some of her other friends are trying to quit smoking.

1. Make a list of four possible choices she has about smoking.

2. Make a list of some advantages and disadvantages about each possible choice.

3. Make a list of the criteria or the things she might consider when deciding what to do.

4. Make up a chart showing the possible choices and criteria. Give each possible choice a plus (+) or minus (-) on each criterion. What should Carole do?

WORKSHEET 4

UNIT 3

Pete is a student with a friend who is not very good at math. This friend has been borrowing Pete's math homework just about every day. Pete made up a chart using the choices that were open to him. The chart shows the advantages and disadvantages of each choice.

Possible Choices	Advantages	Disadvantages
let friend copy	friend will like Pete	Pete and his friend might get caught
stop friend from copying	Pete will no longer feel he is being cheated	friend will be mad at Pete
suggest that friend get help in math	friend will learn how to do math	friend might be mad at Pete
offer to help friend with his math	friend may learn how to do math	will take up a lot of Pete's time

Task: There are some criteria in the above chart. Transfer the information from it onto the one below.

Criteria	CHOICES			

WORKSHEET 5

UNIT 3

Suppose you had a friend who was having a problem with liquor. List some criteria that could be considered when deciding what to do about your friend's problem.

Criteria that refer only to you

1.

2.

3.

Criteria that refer to other people

1.

2.

3.

WORKSHEET 6 UNIT 3

Suppose you had a friend who handed in a social studies project. The project got a really high mark. But you know that the project was mostly done by your friend's older sister.

List some criteria that could be considered when deciding what to do about this problem.

Criteria that refer only to you

1.

2.

3.

Criteria that refer to other people

1.

2.

3.

WORKSHEET 7

In this situation a poor decision has been made.

Situation: David hasn't done his notebook assignment; he decides to steal Sandra's notebook, erase her name and hand it in as his own.

	CHOICES					
Criteria	Confess to Teacher	Confess to teacher and ask for mercy	Confess to teacher and give excuse	Confess to teacher & offer to do it for tomorrow	Copy someone else's	Steal Sandra's
The mark I will get	-	-	-	-	+	+
Avoiding punishment	-	+	+	+	+	+
How much effort involved	-	-	-	-	-	+

Task: 1. Check David's chart. What is wrong with it?

2. Correct David's chart.

3. What are the long term consequences of stealing Sandra's notebook?

[Advanced Question: 4. What is the general principle involved?]

WORKSHEET 8

In this situation a poor decision has been made.

Situation: A student has a serious knee injury. The doctor has told him not to play any sports for a month. There is an important basketball tournament coming up in the next week. What should this student do? The student makes up this chart and decides to play in the tournament.

	CHOICES	
Criteria	Play in tournament	Do not play in tournament; stay home
safety of knee	-	+
not letting down the team	+	-
success of the team	+	-
wishes of parents	-	+
what friends expect	+	-

Task: 1. Check the decision-making chart. What is wrong with it?

2. Correct the chart.

3. What are the long term consequences of playing in the tournament?

[Advanced Question: 4. What is the general principle involved?]

WORKSHEET 9

UNIT 4

In this situation a poor decision has been made.

Situation: Janice is babysitting. Her friends ask her to come down to the corner store to talk to them for 20 minutes or so. She makes up this chart and decides to go.

	CHOICES			
Criteria	Don't Go	Go	Talk to friends on phone	Arrange to talk to them tommorrow
how much she wants to talk to friends	-	+	+	-
whether friends will be mad at her	-	+	-	-

Task: 1. Check the decision-making chart. What is wrong with it?

2. Correct the chart.

3. What are the long term consequences of leaving the children?

[Advanced Question: 4. What is the general principle involved?]

MARKING INSTRUCTIONS FOR WORKSHEETS

Worksheet 1

1. thinking decisions: 2, 5, 7, 8, 9, 11.
   routine decisions: all others

2. See comparison table in lesson, especially the consequences of a poor choice.

Worksheet 2

The final chart in item 4 should look something like this using a level 4 framework with the best choice indicated.

	CHOICES				
Things to Consider	Cross Country	Hockey	Down-Hill Skiing	Curling	Walking
cost	+	-	-	-	+
safety	+	-	-	+	+
equipment required	-	-	-	+	+

Worksheet 3

The final chart in item 4 should look something like this using a level 4 framework with the best choice indicated.

	CHOICES			
Things to Consider	Smoke whenever she wants	Never Smoke	Smoke if there is nobody allergic around	Smoke but don't inhale
Carole's health	-	+	-	+
Allergic friend's health	-	+	+	-
Parent's expectations	-	+	-	-
What other friend's think	+	-	+	-

Worksheet 4

Pete is a student with a friend who is not very good at math. This friend has been borrowing Pete's math homework just about every day. Pete made up a chart using the choices that were open to him. The chart shows the advantages and disadvantages of each choice.

Possible Choices	Advantages	Disadvantages
let friend copy	friend will like Pete	Pete and his friend might get caught
stop friend from copying	Pete will no longer feel he is being cheated	friend will be mad at Pete
suggest that friend get help in math	friend will learn how to do math	friend might be mad at Pete
offer to help friend with his math	friend may learn how to do math	will take up a lot of Pete's time

Task: There are some criteria in the above chart. Transfer the information from it onto the one below. [This is level 2 of the skill.]

	CHOICES			
Criteria	let friend copy	stop friend from copying	suggest friend get help with math	offer to help friend with his math
whether friend will like Pete	friend will like Pete	friend will be mad	friend might be mad at Pete	
whether Pete will feel cheated		Pete will no longer feel cheated		
whether friend will learn math			friend will learn math	friend may learn how to do math
whether Pete will get in trouble	Pete and his friend might get caught			
effort required of Pete				will take up a lot of Pete's time

Worksheet 5

Criteria that refer only to you

1. whether your friend's drinking would get you into trouble [level 3]
2. whether your friend will no longer like you
3. how much of your effort will be required by the choice

Criteria that refer to other people

1. the risk to your friend's health [level 4]
2. what your parents would want you to do
3. what the law says

Worksheet 6

Criteria that refer only to you

1. whether you would be in trouble if you didn't tell [level 3]
2. whether you would still be mad at your friend if he got away with it
3. whether your friends would be mad at you if you squealed

Criteria that refer to other people

1. whether your friend will be able to do his own project next time [level 4]
2. whether your friend will be punished for cheating
3. whether it's fair to your other friends

Worksheet 7

1. Criteria refer only to David; he has not considered criteria involving others.
2. He should add new criteria such as how Sandra will feel, the extent to which David will learn what is in the assignment, fairness in marking, fairness to other students who have done the assignment, etc.
3. If David steals Sandra's assignment: he will not learn the material in the assignment and this may prevent him from learning other things; he will become known as someone who steals; he will become known as someone who cares only about himself, etc.

[4. General principle: is it right to steal?]

Worksheet 8

1. not enough good choices

2. add some good choices, e.g.,

   .play if leg feels all right
   .assist the team by acting as manager
   .assist the team by spotting plays for coach
   .assist the team by cheering

3. If he plays there could be permanent damage to his knee, or there could be enough damage to prevent him from playing the rest of the season; playing might encourage other players with injuries to risk further injury.

[4. General principle: should you knowingly risk serious injury to your body?]

Worksheet 9

1. The criteria used refer only to herself.

2. Add more criteria referenced to other people, e.g., safety of children, reaction of parents of children, the law (it is against the law to leave young children unattended in a house).

3. Long term consequences: nobody will want to hire her as a babysitter; people will think she is unreliable and irresponsible.

[4. General principle: you should fulfil your commitments; young children must be looked after.]

3.2 PERSONAL DECISION-MAKING

ADVANCED VERSION

GRADE 8 GUIDANCE UNIT

Produced by

Dr. John A. Ross, OISE Trent Valley Centre
Deryk Boutilier, Brighton Public School
Sandy Gutteridge, Dale Road Public School
Peter North, Murray Centennial Public School

Contents

NOTE: THIS PACKAGE SHOULD BE USED ONLY IF STUDENTS HAVE COMPLETED "PERSONAL DECISION-MAKING: CONDENSED VERSION" OR THE EQUIVALENT.

Introduction to Teachers

This unit was developed and field tested in the Northumberland and Newcastle Board of Education. It is designed to help students become better decision-makers by improving mastery of five skills:

.identifying choices
.selecting criteria
.assessing alternatives
.summarizing information
.self-evaluation

There are two versions of the program. This is the advanced version for teachers and students who have taught decision-making before. There is a condensed version that addresses lower levels of each decision-making skill for students who have not been exposed to decision-making instruction. Both versions are based on an earlier program. The response of teachers in two boards to the earlier program was very positive and students who participated in the field test showed very substantial performance gains. The field test teachers made a number of suggestions for improving the materials and these have been incorporated into this revision.

There are test items associated with the units. Teachers who would like to try out the test items and/or who wish to comment on this package are urged to call Hugh Grant at the Northumberland & Newcastle Board of Education Consultant's Office (416) 372-2223.

These units use as examples real-life decisions which were identified by grade 7 students and their teachers as being difficult and important issues to deal with. Teachers using the materials may find it helpful to introduce into discussion other issues of particular relevance to the students in their own classroom.

The easiest way to identify issues for classroom analysis is to ask students to list decision problems that are important to them which are difficult to solve. Issues analysis will be most productive when the problems are relevant to students (i.e., within the decision-making power of students) and important to students (i.e., decisions in which the consequences of a poor choice could hurt oneself or others).

The distinguishing feature of this unit lies in the importance attached to the cognitive development of students. Each decision-making skill has been broken down into levels of student thinking. Each unit provides carefully sequenced activities to move students up the "growth scheme" for each skill. A summary of the skills is contained in the chart below--the units give a more detailed description of the meaning of each level.

PERSONAL DECISION-MAKING SKILLS

		Identifying Alternatives	Selecting Criteria	Assessing Alternatives	Summarizing the Information	Self-Evaluation
CONDENSED VERSION	Level 1	single alternative	no criteria	justification of single alternative	eyeball summary	rationalization of choice
	Level 2	a small list of alternatives	good things and bad things	advantages and disadvantages	best alternative on most important criterion	repetition of decision-making process
	Level 3	brainstorming alternatives	self-referenced criteria	positive and negative signs	additive rule	introduction of time dimension
ADVANCED VERSION	Level 4	constructing alternatives by classifying	criteria refer to other people	rank ordering	elimination of alternatives by criteria	different decision rule
	Level 5	constructing alternatives using criteria		interval scale	multiplicative rule	testing of a principle

An Overview of Student Decision-Making Performance

Unit 1: Making a List of Choices

Purpose: To provide students with more sophisticated methods of generating alternatives (levels 4 and 5).

Strategy:

1. Teacher: In a decision-making problem we are trying to figure out which of several possible choices provides the best course of action (thing to do). Some of the possible choices we think of may be very good, others might be not so good. Suppose we decided to do the first thing that occurred to us rather than preparing a list of possible choices. [i.e., the level 1 option.] Would we be deciding wisely?

Desirable Student Responses:

a) No - the first thing that occurs to us will probably be the most obvious thing to do and if the problem is complicated it is not likely to be the best thing to do.

b) No - the first thing that occurs to us might be the best thing to do or it might not be. We can't tell until we have an idea of what the other possible choices are like.

c) No - suppose there are 5 possible choices in a decision problem. If we do the first thing that occurs to us without thinking about the others there is only one chance in five that it is likely the best of the five choices.

It is worthwhile to spend some time on this discussion. About 40% of the students in grade 7 and 8 will not make up a list of possible choices before making a decision, unless they can be persuaded that the single choice strategy will not lead to good decision-making. There are a variety of arguments that might appeal to individual students. Rather than trying to establish an "official" reason for making a list of choices it is preferable to let students find their own rationales. A class discussion will provide a multiplicity of arguments: the most persuasive will be the ones that students discover for themselves and which are expressed in their own words.

2. When students are convinced that it is desirable to make up a list of choices rather than doing the first thing that comes to mind, ask them to suggest some ways for coming up with a list of possible choices to select from.

Desirable Student Responses:

a) make a list of all things you could do about the problem--try to get a minimum number of possible choices, e.g., three.

[this is level 2]

b) in addition to a list of the possible choices that you can think of ask other people (e.g., your friends, parents, etc.) for new ideas--this will give you a larger list of possible choices.

[this is brainstorming a list - level 3]

3. Teacher: These are good methods, especially the method of asking other people. But what do you do if the problem is so personal you don't want to ask other people about it? Or what do you do if everybody asked gives you the same ideas? How would you go about thinking up some new ideas?

Here is a method for thinking of new ideas. Imagine that a student found himself or herself in the following situation.

> A student was fooling around at the community centre, throwing rocks, etc. One of the stones that was thrown bounced off the parking lot asphalt and broke a window. A big window. The student took off. But there was a witness; one of the smaller kids in the neighbourhood had seen the whole thing. What should the student do?

Suppose that this student thought about the problem and came up with 4 possible choices: (i) admit to the crime and hope for mercy, (ii) threaten to beat up the witness if he tells, (iii) blame somebody else if accused, and (iv) try to persuade the witness not to tell. These 4 choices can be put into 3 categories like this:

Confession	Shift Blame	Deal with Witness
(i) admit guilt & hope for mercy	(iii) blame somebody else	(ii) threaten witness (iv) persuade witness

It is possible to come up with a list of more choices by thinking about what else would go into each category. Consider the confession category: what other possible choices are there in addition to admit guilt and hope for mercy?

Desirable Student Responses:

- admit guilt and offer an excuse
- admit guilt and promise not to do it in the future
- admit guilt and offer to pay for the window
- admit guilt and offer to make up part of the cost of the window with unpaid labour

[This is level 4: constructing alternatives by classifying.]

4. Students should complete worksheets 1 and 2 individually or in small groups.

[This provides practice at level 4.]

5. The grouping method will produce a long list of possible choices. But sometimes none of the possible choices are terrific. Let's suppose that one of the choices really looks good when you consider some of the criteria (factors) but that it does not look so good when you consider some of the other criteria. This can be resolved if you modify the possible choices so that it does well on the problem criterion.

For example, suppose you wanted to go on a long trip and you were trying to decide the best way to get there. After thinking about the problem you came up with three possible choices: car, train and bus. But each is very costly. Can you think of a way to get there cheaper?

Existing Choice	New Choice (Desirable Student Responses)
Bus	Go with a group on a charter rather than alone. Buy a round trip ticket instead of 2 singles.
Car	Offer to pay a small amount to somebody who has to go where you want to. Go together with friends and split the cost.
Train	Go on special reduced fare days. Pack your own lunch rather than eat on the train.

[modifying alternatives by criteria in level 5]

This method of making a list of possible choices is more difficult than the others but it usually provides the best options. Have students complete worksheets 3 and 4 individually or in small groups.

[This provides practice at level 5.]

Unit 2: Assessing Alternatives

Purpose: To improve student performance on the skill of assessing alternatives by moving students through this growth scheme:

1. justification of a single choice
2. advantages and disadvantages
3. positive and negative values
4. rank ordering
5. rating scale

Strategy

1. Present students with the following situation:

> Sherri is a girl in grade eight who has quite a few friends. These friends seem to be together a lot and do many things as a group. Recently, the group has more or less decided that they don't want one of them, Mary Anne, to be a part of their crowd anymore. There is no real reason for this, just that a few of the girls have decided they don't like her anymore. They go out of their way to be mean to her and won't include her in any of their activities. The whole group is expected to make her an "outcast". Sherri is bothered by this because personally she likes Mary Anne and considers her a good friend. She really doesn't know what to do about this problem.

2. Ask students to construct a decision-making chart for Sherri's problem. This can be done individually, in small groups or as a class. E.g.,

	POSSIBLE CHOICES				
	Go Along With Gang		Go Aainst Gang		
Criteria	Ignore Mary Anne	Be mean to Mary Anne	Be nice to her if gang not around	Be Mary Anne's friend	Try to persuade gang to accept Her again
will gang be mad at me					
will Mary Anne be mad at me					
Mary Anne's feelings					
how I will feel about myself					

3. Now we want to determine which of the choices is the best. How could Sherri find out?

Possible Student Answers:

a) Sherri should pick . . . . because . . . [i.e., student gives one of the possible choices with a justification: this is level 1.]

b) Sherri should look at the advantages and disadvantages of each possible choice [this is level 2: not a good strategy because different standards are used to judge each possible choice.]

c) Sherri should use +'s and -'s to show how good each choice is [this is level 3: see unit 2 of the condensed program].

4. Students should fill out the chart using +'s and -'s. In doing so dissatisfaction should arise because of the simplicity of the scale. For example, when you consider Mary Anne's feelings, being nice to Mary Anne if the gang is not around gets the same + as going against the gang and being Mary Anne's friend. But Mary Anne would not view these two as the same. What we need is a way of making these differences clear. Instead of using +'s and -'s we could rank each of the choices on each criterion. E.g., when you consider only the criterion "will the gang be mad at me", being mean to Mary Anne is the best choice. So we would rank it first. The next best choice on this criterion is "ignore Mary Anne" so it is ranked second. Fill out the remainder of the top row with the class.

	POSSIBLE CHOICES				
	Go Along With Gang		Be Against Gang		
Criteria	Ignore Mary Anne	Be mean to Mary Anne	Be nice to her if gang not around	Be Mary Anne's friend	Try to persuade gang to accept her again
will gang be mad at me	2	1	4	5	3

When students understand what is going on, students should fill out the rest of the chart using each criterion to rank the five choices from best to worst.

[this is level 4]

5. This is a very good method for assessing the choices. When you have finished you add up the ranks and pick the choice with the lowest score. But in some problems you could have two choices that are very close together on one criterion yet only one choice can be first. On another criterion the choices might be first or second even though there is a very large difference between them. The way to solve this problem is to give each choice an overall weight on each criterion, e.g., a number between 0 and 10 that shows how good it is. Here is how the first row of the table would look using this method.

	POSSIBLE CHOICES				
	Go Along With Gang		Be Against Gang		
Criteria	Ignore Mary Anne	Be mean to Mary Anne	Be nice to her if gang not around	Be Mary Anne's friend	Try to persuade gang to accept her again
will gang be mad at me	4	10	3	1	4

When students understand the method, the students should fill out the rest of the chart. E.g.,

	POSSIBLE CHOICES				
	Go Along With Gang		Be Against Gang		
Criteria	Ignore Mary Anne	Be mean to Mary Anne	Be nice to her if gang not around	Be Mary Anne's friend	Try to persuade gang to accept her again
will gang be mad at me	4	10	3	1	4
will Mary Anne be mad at me	3	1	4	10	10
Mary Anne's feelings	2	0	5	7	7
how I will feel about myself	4	2	5	8	8

[this is level 5]

When students have finished filling out the chart, pick the choice with the highest score.

6. Students should complete worksheets 5,6 and 7.

[These provide practice at level 5.]

Unit 3: Summarizing the Information

Purpose: To improve student performance on the skill of summarizing information about the value of alternatives to level 5.

Situation: You and a group of your friends drop in at the corner store to buy some snacks on the way home from school. You notice your friends stuffing their pockets with small quantities of candy and gum, and you are asked to be their lookout.

Strategy:

1. In our last class we learned some ways of judging choices. The best of these ways involved rating each possible choice on each of the criteria. Today we are going to learn how to use these ratings to pick out the best choice.

2. Here is some information about the decision problem above. The numbers in the boxes are ratings (1-5) showing how good each choice is when you consider each criterion. (Put this chart on the blackboard or have prepared on an overhead.)

	Choices that Could be Made			
Criteria	Refuse to be lookout	Act as lookout & share the loot	Act as lookout but refuse share of loot	Leave store immediately
How you will feel about yourself	5	1	2	4
What your friends think	2	5	4	1
Effect on your reputation	5	1	2	3
Police record	4	1	2	3
Reaction of your parents	5	1	2	3
Effect on the storeowner	5	1	1	4

We want to use this information to pick out the best choice. We could do this by picking out the choice that had the most high numbers and fewest low numbers. [This is level 1 of the skill.] This is not easily done. It's hard to tell which choice has the most support just by looking at the numbers in the boxes. The problem is that 3 choices do well on some criteria and poorly on others.

We could solve this problem by adding up the sources of each choice. If we add a line to the table called total value, we can see that "refuse to be lookout" adds up to 26. "act as lookout and share the loot" adds up to 10. "act as lookout but refuse share of loot" adds up to 13, and "leave store immediately" adds up to 18.

What choice has the highest score? Which choice has the lowest score?

[This is level 3 of the skill]

3. This is a good way of picking out the best choice. But in some problems some criteria are more important than others. Suppose you thought the effect on your reputation was more important than other criteria. How would you pick out the best choice? You could pick the choice that got the highest score on the most important criterion.

[This is level 2 of the skill.]

This is a good method but it ignores all the information about the other criteria. A better way would be to rate the importance of all the criteria. Then you could use this new information to help find the best choice.

This importance of the other criteria could be rated in the same way like this:

Criteria	Weight
Effect on your reputation	4
Reaction of your parents	1
How you will feel about yourself	2
Police record	1
What your friends think	3
Effect on the storeowner	1

One way of using this information would be to eliminate choices by criteria. For example:

a) eliminate the choice that scored the poorest on the most important criterion: eliminate "act as lookout and share the loot" because it scores only 1 on effect on your reputation.

b) eliminate from the remaining choices the one that scored the poorest on the next most important criterion: eliminate "leave store immediately" because it scored only 1 on "what your friends think".

c) eliminate from the remaining choices the one that scored the poorest on the next most important criterion: eliminate "act as lookout but refuse share of loot" because it scored only 2 on "how you will feel about yourself".

d) "Refuse to be lookout" is the best choice because it is the only one left.

[This is level 4 of the skill.]

4. This is a good method but in some problems you would eliminate a choice that does very poorly on one important criterion even though it does very well on all the rest. A way to deal with this is to put the weight of the criteria into the table. You could multiply the original score in each box by the criterion weight. For example:

Choices that Could be Made

Criteria	Refuse to be lookout	Act as lookout and share the loot	Act as lookout and refuse the loot	Leave store immediately
How you will feel about yourself	2x5=10	2x1= 2	2x2= 4	2x4= 8
What your friends think	3x2= 6	3x5=15	3x4=12	3x1= 3
Effect on your reputation	4x5=20	4x1= 4	4x2= 8	4x3=12
Police record	1x4= 4	1x1= 1	1x2= 2	1x3= 3
Reaction of your parents	1x5= 5	1x1= 1	1x2= 2	1x3= 3
Effect on the storeowner	1x5= 5	1x1= 1	1x1= 1	1x4= 4
Total Value	50	24	29	33

Then you could add up the scores for each choice and pick the one with the highest score.

[This is level 5 of the skill.]

5. Students should complete worksheets 8, 9 and 10.

Unit 4: Self-evaluation

Purpose: To improve student performance on the skill of self-evaluation.

.different decision rule (level 4)
.testing a principle (level 5)

1. Demonstrate to students that there is a need for self-evaluation by providing students with situations in which individuals made obviously poor decisions. Ask students to add new situations that show obvious mistakes in decision-making, e.g.,

.Mike thinks he is going to be a great hockey player like Wayne Gretzky. He practices all the time and ignores his school work. Mike is not doing very well in school. Some of his friends have noticed that even though Mike is a better hockey player than most kids his age there are many others who are better.

.Cindy has a book review for English due the next morning. She also has a science project due the same afternoon. Cindy decides to be "sick" that day.

.Sean lost a library book. The librarian is demanding it's return. Sean decides to swipe another copy of the same book from the library shelves and hands it in.

.Some students were horsing around after school. Three of them jumped up on the basket ball hoop and accidentally bent it right to the ground. They decide to keep quiet about it.

2. Obviously sometimes people make mistakes when making decisions. What can we do to make sure that we don't make a bad choice? How can we evaluate a decision once it has been made so that we don't repeat our errors? Present this problem-situation to the students:

Cindy has a book review due for English class the next morning. It is worth 10% of her term mark. She also has a science project due the same afternoon. It is worth 40% of her term mark. Both assignments were given out three weeks earlier. Cindy is a good student who always hands work in on time but on this occasion she just forgot they were due.

Cindy made up the following chart using a 1-10 rating scale that showed she should deal with the problem by trying to negotiate an extension with one of the teachers.

Criteria	Weight of criteria	Do one task: English	Do one task: Science	Do neither	Try for extension: Be sick	Try for extension: Negotiate with teacher	Copy somebody else's
The marks she will get	3	3x4=12	3x6=18	3x1= 3	3x7=21	3x9=27	3x8=24
Amount of time required	2	2x6=12	2x4= 8	2x9=18	2x5=10	2x5=10	2x8=16
English teacher reaction	2	2x9=18	2x1= 2	2x1= 2	2x4= 8	2x9=18	2x1= 2
Science teacher reaction	2	2x1= 2	2x9=18	2x1= 2	2x4= 8	2x9=18	2x1= 2
Reaction of other students	1	1x3= 3	1x7= 7	1x1= 1	1x6= 6	1x6= 6	1x2= 2
How she will feel about herself	3	3x5=15	3x6=18	3x1= 3	3x1= 3	3x8=24	3x1= 3
Total		62	71	29	56	103	49

How could Cindy go about checking to see if she has made the right decision?

Desired student responses: a) Cindy could redo the problem checking her choices, criteria, crite . weights and her ratings [level 2 - repetition of decision-making process].

b) Cindy could check her work while thinking about long term consequences [level 3 - time dimension].

These are both good strategies but there are two other strategies that are even better. For instance, you could use a different way of summarizing the information. The first time Cindy added up the information she used a summary method; she could do it again using an elimination method like this:

.identify the most important criterion (the marks she will get)

.eliminate the choice that gets the lowest score on this criterion (do neither

.use the next most important criterion (how she will feel about herself) to eliminate from the remaining choices the one that gets the lowest score on this criterion (be sick)

.use the next most important criterion (amount of time required) to eliminate from the remaining choices the one that gets the lowest score on this criterion (do science task)

.continue until there is only one choice left, i.e., use English teacher reaction to eliminate copy somebody else's, and then use science teacher reaction to eliminate do English task. The last choice is negotiate with teacher.

[This is level 4 - use of a different decision rule.]

This method shows that Cindy has made the right decision.

3. The last method, and the best way of determining if you have made the right decision, involves testing a principle. Every decision expresses a principle. A principle is a rule for acting that tells you what you should do in a particular situation. For example a principle like "you should always tell the truth"

means that whenever you are in a situation in which you are asked to give somebody some information you should do so accurately without distorting it to make yourself look good. Principles can be tested by asking yourself if it would be a good thing if everybody followed the principle. If it would be a good thing then the principle is a good one. If not it is a bad principle.

	Good Principle	Bad Principle
Example	You should always tell the truth	You should steal if you think you won't get caught
What would happen if everybody did it	You would be able to trust people	You would not be able to trust anybody; you would have to lock up your stuff; there would be violence; etc.

If the principle that comes out of a decision passes the "what if everybody did it" test, then the decision was a good one. If the principle did not pass the test item the decision was a poor one. Present students with this situation:

Sean borrowed a book from the library and left it at the bus stop. After about 2 weeks the librarian demanded that it be returned. What should Sean do?

a) Suppose Sean decided to stall for time and hide from the librarian.

Decision: stall for time
Principle: run away from your problems
Would it be a good thing if everybody acted this way?: No, more library books would be lost, nothing would ever get done, people would never solve their problems.
Is the decision confirmed?: No, the wrong choice was made.

b) Suppose Sean decided to steal another copy of the book off the shelf and hand it in.

Decision: steal another copy
Principle: stealing is a good way to replace lost articles.
Would it be a good thing if everybody acted this way?: No, you would have to lock up all your stuff; you wouldn't be able to trust anybody; there would be fights between stealers and possessors.
Is the decision confirmed?: No, the wrong choice was made.

c) Suppose Sean decided to tell the librarian that somebody else took the book and was supposed to return it to the library.

Decision: blame somebody else
Principle: Avoid responsibility if you can
Would it be a good thing if everybody acted this way?: No, nothing would ever get done; you would never be able to trust anyone.
Is the decision confirmed?: No, the wrong choice was made.

d) Suppose Sean decided to tell the librarian he lost the book and that he would pay for it.

Decision: confess and pay for the book
Principle: accept the consequences of your actions
Would it be a good thing if everybody acted this way?: Yes, you could depend on people to do what they say
Is the decision confirmed: Yes, the right choice was made.

[This is level 5 - testing a principle.]

4. Ask students what they should do if they make a mistake in decision-making. In the ensuing discussion students should see that if you make a decision you have to fix it. If you discover your mistake after having taken action to carry out your unwise decision it may not be possible to clean up the damage. But if you discover your mistake before taking action (through a self-evaluation strategy) you can avoid the negative consequences by choosing again (e.g., construct a better choices and criteria chart).

5. Complete worksheets 11 and 12.

WORKSHEET 1 UNIT 1

Here is a list of grocery items: hamburger, apples, corn, pork chops.

1. Divide this list into categories.

2. Make the list larger by thinking of new items for each category.

WORKSHEET 2 UNIT 1

A student was trying to decide whether or not he should smoke. He came up with a list of possible choices: (i) don't smoke, (ii) smoke if there is nobody allergic to smoke present, (iii) smoke whenever you want, except in school, (iv) smoke whenever you want.

1. Divide this list of possible choices into categories.

2. Make the list larger by thinking of new items for one of the categories.

WORKSHEET 3 UNIT 1

Let's go back to the smoking problem introduced in Worksheet 2. One of the possible choices is smoking whenever you want. This possible choice does not look too good when you consider the criterion of health. List some slightly different choices by thinking about the health factor. (That is, list some ways of smoking that reduces (but does not eliminate) the health hazard.)

WORKSHEET 4 UNIT 1

Task: To make up a list of possible choices. Use the things to consider when making up your mind (criteria).

Decision: A close friend of yours is not very good in math. He or she has been copying your math homework just about everyday. What should you do?

Possible Choices: continue to lend the friend your homework
tell the friend your homework is not to be copied

(Criteria to consider): You want your friend to continue to like you.
You don't want your friend to get credit for your work.

WORKSHEET 5

Pete is a student who comes to school without his homework done. The following chart represents the choices of action open to him, and also the criteria (things he must consider) in making his choice.

	CHOICES			
Things to consider about his choice	Copy someone's work	Don't Copy	Go to Teacher and explain	Skip class
Effect on Pete's marks	(a) if he copies he isn't learning work			
Reaction of Friends				
Reaction of Teacher				
Effects of getting caught				
How he'll feel (conscience)				

Directions: Find the space in the chart where the following actions by Pete would fit in. "a" is done.

a) if he copies, he isn't learning the work

b) if he explains to the teacher at least the teacher will credit him for being honest

c) if he skips the class, he might get caught and be in trouble

d) if he skips the class, he will miss new work

e) if he doesn't copy and goes to class, he might get into trouble with the teacher

f) if he doesn't copy, he'll feel honest

2. Fill out the chart using the best method.

WORKSHEET 6

You were at a party with your friends. Some of them were drinking beer. One of your best friends drank so much beer he (or she) passed out. This was the third time in two months that this friend has passed out from drinking. The day after the party you have to decide what to do about your friend's drinking.

Here is a table that you could use to help you decide what to do about your friend's drinking. The table shows the choices that are open to you and a list of things to consider about each choice (criteria).

Fill out the table using the best method.

	CHOICES			
Criteria	Do Nothing	Talk to Friend	Talk to His Parents	Talk to Other People
.his health				
.his friendship				
.other peer friendship				
.cost to him				

WORKSHEET 7

Refer to Sherri's problem about her group giving Mary Anne, a member of that group, a hard time.

Here is a chart or grid giving some of Sherri's choices and some of the criteria (things to consider) when making the choice.

Criteria	Do nothing (let situation ride)	Go along with gang	Go against gang and remain Mary Anne's friend	Be nice to Mary Anne only when alone	Persuade gang to accept Mary Anne again
How gang will feel about me			"a" If I remain her friend, gang might drop me too		
How Mary Anne will feel about me					
Mary Anne's feelings					
How I will feel about myself					

1. Find the space in the chart where the following actions by Sherri would fit in.

   "a" is done for you

   a) if I remain her friend, the gang might drop me too. (note that this one deals with the choice of "go against gang and remain Mary Anne's friend" and the criteria of "how will gang feel about me")

   b) if I go along with the gang, Mary Anne won't like me anymore.

   c) if I go against the gang, and remain her friend, I won't be hurting Mary Anne's feelings.

   d) if I do nothing about the situation, I won't feel very good about myself.

   e) if I am nice to her when we're alone, gang will still think I'm one of them.

2. Fill out the chart using the best method.

WORKSHEET 8

Situation: Suppose you have a friend who has been drinking a lot at parties. You want to do something about this problem.

Here is a chart showing some choices and some criteria.

	Choices that Could be Made				
Criteria	Persuade him not to drink	Don't see your friend anymore	Keep liquor away from him	Threaten to expose him	Get help from others
what your other friends will think	4	2	3	1	5
effect on friend's health	4	1	5	2	3
whether your drinking friend will be mad at you	4	3	2	1	5
what your parents want you to do	2	4	1	3	5

Task

1. Rate the criteria

Criteria	Weight
_____	_____
_____	_____
_____	_____
_____	_____

2. Make out a new chart in which the weights of the criteria are used to find the best choice.

WORKSHEET 9

Situation: Suppose you didn't get your math homework done. You had a good excuse. What would you do?

Here is a chart with information about some choices and criteria.

	Choices that Could be Made			
Criteria	Don't do math problems	Skip the period	Copy a friend's	Appeal to teacher
whether you will get into trouble	2	1	4	5
fairness to other students	3	5	1	4
what teacher thinks	3	1	2	5
what friends think	5	3	2	1
fairness to himself	1	3	2	5

Task

1. Rate the importance of the criteria

Criteria	Weight
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. Make out a new chart in which the weight of the criteria are used to find the best choice.

WORKSHEET 10

Situation: Suppose you saw a friend take a notebook from the desk of a top student just before a scheduled examination. The student reports the loss of the notebook to the teacher, who in turn asks the class if they know anything about it. The student after much soul-searching thinks about reporting his observation to the teacher.

Here is a chart in which only one alternative and criterion have been given to you.

	Choices that Could be Made			
Criteria	Threaten the thief			
The trouble your friend can get in				

Task:

1. Select criteria and rate their importance.

Criteria	Weight
The trouble your friend gets into	

2. Fill out the chart. Add possible choices. Rate each choice on each of the criteria. Use the weight of the criteria to find the best choice.

WORKSHEET 11

Here are some decisions. For each problem make up a principle and test the decision.

1. Decision: A girl decides to shoplift a pair of earrings.

   Principle:_____

   Would it be a good thing if everybody followed the principle:_____

   _____

   Is decision confirmed or rejected:_____

2. Decision: A boy decides not to copy a friend's homework.

   Principle:_____

   Would it be a good thing if everybody followed the principle:_____

   _____

   Is decision confirmed or rejected:_____

3. Decision: A student decides to keep a bicycle found on the schoolyard.

   Principle:_____

   Would it be a good thing if everybody followed the principle:_____

   _____

   Is decision confirmed or rejected:_____

WORKSHEET 12

Here are some decisions. For each problem make up a principle and test the decision.

1. Decision: A girl decides to try out for the boy's hockey team.

   Principle:_____

   Would it be a good thing if everybody followed this principle:_____

   _____

   Is decision confirmed or rejected:_____

2. Decision: A boy decides to hitchhike home from hockey practice.

   Principle:_____

   Would it be a good thing if everybody followed this principle:_____

   _____

   Is decision confirmed or rejected:_____

3. Decision: A group of students decide to shoplift using a foolproof method of not getting caught.

   Principle:_____

   Would it be a good thing if everybody followed this principle:_____

   _____

   Is decision confirmed or rejected:_____

MARKING DIRECTIONS

WORKSHEET 1

UNIT 1

1.	meat	fruit	vegetables
	hamburger porkchops	apples	corn
2.	veal steak roast etc.	cherries oranges grapefruit etc.	peas carrots potatoes etc.

WORKSHEET 2

UNIT 1

1. no smoking (i) — smoking with limitations (ii) (iii) — smoking without limits (iv)

2. smoke whenever you want...
   except on the bus
   except in hospitals
   except when parents are around
   except where smoking is prohibited
   etc.

WORKSHEET 3

UNIT 1

e.g., -smoke but don't inhale
-smoke only filter tip cigarettes
-smoke only cigarettes that are low in nicotine
-smoke 2 cigarettes a day or less
-smoke cigarettes only half way down
-smoke cigarettes made of imitation tobacco (e.g., lettuce leaves)
etc.

WORKSHEET 4

UNIT 1

New Choices:

1. Offer to help your friend with his/her math problems.
2. Suggest that you do your math homework together.
3. Suggest to the teacher that your friend is having trouble in math.
4. Explain to your friend that you feel the present deal is not fair to you.
5. Explain to your friend that he/she will not get better at math unless he/she does the homework.
6. Get a mutual friend to help the three of you to solve the problem.

WORKSHEET 5

1.

Criteria	Choices: Copy someone's work	Don't copy work	Go to teacher and explain	Skip class
Effect on Pete's marks	(a) if he copies he isn't learning work			d
Reaction of friends				
Reaction of teacher		e	b	
Effects of being caught				c
How he'll feel (conscience)		f		

2. Students should use a level 5 strategy, e.g., a 1-10 rating scale, like this:

Criteria	Choices: Copy	Don't copy	Explain to teacher	Skip class
Effect on Pete's marks	5	3	8	1
Reaction of friends	6	8	6	7
Reaction of teacher	1	7	9	1
Effect of getting caught	1	7	8	1
Pete's conscience	1	8	8	2

WORKSHEET 6

Students should use a level 5 strategy, e.g., a 1-10 rating scale, like this:

Criteria	Choices: Do nothing	Talk to friend	Talk to his parents	Talk to other people
his health	2	6	8	10
his friendship	4	10	6	8
other peer friendship	2	8	4	10
cost to him	10	8	6	8

WORKSHEET 7

Part One

Criteria	Choices: Do nothing (let it ride)	Go along with gang	Remain Mary Anne's friend	Be nice to Mary Anne only when alone	Persuade gang to accep Mary Anne ag
How gang will feel about me			a	e	
How Mary Anne will feel about me		b			
Mary Anne's feelings			c		
How I will feel about myself	d				

Part Two

Students should use a level 5 strategy, e.g., a 1-10 rating scale, like this:

Criteria	Choices: Do nothing (let it ride)	Go along with gang	Remain Mary Anne's friend	Be nice to Mary Anne only when alone	Persuade gang to accept Mary Anne agai
How gang will feel about me	4	10	1	6	8
How Mary Anne will feel about me	4	1	8	6	10
Mary Anne's feelings	4	1	9	6	10
How I will feel about myself	2	4	7	3	10

WORKSHEET 8

Part One:

Criteria	Weight
friend's health	3
if friend mad	2
other friends	1
parents	1

Part Two:

	Choices that Could be Made				
Criteria	Persuade him not to drink	Don't see your friend anymore	Keep liquor away from him	Threaten to expose him	Get help from others
what your other friends will think	1x4= 4	1x2= 2	1x3= 3	1x1= 1	1x5= 5
effect on friend's health	3x4=12	3x1= 3	3x5=15	3x2= 6	3x3= 9
whether your drinking friend will be mad at you	2x4= 8	2x3= 6	2x2= 4	2x1= 2	2x5=10
what parents want you to do	1x2= 2	1x4= 4	1x1= 1	1x3= 3	1x5= 5
Total	26	16	23	12	29

WORKSHEET 9 UNIT 3

Part One:

Criteria	Weight
whether you will get into trouble	4
fairness to other students	3
fairness to himself	3
what teacher thinks	2
what friends think	1

Part Two:

	Choices that Could be Made			
Criteria	Don't do math problems	Skip the period	Copy a friend's	Appeal to teacher
whether you will get into trouble	4x2= 8	4x1= 4	4x4=16	4x5=20
fairness to other students	3x3= 9	3x5=15	3x1= 3	3x4=12
what teacher thinks	2x3= 6	2x1= 2	2x2= 4	2x5=10
what friends think	1x5= 5	1x3= 3	1x2= 2	1x1= 1
fairness to himself	3x1= 3	3x3= 9	3x2= 6	3x5=15
Total	31	33	31	58

WORKSHEET 10

Part One:

Criteria	Weight
trouble for friend	1
what your friends think	1
consequences to victim	2
future thefts	3

Part Two:

	Possible Choices			
Criteria	Threaten the thief	Tell the victim	Do nothing	Tell the teacher
Trouble for friend	6x1= 6	7x1= 7	2x1= 2	6x1= 6
What other friends will think	4x4= 4	6x1= 6	3x1= 3	5x1= 5
How victim will feel	6x2=12	9x2=18	1x2= 2	9x2=18
Reduction of future thefts	4x3=12	6x3=18	1x3= 3	9x3=27
Total	34	49	10	56

WORKSHEET 11 UNIT 4

1. Principle: It's alright to shoplift as long as you don't get caught.

   Would it be a good thing if everybody followed the principle: No, because stores would go out of business, etc.

   Is decision confirmed or rejected: rejected.

2. Principle: You should take credit only for your own work.

   Would it be a good thing if everybody followed the principle: Yes, the reward would match the effort; everybody would be treated fairly.

   Is decision confirmed or rejected: confirmed.

3. Principle: Finders keepers.

   Would it be a good thing if everybody followed the principle: No, because everybody would have to lock up his/her possessions, would not be able to trust anybody.

   Is decision confirmed or rejected: rejected.

WORKSHEET 12 UNIT 4

1. Principle: Boys and girls should be treated equally.

   Yes, it would be a good thing. Decision confirmed.

2. Principle: You should travel as cheaply as you can.

   No, it would not be a good thing because some methods of travel are very dangerous. Decision rejected.

3. Principle: It's okay to steal if you don't get caught.

   No, it would not be a good thing because then you wouldn't be able to trust anybody, everyone would have to lock up their possessions. Decision rejected.

4. Dissemination and Implementation Activities

Adoption Decisions

The revised curriculum materials, and the program they embody, were examined by two school systems in the Trent Valley region in terms of their suitability for inclusion as components of the official curriculum in the two jurisdictions. Both boards decided to adopt the program and circulated copies of the materials to grade 7 and 8 teachers with Guidance responsibilities. In addition, a number of other boards, within and beyond the Trent Valley region, have requested copies of the materials and are actively considering adopting them.

Inservice for Teachers

In 1981-82 workshops were held for 25 volunteer teachers in the Victoria County Board of Education and for 65 teachers (in two groups) in the Northumberland and Newcastle Board of Education. Small groups of principals attended the sessions in each board.

The workshops were intended to provide teachers with the knowledge and skill to implement decision-making instruction. The sessions were activity-based with hands-on examination of the curriculum materials. Explicit attention was given to a rationale for decision-making instruction, the nature of decision-making processes, the growth schemes for the target skills and particular teaching strategies. All teachers were given copies of the grade 7 unit and those who had students with some decision-making training were given the grade 8 unit.

Program Implementation

In April 1982, grade 7 and 8 teachers with Guidance responsibilities in the Northumberland and Newcastle Board of Education were surveyed to determine the extent to which the program had been implemented. Teacher questionnaires were returned by 20 of the 23 schools (87%) producing data on the practices of 56 teachers.

All but two of these teachers reported that they had devoted classroom time to teaching decision-making this year; the mean for the group was 8-1/2 hours of classroom time from September until April with an additional 3 hours planned for the period from April until the end of the school year. The means conceal a vast range between classrooms: the standard deviations for time spent on decision-making were as large as the means (sd = 473 minutes for the period before April, and sd = 170 minutes after April). Not all of this time was spent on the lesson materials produced in the project. These materials were used within a broader program that gave students information about the important decision issues facing them as well as providing instruction on decision-making processes.

Most of the teachers reported that they followed the introductory program. This program (provided in section 3) consisted of four components. Table 2 shows the extent to which each of these units was implemented (based on self-reports of teachers): relatively few indicated that whole sections were omitted. (It should be noted that a number of teachers did not respond to this question on the survey.)

Table 2: Extent of Program Implementation (in percentages)

Component	Followed all the steps in the unit	Followed some of the steps in the unit	Followed none of the steps in the unit
1. Introduction (n=47)	70	17	13
2. Basic Strategy (n=51)	71	18	12
3. Criteria Section (n=42)	79	14	7
4. Self-evaluation (n=38)	66	18	16

The worksheets provided in the materials were also used by most teachers. Table 3 shows the extent to which the practice materials were assigned to students. In most instances these practice materials were taken up in class or marked by students rather than by teachers.

Table 3: Extent to Which Student Worksheets were Used (in percentages)

Worksheets	Not Used	Used
1. Unit 1	16	84
2. Unit 2	19	81
3. Unit 2	19	81
4. Unit 3	20	80
5. Unit 3	31	69
6. Unit 3	31	69
7. Unit 4	25	75
8. Unit 4	31	69
9. Unit 4	32	68

The majority (66%) of those who taught decision-making devoted one continuous sequence of classroom time to it (i.e., they taught it as a major unit) rather than spreading the instruction over a series of occasions. The latter method of spiralling the instruction is clearly preferable and was recommended in the inservice sessions but it is also more demanding of teachers in terms of their own preparation time.

The majority of respondents indicated that they used the growth schemes provided by project materials to guide instruction. The teachers tended not to modify these growth schemes in any way although a few teachers reported that some modest adjustments were required to adapt the approach to geography and history. This latter group likely experienced interference from a comparable program concerned with decision-making in the social sciences (Ross & Maynes, 1982) that was field tested in a small sample of classrooms in the same board the previous year: there were minor differences in the conceptualization of decision-making between the two programs.

One of the goals of the inservice was to encourage teachers to use alternative classroom arrangements in teaching the program. This goal was partially met. No teacher converted the instructional materials into a listening centre format but sizable proportions attempted grouping strategies. Thirty percent arranged students in homogeneous* performance level groups for an average of 32% of the time. A majority (54%)

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*That is, the students in each group were more or less at the same level of the target skill during the instructional activities.

arranged students in hetereogeneous performance level for a substantial proportion of the time (30% of total for the group using the strategy). Given the infrequency of grouping strategies in the intermediate division this is a noteworthy development. The most frequently used classroom arrangements were whole class arrangements (used by 92% of teachers) and organizations in which students worked individually at their desks (used by 76% of respondents).

A second major goal of the inservice was to encourage teachers to give explicit attention to remedial activities. The program is sequential; previous field trials indicated that students who fall behind quickly become frustrated. Teachers reported a variety of remedial activities for situations in which individuals or groups of students had not mastered a particular teaching episode.

The most frequently used remedial strategy (61% of the sample) consisted of repeating the unsuccessful teaching episode using a different example. Other frequently used methods when students encountered difficulties were providing additional practice activities (reported by 45%), using an alternative teaching strategy (45%) and trying to diagnose the precise nature of the student's failure by observing the student's attempt to solve a decision-making problem (29%).

Less commonly used remedial strategies involved trying to diagnose the student's difficulty by using the growth scheme for the skill (18%), repeating the unsuccessful teaching episode using the same example employed originally (9%) and trying to diagnose the student's difficulty by using a checklist for the skill (9%). Only 29% confessed that they ever responded to student difficulties by going on to a new activity.

There was also variety in the teaching strategies employed. Three instructional strategies were used by almost all teachers: collectively developing the decision-making procedures with students (84%), modelling the procedures for students (59%) and having students discover the inadequacies of lower levels of the skills (54%). Fewer teachers (41%) demonstrated to students the inadequacies of lower levels. Relatively few teachers (20%) had students invent levels of the skills.

Almost all teachers tested student performance in some way, with informal methods predominating: 75% monitored progress through observation of student responses to decision-making exercises and the same proportion gauged student performance through observation of classroom participation. Smaller proportions used open-ended test items (16%) or multiple-choice test items (13%). A few teachers (13%) used other methods such as observation of small group activities, formal decision-making essays, etc.

Almost all teachers reported that students improved to some degree. Only one teacher reported no improvement at all and only 7% reported that less than half the class showed gains. The remainder reported greater success with 20% of the teachers claiming modest improvement for more than half the class; 29% of the teachers claimed that almost all students improved modestly and 14% reported that almost all students improved substantially.

Teachers reported that they encountered a number of problems in implementing the program. These problems tended to fall into three major categories: teacher preparation, responding to the wide range of student ability in the typical classroom and problems of grading.

The biggest problem in terms of teacher preparation concerned the difficulty of finding class time for the decision-making lessons (reported by 57% of the teachers). The grade 7-8 Guidance program is extremely crowded with topics and issues that most teachers view as essential. Deciding which topics to reduce in order to cover decision-making processes (even if the context and process goals are combined) remains a perplexing dilemma that confronts all teachers. Many teachers (34%) also reported difficulty finding planning time to prepare the lessons, a problem common to all areas of the curriculum. Problems of teacher preparation specific to the project included understanding the ideas of the project, particularly the expectations for the teacher and the growth schemes (reported by 20%) and finding relevant data for exercises and examples (13%).

Selecting appropriate teaching strategies was reported as a significant problem by 29% of the teachers. These difficulties were related to the fundamental need to address a broad span of student ability. Keeping slower students in pace with the rest of the class and finding ways and opportunities to help slower students catch up were reported as obstacles to implementation by 43% and 34% of the teachers respectively. By the same token, 29% reported difficulty keeping brighter students from getting bored.

Despite these obstacles to implementation, a majority of teachers (64%) reported that they had attempted to include decision-making in other subjects. This "spread effect" was one of the overt goals of the inservice. In terms of subjects that received a decision-making emphasis, geography was identified by 23% of the teachers with the remainder reporting music, history, English (literature and composition), science and math.

For teachers who reported the amount of time spent on decision-making in other subjects, the average time spent was 128 minutes over the course of the year.

In summary, the program was implemented to a considerable degree in most classrooms, although it is clear that there was teacher adaptation of the materials. Also, the main goals of the inservice sessions were reflected in the responses of teachers to the survey. Finally, most teachers reported that the experience of teaching the program was a positive one for themselves and their students and they indicated that they would teach the program again next year.

Student Testing

In the spring of 1982, tests were administered to students in a random sample of grade 7 and 8 classrooms in the Northumberland and Newcastle Board of Education. In February all teachers in the population were notified that they were eligible for inclusion in the sample but the test sites were not announced until a week before the administration in April. The sample consisted of 15 classes selected using a random numbers table from a population of 85.*

Two sets of tests were administered. The first set was a series of multiple-choice instruments for each of the five skills (Ross, 1981a); the second was an open-ended instrument that provided a summative measure of self-directed decision-making. One class did not return the results

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*There were fewer teachers than classes because in some schools teachers "traded-off" their Guidance responsibilities to another staff member.

from the multiple-choice tests; two classes did not return the open-ended results. There were data from 406 students on the multiple-choice and from 358 students on the open-ended measure.

The results of the first set could be compared to previous administrations. In 1979, prior to the development of instructional materials, these instruments were administered to the total population of grade 7 and 8 students in the board (Ross, 1981a). In 1980 these instruments were administered to a field test sample of students in classes in which the original version of the project materials were implemented (Ross, 1981b). Figure 1 compares the results of the three administrations.

Figure 1 shows that on four of the five skills, student performance in 1982 was higher than for the baseline data collected in 1979. On the skill of selecting criteria the results were lower. Scores on all five skills were below the field test results from 1980, most likely because students in 1982 were exposed to only a portion of the original program. The original materials were divided into two portions and only the first was taught in 1981-82. (In 1982-83 the first portion will be assigned to grade 7 and the second portion will be assigned to grade 8.)

The open-ended item was a measure of self-directedness. It provided a summative measure of the extent to which students were able to aggregate the component decision-making skills without additional stimulus from the teacher or the test. Students were given a simple situation (a lost library book) and were asked to decide what the character in the situation should do. To solve the problem students were required to generate alternatives, select criteria, assess alternatives and summarize the data.

Results of Real Life Decision-Making Instruction

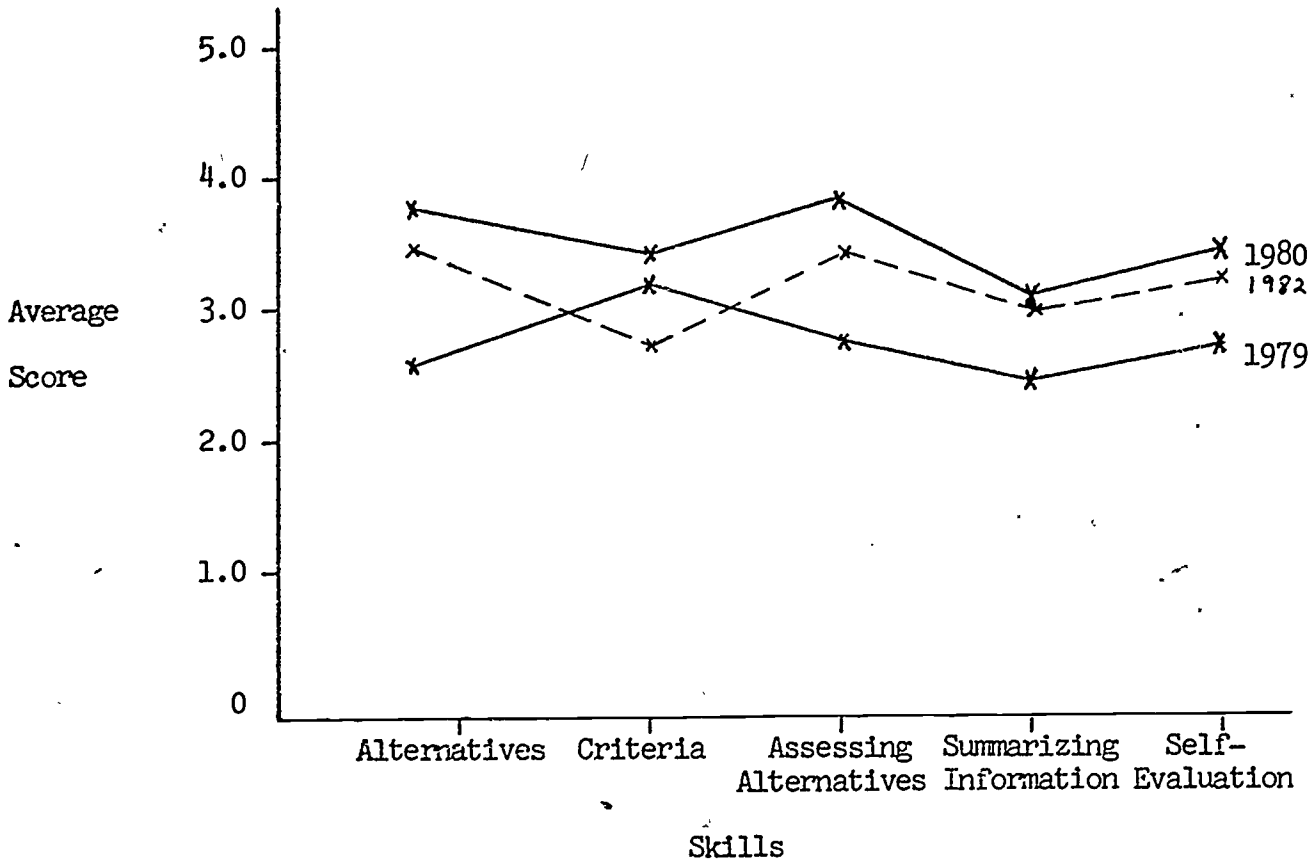

Figure 1

Student responses were marked by a trained tester using a scale and procedures provided in Ross & Maynes (1982). The mean score on this item for the sample was 2.33 (on a scale ranging from 0 to 4) with a standard deviation of .99.

There were no previous administrations of this item type in the Board that could be used as a valid comparison. Available data from a second board were introduced for illustrative purposes. The sample in the second board consisted of 4 classes of grade 7 and 8 students who had not received decision-making instruction and the item they were given was slightly different in content. The mean score of this untutored sample was 1.3 with a standard deviation of .42 suggesting that if the student groups were reasonably equivalent that some growth in self-directed decision-making had been achieved.

The field test results provide evidence that the curriculum materials had a positive effect on students. The multiple-choice comparisons between 1982 and 1979 showed that on four of the five skills, real improvements occurred; the growth was not as large as in the original field test because the students had been exposed to only half the original program. The open-ended results are much softer because of the difficulty of establishing the equivalence of groups; although modest evidence of self-directedness was obtained, claims must be made with great caution.

The results for the skill of selecting criteria are to some extent worrisome. Despite the revision, student performance declined. Anecdotal evidence from teachers suggests that the test devices generate misleading results for partially trained students. That is, students who have mastered the grade 7 version of the materials tend to gravitate toward

the levels taught. This has the effect of raising performance for some students but it also has the effect of consolidating the performance of others at a lower level than was previously obtained. The teachers argued that subsequent training using the grade 8 materials will resolve this problem and students will reach the desired levels. They argue that the effects of the program have been evaluated prematurely and that judgment about its effectiveness in teaching criteria selection procedures cannot be made until the grade 8 program is actually in operation.

5. Future Steps

The curriculum materials that were developed in the project will continue to be used in subsequent years. In 1982-83 the grade 8 materials will be introduced through inservice workshops. Responsibility for this inservice has been accepted by the boards who participated in the development process. Formal evaluation of program effects will continue in the Northumberland and Newcastle Board of Education. This Board has included the multiple-choice Guidance tests as part of its county-wide testing program. It anticipates that these instruments will be administered every 2 to 3 years and the results compared to the previously collected data in a time-series evaluation design. The principal investigator will continue to disseminate the materials produced in the project to other boards in the region.

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