

AN INDEPENDENT PROBLEM-BASED COURSE
FOR GRADE TWELVE ENGLISH

AN INDEPENDENT PROBLEM-BASED COURSE
FOR GRADE TWELVE ENGLISH: ADVANCED LEVEL

By

SHEELAGH CLELLAND WOOD, B.A., B.ED.

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AUTHOR: Sheelagh Clelland Wood, B.A. (McMaster University)

B.Ed. (UnIversity of Toronto)

SUPERVISORS: Dr. J. Ferns

Dr. H. R. Woodhouse

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Abstract

This project is an attempt to design a new English curriculum to fit a major organizational and philosophical change planned for Westmount Secondary School in the year 1990.

Chapter 1 describes the context in which the innovation will take place, the nature of the innovation itself and the primary objective the changes is intended to fulfil; namely, the development of students who are self-directed problem-solvers.

Chapter 2 attempts to clarify this objective by examining the origins of problem-solving in education and describing some recent accounts of its use, most notably in problem-based learning. Chapter 3 explores the philosophy of self-directed learning and differentiates among the many similar related terms. Autonomy is identified as the key feature of self-directed learning.

Chapter 4 outlines the constraints on curriculum design imposed by the new *English Guideline* recently published by the Ministry of Education. Finally, in chapter 5 an attempt is made to identify the features common to both self-direction and problem-solving and adapt these to the requirements of "Westmount 1990" and the *English Guideline*. The result is a proposal for a problem-based independent Grade 12 course outlined in Chapter 6.

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CHAPTER 1
"WESTMOUNT 1990"

"Westmount 1990" is a name given to a plan involving far-reaching administrative, structural and curriculum innovation for a Hamilton secondary school. This paper constitutes an attempt to design an English course which will not only be compatible with the philosophical and technical requirements of "Westmount 1990" but also conform to the requirements of the new English Guideline of the Ontario Ministry of Education. In order to understand how the "Westmount 1990" plan will affect the curriculum, it is necessary to understand the background and nature of the innovation itself, as well as something of the context in which it will take place.

Westmount is a composite secondary school with a student population of approximately 1,100 and a teaching staff of about 70. The school, built in the late fifties, is located in a middle-class neighbourhood on the west end of the escarpment which runs through the city. The neighbourhood has always been one of the city's more affluent, and, despite the recent growth of public housing in the area, to a large extent it still is. This is reflected in the fact that the school has a comparatively high ratio of advanced to general level classes - almost two to one.

Westmount's staff is no different from the typical secondary school staff in Ontario in that the average age of the teachers is fairly high. Only about ten percent are under 40 and this means that most have been teaching upwards of twenty years. As a result of their early training and long service, their style tends to be somewhat traditional. Although the pressures of the impending innovation have begun to cause some change, generally speaking, most classrooms are very teacher-centred and set up in conventional rows.

The idea for changing all this began with the appointment of a new principal, Andrea Robertson, in 1985. Robertson sensed a high degree of discontent among staff members, and when this was borne out in discussions with individuals, she set out to look for a solution.

In 1984, as part of its review of secondary education, the Ontario Ministry of Education published *Issues and Directions*, in which the writers established the goal of helping students to become "self-motivated, self-directed problem solvers."¹ Robertson wanted to find the best way to meet this primary objective. At about the same time, she attended a presentation given by the then Area Superintendent, Jim Forrester, on education in the Soviet Union. What impressed her most was the fact that, in Soviet schools, afternoons are largely unstructured and consist of unassigned time, during which students can seek help, work independently, pursue their own interests or try to

¹Ontario Ministry of Education, *Issues and Directions: The Response to the Final Report of the Commission on Declining Enrolment in Ontario*, (Toronto, 1980), 2.

remedy their weaknesses. When she expressed admiration for this concept, she learned that the separate school board in Calgary, Alberta, was operating a school full-time on a somewhat similar, flexible time model. This led to a visit to Bishop Carroll Secondary School in Calgary by Robertson and another of the Hamilton Board's superintendents, Frank Kelly. Both were very impressed by what they saw, particularly by the fact that all the students they encountered were working in a happy and committed way.

The Bishop Carroll model is based entirely on the concept of self-pacing. The curriculum is delivered in three basic ways: small group sessions, large-group sessions and individual learning guides. The large group sessions are very infrequent, and usually involve a guest speaker or a film or other presentation of interest to all the students in a particular course. Small group sessions vary in frequency from subject to subject and their primary purpose is to allow the teacher to present key concepts or difficult sections of the work. The times and staff for these sessions are posted in a central location and students book into them at their own convenience. Generally speaking, attendance is required, but individual students may negotiate exemptions. Most of the students' time is spent working independently through their learning guides in subject resource areas staffed by subject teachers who can help them with difficulties they may encounter. The primary method of evaluation is through tests of a fairly traditional nature taken in a central testing centre. What follows is a

description of the roles of teachers and students under the Bishop Carroll model as Mrs. Robertson understood it.²

WESTMOUNT 1990

STUDENTS

- each student will have a work load suited to his/her individual needs and ability - most will have the normal load of 8 subjects/year.
- each student will report in each day to his/her TA for:
 - attendance
 - morning announcements
 - return of test results
 - setting up of appointments if necessary - TA
 - subject teacher
 - if necessary to discuss progress, daily schedule, review goals and objectives
- each student will check out with TA at end of each school day
- each student will devise his/her own daily timetable to meet his/her own needs (in conjunction with TA)
- the daily/weekly schedule will be built to include the following:
 - check in and out with TA
 - appointments with TA to discuss general progress, timetable concerns, closer monitoring needs if appropriate

²All further references in this chapter are to in-house documents of the Westmount administration and the 1990 Steering Committee.

- appointments with subject teacher to discuss concerns specific to the subject, e.g., lack of understanding of concepts, assistance with resources, learning activities, evaluation procedures
- appointments with administration when progress is a serious concern
- consideration for time requirements specific to each subject being taken
- an equitable division of time on independent study for the units of study being dealt with
- compulsory as well as optional small group sessions for the units of study being dealt with
- large group sessions for the units of study being dealt with
- evaluation time in test centre for units when completed
- field trips, co-op, other community related experiences
- remedial assistance with LRT and other resources if necessary
- interviews with student services counsellor for career counselling and program counselling
- as a student successfully completes a unit in a course, work on the next unit is begun
- as one course is completed, the student will make an appointment with student services to arrange for a new course

- each student will spend some time during each year developing generic skills³ - skills needed to help them move along the continuum from dependent to independent learner - this will vary from one student to another and from one grade to another.

TEACHERS

- 2 distinct roles - teacher advisor, subject area
- Teacher Advisor Role
 - monitor very closely the progress of all students (16-20) in TA group
 - monitor attendance lates
 - monitor number of units completed in each course being studied
 - report progress to parents frequently
 - if progress is satisfactory, encourage student
 - if progress is not satisfactory, consult with student to try to discover why and to find solutions - establish more control as deemed necessary
 - refer serious problems to administration
- Subject Teacher Role
 - each department will determine the best way to use the skills and interests of the staff, e.g., specialized interest within subject content or method of delivery
 - some time will be spent in the following activities:

³"Generic skills" is a term given to skills which cross subject boundaries; e.g., research skills, time management skills, skills in the use of audio-visual equipment, etc.

- resource room - assist individual students with individual problems
- diagnose needs of students--individuals or groups--design ways of meeting these needs, e.g., if many students are experiencing the same problem, plan a group session to deal with it
- small group session - e.g., socratic [sic] lessons with 25-30 students, seminars with 10-15 students, etc.
- large group sessions - e.g., lecture for all students taking a course
- time will be built in for curriculum development and review and teacher in-service - include developing and revising learning guides, resources, evaluation instruments
- each teacher will spend some time working with a group of students to develop generic skills
- teachers responsible for evaluation and subject - specific monitoring of a certain group of students - number to be determined by contract requirements
- if necessary, each teacher will spend some time in Test Centre (differentiated staff or parent volunteer would be preferable).

APPROXIMATE TIME ALLOTMENT EACH DAY

1 hour - TA responsibilities

1½ hours - curriculum development, making preparation

- more time for curriculum development is to be allotted when necessary

3½ hours - resource centre, small or large groups

CURRICULUM

- each department will determine if there are special needs for each subject in the department - e.g., can it be semestered or should it go all year? are there unique needs for group if students to meet together more so than in other subjects?
- each course will be identified as to credit value - 1 credit, 1/2 credit, 1/3 credit
- each course will be divided into units
- each unit will have a learning guide - to include:
 - a) objectives - these should be clear, concise and lead directly to evaluation requirements
 - b) learning objectives - to include activities to meet needs of students with different learning styles
 - include small and large group requirements
 - include challenges at the gifted level that exceptional and/or non-exceptional students might choose
 - include field trips
 - c) resources - some print materials might be included with the learning guide
 - include a list of print, audio-visual, and human resources

d) evaluation requirements - a variety of evaluation techniques are to be used

- students are to have a choice of method to accommodate exceptional students and individual needs - e.g., oral, written, computer-assisted

- as students progress in their independent learning skill development, it is hoped that they will make proposals for their own learning activities and evaluation techniques

- in each subject, a core of essential material should be identified - all students will be expected to cover this material
- there would then be optional units of non-core material that students could choose from
- generic skills will be identified - i.e., skills across the curriculum necessary if students are to grow to be independent learners, e.g., time management, research skills, goal setting
- units will be developed to help students develop these skills - credit could be given through guidance or personal life management
- these will be available for students in each grade - needs will vary from grade to grade and student to student
- students with deficits in language or mathematics will be provided with a remedial program before beginning courses affected

- we could provide some time at the beginning of each year or throughout the year to have students meet in TA groups or subject area groups to develop generic skills or skills specific to that subject - especially in Grade 9 - maybe 2-4 weeks - time might be spent working through the first unit together and taking time to explain concepts involved in the learning guides.

BUILDING

- each department has one or more resource rooms
 - may be general in nature
 - may be specialized according to subject, grade
 - may be integrated, e.g., arts - music, art, drama
- in these rooms will be:
 - places for students to work alone, in pairs, quietly
 - print resources for courses in that department
 - some audio-visual resources for these courses
 - computers for individualized learning
 - a schedule for all small and large group sessions for that month in that department
- there will be classrooms set aside for small group sessions
 - some for groups of about 30
 - some for smaller groups (5-10)
- each department will have an office or series of offices for teachers in the department

- 2 Test Centres - one for pen and paper tests
 - one for alternative types of testing - oral, computer, etc.
- media resource centre - general reference section
 - more elaborate audio-visual resources
- video-taping Centre - a classroom set up to videotape an entire class or small group
- student services office
- main office
- large duplicating area
- cafeteria - open only during lunch break unless used as a resource room

(Robertson 1987)

Since none of the staff members has had the opportunity to see the Bishop Carroll model in operation, many of them are having difficulty conceptualizing the "Westmount 1990" plan, quickly nicknamed "the Vision." In an effort to clarify it for them, some of us undertook to present our view of the vision to a staff meeting in the fall of 1987. This is a script I wrote for a role-playing demonstration of a student in 1990.

I'm Susan and this is my English writing assignment. I know it's kind of unusual to do it this way, when all the other kids have to hand it in, but I have this learning disability, you see, so my teacher arranged for me to do it orally in front of this group. I'm supposed to talk about how I like being in high school - the adjustment you know - and I have to say I like being at Westmount a lot. This is a new system, I guess, and some people are wondering how they'll adjust, but so far I have to say it's great. Before when I was in grade 8, I had a lot of problems. I used to think I was just dumb, but now they say it's because I can't read very well. It takes me ages to get through anything and by the time I get to the bottom of the page, I forget what it said at the top. It takes forever when you have to keep going back like that. So, like I said, in grade 8, I just got so far behind and then they sent me out for help which, if you don't mind my saying so, was not such a hot idea, because not only did I feel really dumb being in that special class, but I missed even more work and got farther behind than ever. Now I can take all the time I want with my reading which is a good thing since we are studying this majorly long novel called *Moonfleet*, which is full of hard words. Mr. Borges says there is a taped test I can get from the testing centre when I'm ready, so I figure if I don't book in any practice time for my flute playing exam, I can use those blocks to go to the resource room and listen to the *Moonfleet* tapes. My TA will probably want to know in the morning why I'm not practising my flute, but I am a really good flute player, if I do say so myself, and I can always practise at home. I know I have to leave Wednesday and Friday afternoons free from 2 to 4 because I have to go to the two lectures on Urban Planning if I want to make sense of this week's Geography assignment. Then, there is our Science small group which meets on Tuesday morning. I think Ann and Ted and I should get together before then - maybe Monday from 1 to 3 because I need to hear someone

talk about this problem we're working on before I make an appointment to see Miss Festing. Reading it isn't doing a thing for me. But the nice thing is that nobody knows that unless I tell them. I used to think I had to stop the world so I could get off. Now, I think just slowing it down will be ok.

The script suggests some of the ways in which Robertson saw the vision as an improvement upon the traditional methods of curriculum delivery. In the traditional system, the teacher determines the context and speed of what is to be learned and the student is required to keep pace, whether or not s/he has mastered, or even completed the previous work. In addition, the timetable forces the students to give equal attention to all subjects, regardless of his/her relative strengths. The gifted student is often held back from working ahead of the group and, consequently, is obliged to spend the required four or five months in a course s/he may have been able to complete in one. Self-pacing, on the other hand, permits the student to decide how much time to devote to any particular subject, as well as freeing the teacher to spend time with those students who really need it. Consequently, it may lessen the number of discipline problems which develop in the classroom because of boredom or frustration. Self-pacing has the added advantage of permitting the students to have flexible entry and exit points for courses, so that requiring a longer time to complete the work does not result in failure or repeating.

Robertson proposed that Westmount reorganize along the lines of Bishop Carroll school and be ready to offer a self-paced curriculum by September 1990. In their presentation of the "Westmount 1990" plan to

the Hamilton Board of education in the fall of 1987, she described it as addressing the following questions:

- the Ministry of Education's image of the learner as a self-motivated, self-directed problem solver
- a belief that students are capable of doing more for themselves and that it is desirable that they be given more responsibility for their own decisions and education
- OSIS and the new Ministry of Education curriculum guidelines have an emphasis on the process of education as well as the content
- the requirements of Bill 82 to meet the needs of exceptional students
- the Curriculum Model of the Board of Education for the City of Hamilton mandates a move from a teacher-centred curriculum to a student-centred curriculum
- the significance of learning styles theory
- the need for increased flexibility for students to move between basic, general, and advanced level courses
- the different rates of learning that students have
- the revitalization of competent staff members
- the maximum use of teachers' professional skills
- the need for time for in-service of teachers
- the belief that changes to date have not satisfactorily addressed the identified needs of students
- a more positive achievement may be possible with a change in structure
- our challenge is to remove ourselves from our present structure, explore the needs of our students, ..?

(Robertson, 1987)

In spite of the advantages Robertson cited, some staff members have expressed a number of reservations about the Bishop Carroll model, especially in terms of meeting the primary objective, namely... Would such a system really help to turn out self-directed problem-solvers? This issue is particularly problematic for the English and Geography Departments who would then be working within the constraints of a process-oriented curriculum imposed by new Ministry guidelines in their subjects. At about this time, during the Fall of 1987, several

committees were struck to explore further the concerns of the staff and the implications of the change. Because of my concerns as Head of the English Department, I volunteered to chair the committee investigating the potential of the Bishop Carroll model to achieve the goal of developing self-directed problem-solvers. This excerpt from the committee's final report expresses our concerns.

The committee felt that the "vision" had great potential to meet the objective. Its very nature will force students into increased interaction with their peers, the print-media resources and themselves. They will have to learn how to learn.

We do, however, see two dangers in the Bishop Carroll model specifically which, if left unexamined, could be serious threats to the whole philosophy of self-directed problem-solving.

The first is the use of learning guides. If these are to become something more than on-site correspondence courses, careful attention must be paid to their design and implementation. They must provide ample scope for student decision-making and feedback.

The second concern involves the use of the testing centre. The major caveat offered by critics of objective-based curricula has been the observation that they often become end-directed and assessment-driven. Consequently, the objectives become the things most easily tested, usually content and recall, and these are often the things least worth knowing. Process-oriented evaluation requires extensive observation of students engaged in the process, as well as assessment of the product. If the "vision" is committed to the goal of turning out self-directed problem-solvers, close attention will have to be paid to the question of the opportunity to evaluate process. Teachers must also be provided with the skills and time for the observation, record-keeping and feedback which are part and parcel of such evaluation [Wood, 1987].

In addition to the concerns cited in the report, the English Department was also worried about the difficulty of fitting oral language work into the Bishop Carroll model. The new *English Guideline*

increases the emphasis on both group and oral language work requiring that this account for 25% of the student's mark in any English course. If the time spent is to reflect the importance of the work in terms of marks, then it is clear that the English program at least has to allow for more interactive learning than the Bishop Carroll model seems to offer.

At about this point in the adoption process, two staff members travelled to Calgary to look further at Bishop Carroll School and also to investigate several other non-traditional models operated by the Calgary public board. The information they brought back about the various models can be found in the appendix. All of the models were discussed at a subsequent staff meeting, but it must be noted that while a videotape of Bishop Carroll was shown, the presentation of the other models was extremely brief. It is important to make clear at this point that, although one of the benefits cited by the ABC Project of the Calgary Board of Education under which these innovations were developed is that it "fosters learning independence," its primary objective is to

develop and explore alternative models to the CARNEGIE UNIT, the traditional time-for-credit model used in all high schools. The major thrust in PROJECT A.B.C. (Advancement Based on Competency) is to remove the TIME requirement and substitute COMPETENCY as the criterion for rewarding credit.

Although at least one of the presenters clearly favoured the Ernest Manning model in use at a Calgary public school because of its greater emphasis on encouraging the student to "accept some responsibility for

his/her learning and to become a more self-directed learner," scant attention was paid to this model at the staff meeting.

In spite of the limited information given them by the administration the staff members were then asked to choose among the models, and, predictably I think, chose the one most familiar to them by this time - the Bishop Carroll model - with very little idea of the implications of their decision.

Subsequently, a meeting was held among those individuals most familiar with the models to make a final decision about the Westmount model. The model which resulted is a slightly more flexible version of the Bishop Carroll model, with an attempt to recognize more subject autonomy and encourage more interaction among students. Its framers hoped to assist teachers in writing learning guides which will maximize choice and collaboration for students.

As time went on, however, it became apparent that the "vision" was still very murky for many staff members and there was no common philosophical basis from which to develop such learning guides. Departments for whom independent learning, student-centredness and process were important became increasingly concerned that the implications of the term "self-directed problem-solver" were not only unclear but fading fast. The situation became more urgent when the principal put plans in motion to require departments to write learning guides for at least one unit of their courses. At the next meeting of the school's "Westmount 1990" steering committee, two members set about

to ask for a clarification of the "vision" in terms of what it implied for the curriculum. When efforts to halt the new curriculum development process until sufficient in-service had been carried out failed, a compromise was struck. Departments would go ahead and "get their feet wet," assisted by a brief statement of common philosophy, a description of a good learning guide, and a checklist to help in designing their own. These documents are quoted in their entirety because of the importance they play in the design of the English curriculum being proposed here.

THE WESTMOUNT MODEL

The Westmount Model will involve self-pacing in terms of the curriculum delivery. This self-pacing aspect of the model will allow us to more easily address the following curriculum goals:

- (1) a move to a more student centred learning approach,
- (2) an ability to address the process of learning as well as the product,
- (3) an ability to build in a greater variety of learning experiences,
- (4) a move to a more problem solving approach to learning,
- (5) an ability to individualize program to a greater extent in the areas of methodology, evaluation, objectives, etc.

The curriculum will be delivered in small group and large group sessions, and in well designed learning guides or curriculum models which will allow students to work individually or independently. Large group sessions will, by definition, be limited in number. Student progress will be carefully monitored by teachers in a Teacher-Advisor Role. (Westmount 1990 Steering Committee 1987)

A LEARNING GUIDE CHECKLIST

"20/20"

1. How long will it take the student to complete all the work in the learning guide? Note: One unit should take 5-6 hours.
2. Is the learning guide clear enough? i.e. Are instructions (terminology) understood so that the student could proceed through it with a minimum of assistance?
3. Are there enough resources available for the number of students enrolled in the course?
4. Are resources available to provide for individual differences?
5. Does the learning guide provide opportunities for different learning styles?
6. Do the learning activities have variety?
7. Do the learning activities match the objectives?
8. Does each learning guide emphasize process as well as product?
9. Is it clear to the student how he/she will be evaluated?
10. Is the evaluation consistent with the objectives and activities?
11. Has the learning guide been proofread by one or more colleagues? (Students may also help here!)
12. Are the resources cited at the appropriate reading level?
13. Is the learning guide attractive to the learner?
14. Is there a method built in for the student to keep track of his/her own progress?
15. Are the objectives clear and concise and written in the language of the learner?
16. Does the learning guide represent higher levels of thinking?
17. Is the learning guide free of sexist or cultural bias?
18. Does the learning guide allow for more self-directed learning at the senior level?

19. Use these spaces to design further checklist items specific to
20. your department.

[B. Jazvac, J. McCutcheon, S. Wood, 1987]

Both the Westmount Model and the Learning Guide Checklist were presented enthusiastically by the writers to the next staff meeting but the reaction was mixed.

The presenters saw self-pacing as only the first step in a major move towards independence and were concerned that it might not go far enough towards the goal of developing self-directed problem-solvers. They sought to encourage the staff to use the learning guides to write curriculum which would foster independence, process and problem-solving. Many of their listeners, on the other hand, were not only threatened by the very idea of self-pacing but also unfamiliar with the concepts the writers had taken for granted. Everyone concerned needed to take a long hard look at the curriculum implications of the stated goals of "Westmount 1990."

CHAPTER 2

PROBLEM-SOLVING

Since the "vision" of "Westmount 1990" has as its primary goal enabling students to become self-directed problem-solvers, it is necessary to examine the origins and implications of this key concept. The phrase appears as early as 1980 in the Ministry document *Issues and Directions*, where the authors explain the image of the learner which they claim is implicit in the guidelines and policies of the Ontario Ministry of Education.

Recognizing the diversity of individual abilities and interests, the Ministry views the learner as an active participant in education who gains satisfaction from the dynamics of learning. The concept of the learner as a mere processor of information has been replaced by the image of a self-motivated, self-directed problem-solver, aware of both the processes and uses of learning and deriving a sense of self-worth and confidence from a variety of accomplishments. This learner is guided by values consistent with personal religious-ethical beliefs, cultural traditions, and the common welfare of society. The image also reveals a methodical thinker who is capable of inquiry, analysis, synthesis, and evaluation, as well as a perceptive discoverer capable of resourcefulness, intuition and creativity.¹

The new image of the learner then is apparently related to the concepts of self-direction, critical thinking, problem-solving and emphasis on process, but no attempt is made in this largely abstract description to sort out or define these related ideas or to show clearly what they

¹Ontario Ministry of Education, Issues and Directions, 2-3.

imply for the development of curriculum at the classroom level. What precisely is a self-directed problem-solver and how does a student become one? Each of the two components of this concept must be examined individually before their relationship can be explored.

Problem-solving in education is not a new idea. Although much of the work in this area can be found in the "hard sciences" like physics, mathematics and engineering, where teachers enable students to solve problems in the discipline, the concept is also capable of a much wider application. An analysis of its origins and meanings will help to explain why.

1. Critical Problem-Solving

A seminal work in the genesis of problem-solving is John Dewey's *How We Think*. Here Dewey considers that a problem identified as such by the student is the trigger to all learning. He outlines five steps involved in the process of "critical problem-solving" as follows:

- (i) a felt difficulty
- (ii) its location and definition
- (iii) suggestion of possible solution
- (iv) development by reasoning of the bearings of the suggestion
- (v) further observation and experiment leading to its acceptance or rejection²

²John Dewey, *How We Think* (Boston: D. C. Heath and Co., 1910), 72.

Dewey understood this process as a skill both for education and for daily living. The educated mind was one which was "sensitive to problems and skilled in their attack and solution."³ The concept of "problem" or "felt difficulty" is illustrated in Dewey's example of a man looking skyward and quickening his steps in response to a perceived drop in temperature.

To say that the abrupt occurrence of the change of temperature constitutes a problem may sound forced and artificial; but if we are willing to extend the meaning of the word "problem" to whatever--no matter how slight or commonplace in character--perplexes and challenges the mind so that it makes belief at all uncertain, there is a genuine problem or question involved in this experience of sudden change⁴

Step two, "definition and location of the difficulty," is a crucial part of the process, according to Dewey, because it makes the difference between uncontrolled thinking and critical thinking. It requires the thinker to suspend judgment about possible solutions to the problem until the nature of the problem has been thoroughly investigated. Dewey uses the analogy of a doctor who, when called in to treat a patient, jumps to a hasty conclusion about the ailment based on what the evidence first suggests. He cautions that it is the doctor's duty to determine the nature of the difficulty thoroughly before attempting a solution.⁵

³Dewey, *How We Think*, 78.

⁴Dewey, *How We Think*, 9.

⁵Dewey, *How We Think*, 74.

Dewey calls step three suggestion, but points out that it might also be called supposition, conjecture, guess, hypothesis, or even, theory. Its essence is "the cultivation of a variety of alternative suggestions" as solutions to the problem.⁶

In step four, the problem-solver develops the implications of the alternative solutions formed at step three, deciding which one(s) may provide the best explanation or solution to the problem. Dewey notes that "conjectures that seem plausible at first are often found unfit or even absurd," while those which initially seem "remote and wild" can prove to be "apt and fruitful."⁷

The final step in Dewey's process is verification of the correctness of the conclusion. Such verification can range from simple direct observation of the situation to elaborate experiments set up to corroborate a scientific theory.

Although Dewey concludes his process with step five, he clearly implies a sixth step which might be called evaluation or reflection. The trained mind, he notes, must be capable not only of observing, hypothesizing, reasoning, and verifying, but also of profiting "in future thinking by mistakes made in the past."⁸

According to Dewey, the perception and solution of problems was the basis of all thinking and learning and in their use he anticipated

⁶Dewey, *How We Think*, 75.

⁷Dewey, *How We Think*, 76.

⁸Dewey, *How We Think*, 78.

the solutions to many of the difficulties still encountered in education today. Teachers who currently complain about the lack of recall and transference of which students are capable may be interested in Dewey's explanation.

The assumption that information which has been accumulated apart from use in the recognition and solution of a problem may later on be freely employed at will by thought is quite false.⁹

For Dewey, the posing of problems would also provide the motivation for learning, a factor much sought but often elusive. Problems, he observed, would "force the mind to go wherever it is capable of going better than...the most ingenious pedagogical devices."¹⁰

Because real-life problems are interdisciplinary, the concept of problem-solving has the added advantage of avoiding the compartmentalization of subject matter which Dewey deplored. He believed that such compartmentalization was artificial, standing in the way of recall, application, and transference of knowledge and putting the emphasis on product instead of on process where it belonged.¹¹

This emphasis on process which was so important to Dewey has enjoyed a revival among English teachers and is a key feature in the new *English Guideline* just published by the Ministry of Education for

⁹Dewey, *How We Think*, 52.

¹⁰Dewey, *How We Think*, 207.

¹¹John Dewey, *Democracy and Education* (New York: Macmillan Company, 1916), 209.

Ontario. A recent conference of English teachers in the United States wrestled with the canonical discipline-based approach to English studies represented by E.D. Hirsch's book, *Cultural Literacy: What Every American Needs to Know*.¹² In the end, the teachers issued a press release in which they plumped for process, asserting that teaching students how to think was more important and longer-lasting than transmitting a body of facts.¹³

Such evidence suggests that Dewey's concept of problem-solving as the foundation of education is an idea whose time has come again. In the meantime, however, there have been more recent interpretations of what constitutes problem-solving. These are worthy of consideration if we wish to understand this complex concept. By examining four current accounts of the concept of problem-solving, it is possible to understand it better.

2. Problem-Solving and the Hard Sciences

As was mentioned at the outset, much of the literature about problem-solving can be found in journals of mathematics, physics and engineering.

The initiative in these disciplines has come from the frustration of trying to teach students to find solutions for specific,

¹²E. D. Hirsch, Jr., *Cultural Literacy: What Every American Needs to Know* (Boston: Houghton Mifflin, 1987).

¹³Scott Heller, "English Teachers Favour Emphasis on How to Read, Write, Think Rather Than Becoming Familiar with Specific Literary Works," *The Chronicle of Higher Education* (5 August 1987): 9.

subject-discrete problems posed by textbook or instructor. The emphasis in this work is on a step-by-step approach often involving such techniques as graphic representation and verbal protocol. This technique, in which students are asked to say aloud everything that they are thinking while attempting to deal with a problem, is the basis of the well-known Whimbey pairs exercise. In this exercise the verbalizing subject has a listening partner to encourage and remind him/her to articulate the thinking process. The aim is to cultivate the habit of "patient thinking."¹⁴

This approach differs from Dewey's original conception in several ways. To begin with, it does not take into account Dewey's concern with the learner's perception of the "felt difficulty," and has an emphasis on product and discipline which are at odds with Dewey's views. In addition, many of the problems are set for the students in order to test their ability to apply a body of previously learned knowledge.

Many of the practitioners of this type of problem-solving have suggested wider applications for it. John Hayes, for instance, includes in his examples of problems situations as varied as crossing a river, assembling a mail-order purchase or searching for just the right words in a letter. In *The Complete Problem-Solver*, he defines a problem as a gap which the thinker does not know how to cross between where s/he is

¹⁴Donald Woods, "PS Corner," *The Journal of College Science Teaching* (May, 1984): 472.

at any given time and where s/he wants to be.¹⁵ In the breadth of his definition, Hayes comes much closer to Dewey than many other writers in the field.

One scientist whose problem-solving work has had considerable influence is McMaster University's Dr. Don Woods. Woods began by helping his science students solve problems set for them in their classes. He now gives workshops to a variety of audiences interested in the wider application of problem-solving strategies. Woods points out that the people attending his workshops, many of whom are educators and other professionals, are already reasonably good at problem-solving; otherwise, they would not have succeeded so well in their careers. For Woods, problem-solving is a step-by-step process in which various specific thinking and attitudinal skills are used at each step. The steps can be applied with equal success to the problems in an engineering textbook and to the problems of real life.¹⁶ Like Hayes, Woods seems to have moved from a particular subject-discrete notion of problem-solving to a much more general, life-skills orientation reminiscent of Dewey.

Woods has developed a graphic or visual representation to explain his problem-solving procedure. In educational circles such

¹⁵John Hayes, *The Complete Problem-Solver* (Philadelphia: Franklin Institute Press, 1981), 11.

¹⁶Donald Woods, "What Is Problem-Solving and Background Ideas," *McMaster Problem-Solving Program Unit 2* (Hamilton: McMaster Publications, 1985).

representations are commonly called "models" and are intended only to help visualize an abstraction or a process. In terms of what happens in classrooms or schools, "models" help to freeze frame the dynamic into the static so that it can be examined and understood. This is the way the term "model" has been used so far in this paper and it will continue to be so understood. A clear grasp of this definition is vital to any investigation of problem-solving, if it is to be compatible with the notion of student self-direction which will be explored later.

Woods' problem-solving model consists of six steps:

- read about situation
- define given situation/problem
- define "real" problem and create representation
- plan
- do it
- create the look back, implement¹⁷ (see Figure 1)

At each step in his procedure, Woods identifies what he calls thinking and attitudinal components which the problem-solver needs.

A comparison of Woods' model with Dewey's is informative. The first step in both approaches is essentially the same; namely, becoming aware of the problem. Woods, however, uses "read about the situation," the terminology of written curriculum, instead of the more general "felt difficulty" of Dewey's. Step two is similar in both models. Step three in both models suggests looking for possibilities and considering their

¹⁷Woods, "What Is Problem-Solving," Figure 2:2.

applicability. Although Woods has an extra step called "look back," Dewey's step five certainly implies that the rejection of a hypothesis would involve backing up and trying again. Dewey knew the importance of evaluating the process and drew attention to it in *How We Think*.

After we have reached the conclusion, a consideration of the steps of the process to see what is helpful, what is harmful, what is merely useless, will assist in dealing more promptly and efficaciously with analogous problems in the future.¹⁸

Woods' model is also similar to Dewey's in its emphasis on "willingness to suspend judgement." According to Dewey, "the most important factor in the training of good mental habits consists in acquiring the attitude of suspended conclusion."¹⁹

Several writers, among them Lacounte²⁰, and Cook and Slife²¹ identify steps similar to those given so long ago by Dewey. Only Woods' model, however, includes within it attitudinal components to the problem-solving process. What Woods calls attitudinal components would belong to what teachers or curriculum writers call the affective domain. Most curriculum being written now is designed and evaluated in terms of

¹⁸Dewey, *How We Think*, 113.

¹⁹Dewey, *How We Think*, 13.

²⁰Marlene F. Lacounte, "Teaching Thinking," *Cleaning House*, vol. 60, no.6 (February 1987): 251.

²¹Ruth E. Cook and Brent D. Slife, "Developing Problem-Solving Skills," *Academic Therapy* 21:1 (September 1985): 7-12.

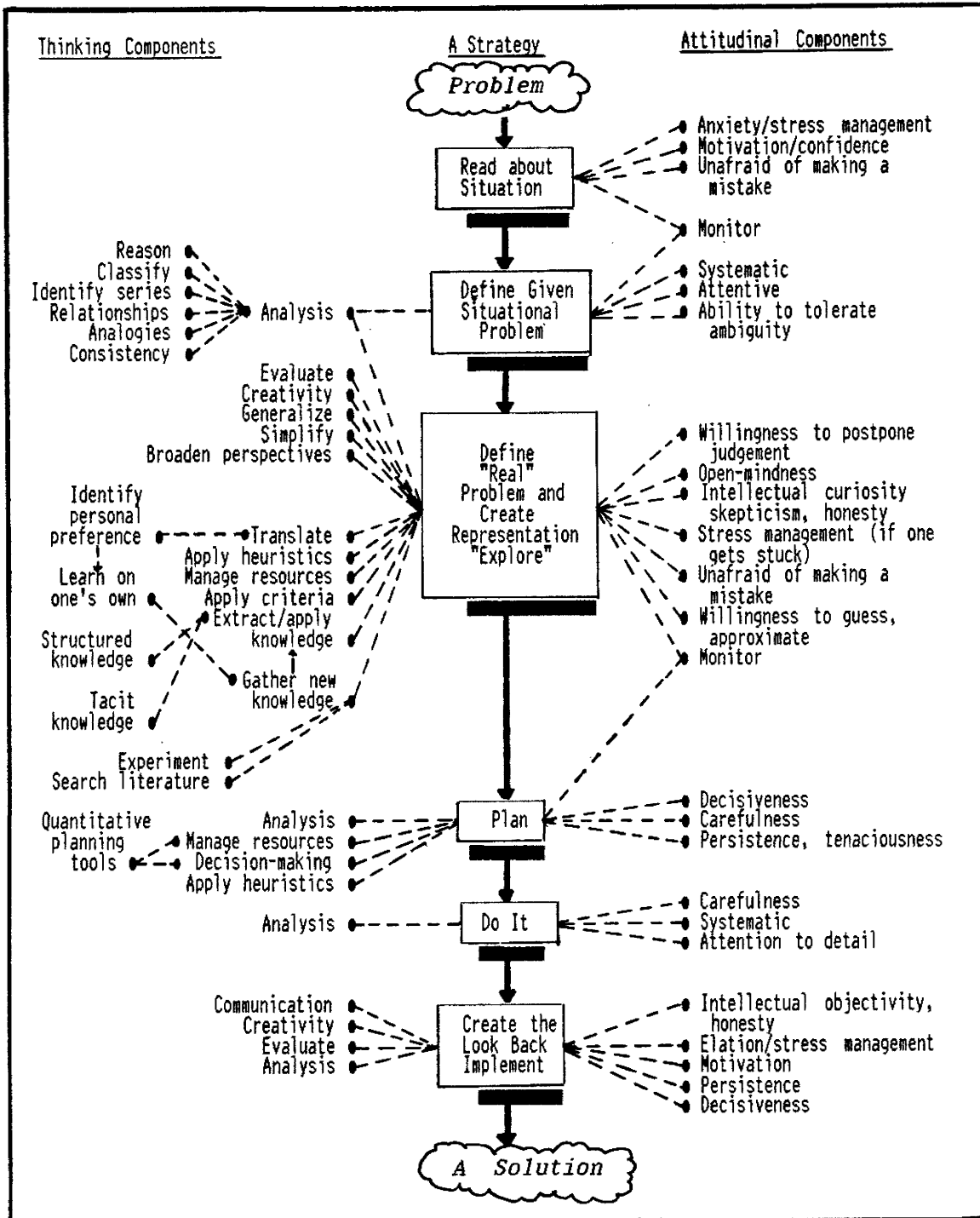


Fig. 1. Components in the problem solving process.

students meeting objectives in three distinct domains; the knowledge domain, the skills domain and the affective domain. The affective domain deals with the feelings, emotions, values and attitudes of students as these are manifested in their behaviour. Teachers are often very uncomfortable with designing and evaluating affective objectives because they view them as too "soft" or subjective. Teachers attempting to evaluate students' growth in problem-solving ability would find Woods' observations useful. For example, an affective objective based on Woods' model might read, "Student is able to postpone judgment until an investigation of all the data is complete."

Woods' emphasis on the role of stress at three points in the process and on the importance of confidence suggests the need for a non-threatening, co-operative learning environment. Students will hardly be willing to risk making mistakes in an environment of fierce competition or ridicule.

3. Problem-Solving and Research Skills

Some theorists have come to equate problem-solving with research skills by concentrating on the gap between where the learner is and where s/he wants to be. When considering the traditional school "set" problem of the "train A, train B" type, it is common to obtain the information necessary for solving it within the text of the problem itself. What is unknown then is the relationship of these facts to one another and to the solution of the problem. In these instances, how they are related is often knowledge which the teacher believes the student already possesses

and, consequently, crossing the gap will consist in applying the knowledge to the problem. In other cases, the knowledge required to solve the problem is not part of the problem and the student is required to identify what is not known and then to develop strategies for finding it out. This aspect of problem-solving is not new. Dewey himself recognized in *How We Think* that "mastering the various methods of searching for new materials to corroborate or to refute the first suggestions" went hand-in-hand with suspending judgment as a key factor in training thinking.²² Woods' model also includes this part of the process under "gather new knowledge, experiment and search literature."

Ross and Maynes adopt a view of problem-solving so exclusively based on research that it almost totally obscures the other aspects of the process. As a result, they identify the project as the primary curricular manifestation of the problem-solving process and their analysis of problem-solving looks like this:

1. Establishing a focus for the inquiry
2. Establish a framework for the inquiry
3. Determining sources of data
4. Obtaining data at source
5. Judging adequacy of data
6. Putting data in a framework
7. Reducing data to a summary form
8. Observing relationships in data

²²Dewey, *How We Think*, 13.

8. Observing relationships in data
9. Interpreting data
10. Extrapolating the interpretation
11. Communicating an inquiry²³

A third model which emphasizes research skills in problem-solving is suggested by curriculum writers in Geography (see Figure 2).²⁴ This model shares with Dewey's problem-solving the notion that learning begins with a difficulty facing the student and requiring clarification and suspended judgment. It also requires Dewey's "searching for new materials to corroborate or refute." What is not clear in the model, however, is what the process and the product have to do with the trigger. Despite the circular configuration, there is no arrow suggesting that the product and the trigger are connected and this suggests that the two are quite separate and that moving through the problem-solving process is not a continuous unending movement. Also, there is no sense that the model includes the kind of evaluation Dewey considers so important for the facilitation of future problem-solving. Its great virtue lies in the fact that it is a model currently in use in real Geography classrooms and considered effective for the objectives of the Geography curriculum. As such, it attests to the fact that a problem-solving model can work in a high school environment, and in

²³John A. Ross and Florence J. Maynes, *Teaching Problem-Solving* (Toronto: OISE Press, 1982), 5-7.

²⁴John McCutcheon, "Building from Strength 11: A Suggested Curriculum Approach for the Social Sciences," *Contact 58* (May 1983), 3.

subjects other than the hard sciences. The Geography model also differs from much of the work in the hard sciences because the problem is posed before the learning in order to stimulate it, rather than after it in order to test it, as so often happens in mathematics, physics or engineering.

Figure 2 is a model general enough to represent any given learning process that occurs in the classroom. There may be many different routes through the process. The arrows shown illustrate one way in which an exercise might be "worked through."

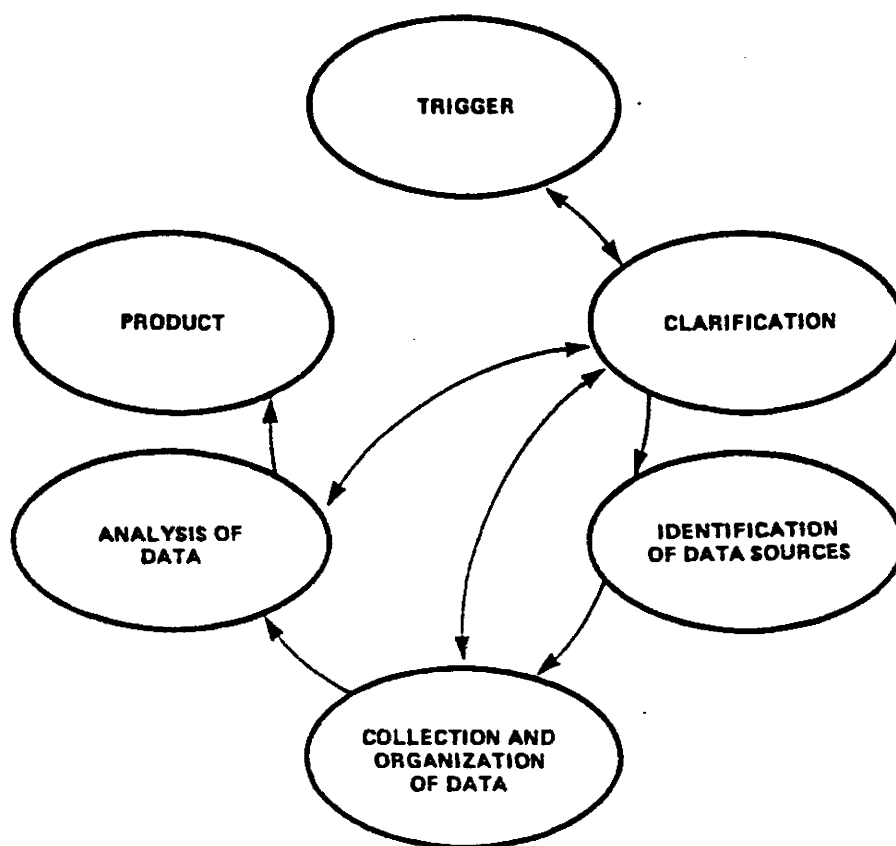


Fig. 2. A classroom learning process.

The process begins with a thought trigger. The trigger is often a question posed by the teacher, but it might be an assignment, a problem, a picture, a chart, etc. Often the data itself can serve as the trigger. The clarification stage allows us to more fully understand the trigger and also to decide upon what we want to do with the trigger; in other words, it points us in a direction. Clarification usually occurs throughout the process. In fact, clarification might not necessarily follow the trigger. You might wish to identify and collect data before deciding on what you wish to do with the trigger.

4. Problem-Solving and Related Thinking Skills

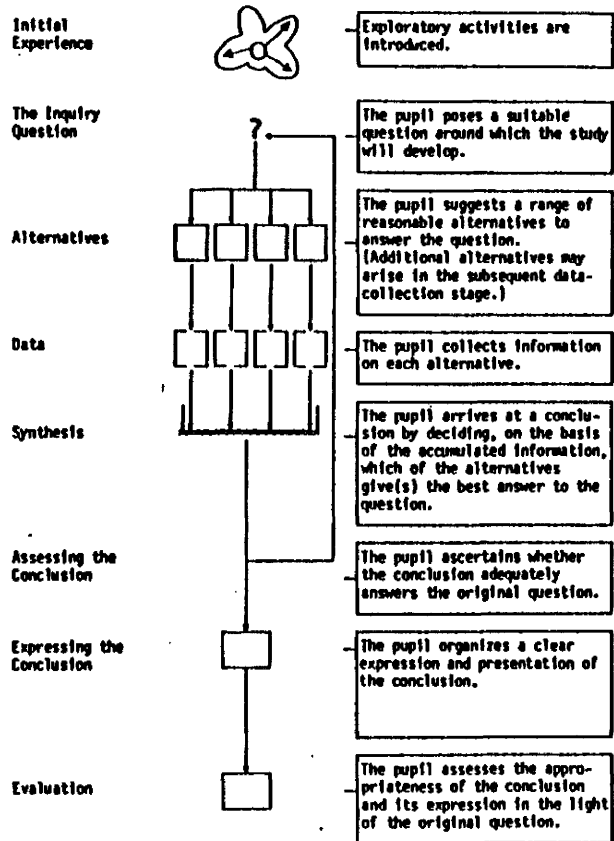
Anyone reading about problem-solving soon notices the repeated connections between this concept and those of thinking skills, inquiry, decision-making and metacognition. Some researchers, like Arthur L. Costa, use thinking and problem-solving almost interchangeably and in this they are closer to Dewey, for whom problem-solving was the essence of reflective thinking.²⁵ Others, like Woods, see thinking and decision-making skills as component parts of the problem-solving process.

In the Ontario Ministry of Education document *Programming for the Gifted*, the relationship is explored more thoroughly. Drawing heavily on the work of Popp, Robinson and Robinson (1974) the document identifies basic and integrative thinking skills which are to be applied to models of inquiry, decision-making, problem-solving and communication. Four of their models are offered here as examples (see Figures 3,4,5).²⁶

²⁵Arthur L. Costa, "Thinking: How Do We Know Students Are Getting Better At It," *Roeper Review* 6:4 (April 1984): 197.

²⁶Ontario Ministry of Education, *Programming for the Gifted* (Toronto: 1985), 134, 141, 138.

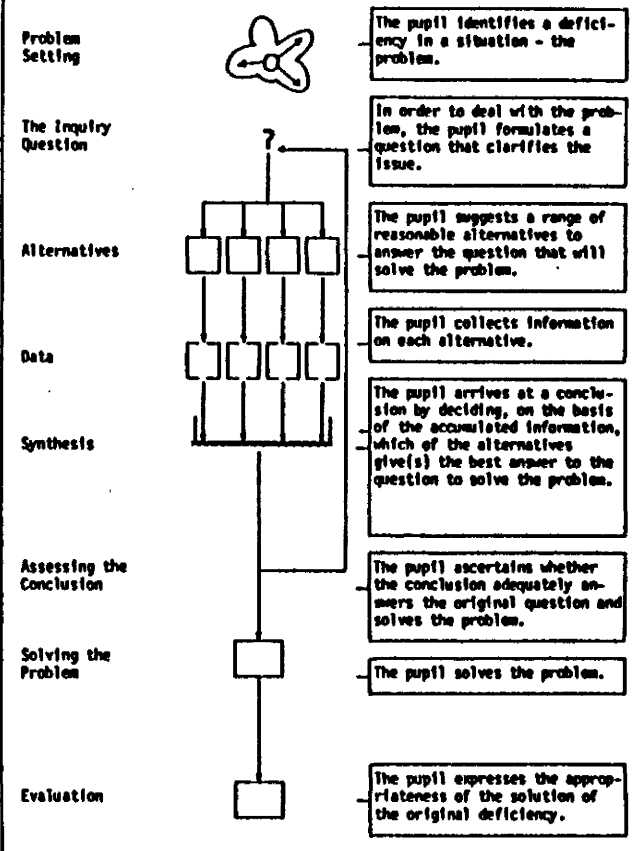
THE BASIC INQUIRY MODEL



For THEMES

From Ministry of Education, Ontario, *Research Study Skills. Curriculum Ideas for Teachers* (Toronto: Ministry of Education, Ontario, 1979), p. 20.

THE BASIC PROBLEM-SOLVING MODEL



For PROBLEMS

Fig. 3. Basic models.

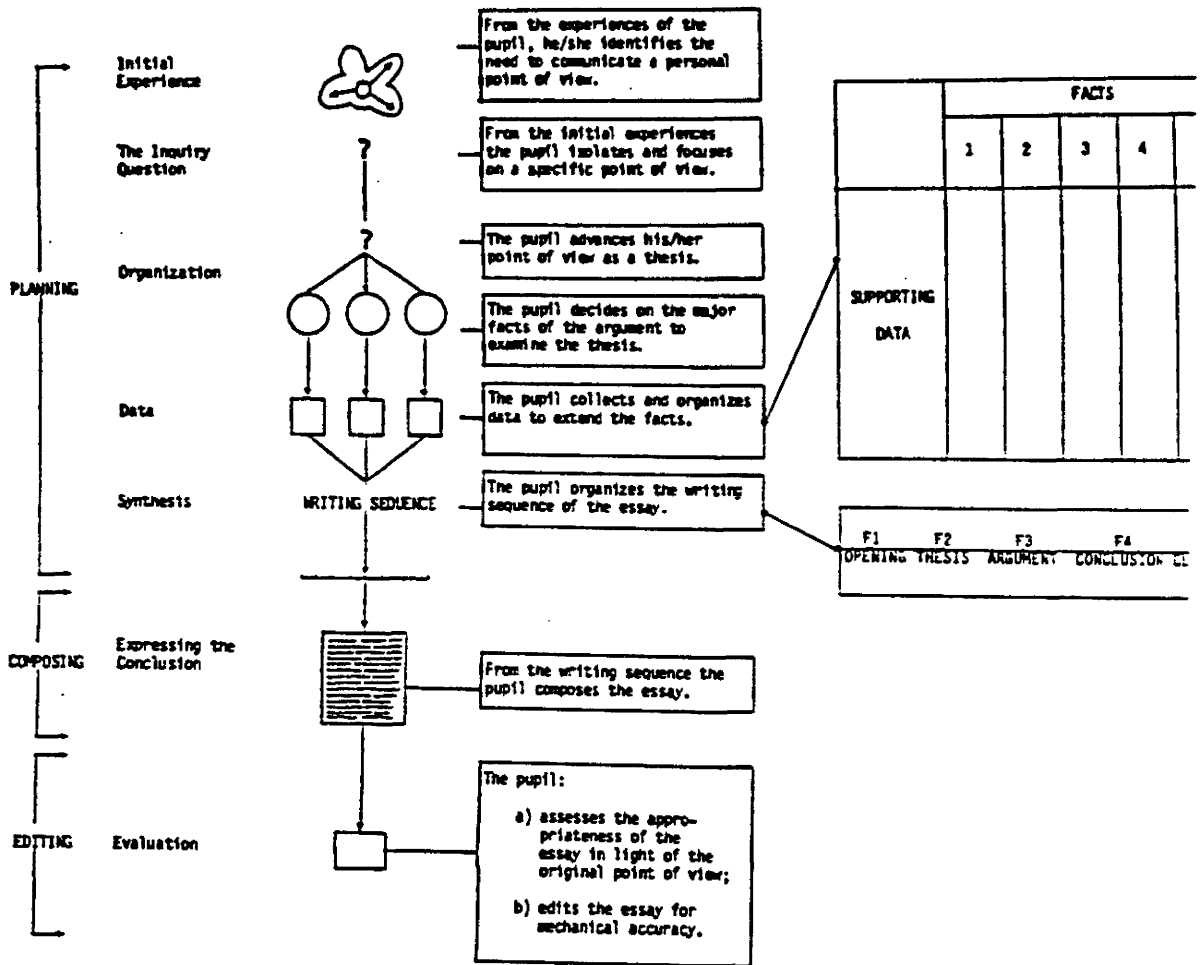


Fig. 4. The essay-writing model.

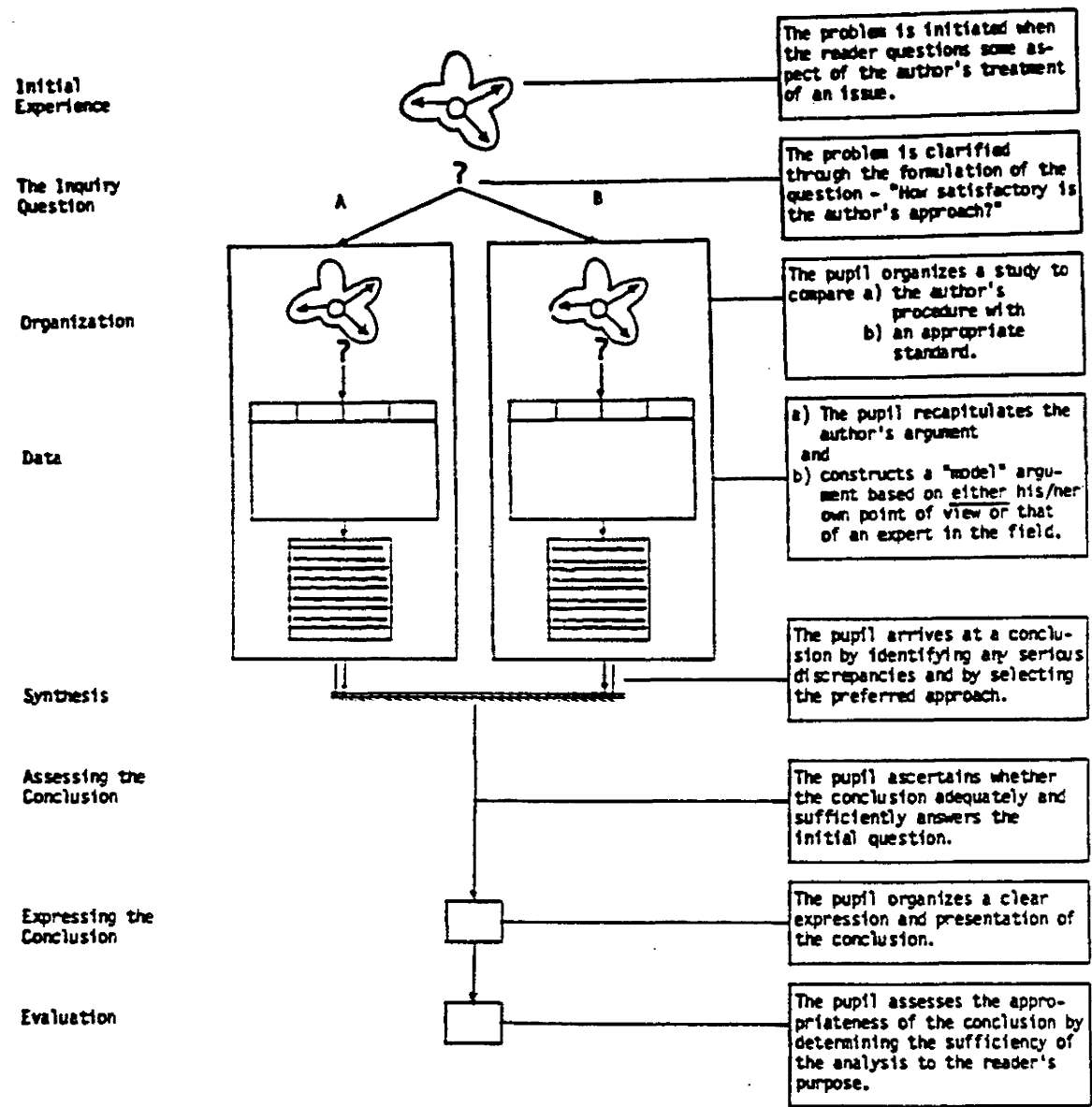


Fig. 5. The critical-reading model.

Although the latter two models could be straightforwardly applied to the teaching of English, they have some serious shortcomings. The distinctions between them are arbitrary; there is no real difference between the problem-solving model, and the inquiry model. Furthermore, the whole document produces in the reader an uneasy sense of an extremely rigid structure imposed from the top which, regardless of the framers' intent, might be directed primarily at the accomplishment of a very teacher-centred curriculum in a more "organized" way. In so doing, they call to mind Dewey's warning to teachers about imposing upon the students' thinking the logical structure they themselves had only come to recognize in retrospect.²⁷ Dewey believed that it was necessary for the skills and the structure to grow out of the motivating activity, thereby acquiring their relevance for the students. There is a sense that these models have become prescriptions rather than descriptions. Instead of helping to visualize a process, they dictate it. Indeed, one wonders who Dewey would have viewed the idea of teaching problem-solving as a strategy imposed on the student from without when such a high degree of teacher direction is very much at odds with his philosophy of education.

5. Problem-Based Learning

Problem-based learning is the methodology currently in use at McMaster Medical School. It is closely related to the concept of

²⁷Dewey, *How We Think*, 61.

problem-solving and the terms are often confused. Writing in *The Research and Development Newsletter* of New South Wales, Dr. C. E. Engel attempts to clarify the difference.

Posing a problem for students to solve after they have studied a subject for its own sake, *in vacuo* and without an opportunity to appreciate the relevance or applicability of what they were asked to learn, is not problem-based learning...problem-based learning should give students the opportunity to identify what they do not know or do not understand--but need to understand or know in order to deal with the unfamiliar situation: in order to problem-solve.²⁸

In the McMaster Health Sciences Program, students working in small groups are presented with a series of problems designed to highlight issues and satisfy knowledge objectives predetermined by faculty members. The group members work together for fifteen weeks on the problems, assisted by a tutor or facilitator who is a faculty member but not necessarily an expert in many of the areas of investigation raised by the problems. The instructors who use problem-based learning point out several advantages it enjoys over traditional methods of teaching and learning:

(1) it is closer to the real-life situation in which learning from problems is a condition of human experience.

(2) it permits an interdisciplinary approach in which subject fields are not isolated from one another in an artificial way.

(3) it makes use of the knowledge the student already has.

²⁸C. E. Engel, "Problem-Solving, Problem-Based, Problem-Centred and all that...*Centre for Medical Education, Research and Development Newsletter* (University of New South Wales) undated reprint.

(4) its emphasis on process is more compatible with the lifelong learning currently required by the professions.

(5) it is eminently compatible with small group learning.

(6) it is a framework which can be used to increase the student's control of his/her learning.

(7) it is demonstrably effective in promoting the recall and transference of knowledge.²⁹

Examples of two typical Health Science problems follow together with the issues which the designers hope they will raise.

²⁹Private communication from Luis Branda.

Few years ago, researchers at the drug company Hoffmann-La Roche found a compound* which was shown to antagonize the behavioural effects of ethanol in animals (1). This drug goes by the research code number, Ro15-4513. More recently, research carried out at the National Institute of Mental Health confirmed that Ro15-4513 makes drunk animals behave as sober.



Passed out. The rat on the left has passed out from alcohol intoxication. The one on the right had the same amount of alcohol, but after it passed out, it was given the experimental drug Ro15-4513. Within 2 minutes, it acted sober.

*Ethyl-8-azido-5,6-dihydro-5-methyl-6-oxo-4H-imidazo[1,5][1,4]-benzodiazepine-3-carboxylate)

- (1) Mohler, H., Sieghart, W., Richards, J.G., and Hunkeler, W. (1984) Eur. J. Pharmacol. 102: 191.

SOBERING DRUG**Some issues****Effects of ethanol****biological****behavioural****species differences****Drug addiction and drug dependence****biological aspects****psychological aspects****sociological aspects****Chemical nature of Ro15-4513****its relationship with drugs affecting
the nervous system****Drug development****ethical, economical, legal implications**

REWARDS FOR GIRLS

As a Hamilton Board of Education trustee, you are concerned about reports that girls perform less well than boys in mathematics and physical sciences. As a result they are less likely to do senior level courses in these subjects and therefore limit their access to university programmes. You propose to initiate a city-wide programme of prizes for girls in Grades 9-12 who perform well in mathematics.

Some Issues

Role of the Board of Education in general and individual trustees in particular

Mechanism by which such a proposal would be approved and implemented

Performance as a reflection of ability

What is the evidence that girls perform less well in mathematics and natural sciences courses?

What is the evidence that girls select fewer senior level courses in these subjects?

What is the evidence that their access to university programmes is limited

Validity of the evidence; critical assessment of evidence

If valid evidence supports the concerns, what are the causes

biological sex differences?

psychological sex differences?

sex differences in socialization?

Motivational effectiveness of prizes

Legality of the sex discrimination in the proposal

B.M.Ferrier (McMaster, 1988)

The McMaster model has many features which suggest Dewey's original concept. It is interdisciplinary in its approach, process-oriented in both strategies and evaluation, and learner-centred in its focus. It seems as though the model's framers were heeding Dewey's warning that:

Instruction in subject matter that does not fit into any problem already stirring in the student's own experience, or that is not presented in such a way as to arouse a problem, is worse than useless for intellectual purposes (my emphasis).³⁰

Indeed, Dr. Luis Branda, one of the founding members of the problem-based learning programme at McMaster, emphasizes that the problem must be "captivating" to the students, and suggests that they be presented with a set of problems from which they may choose those which arouse their interests or meet their personal objectives. The problems may not be soluble, but will nevertheless provide motivation for learning.³¹

The role of the learner in the McMaster model is significantly greater than in the traditional "knowledge-transmission" model still practised in Westmount and most other Ontario high schools. In addition to the knowledge objectives set for the problems by the Health Sciences faculty, students are encouraged to set personal objectives. They are expected to identify their starting points in terms of the given objectives, to set their own priorities, and to identify, along with the

³⁰John Dewey, *How We Think*, 199.

³¹Private communication from Luis Branda.

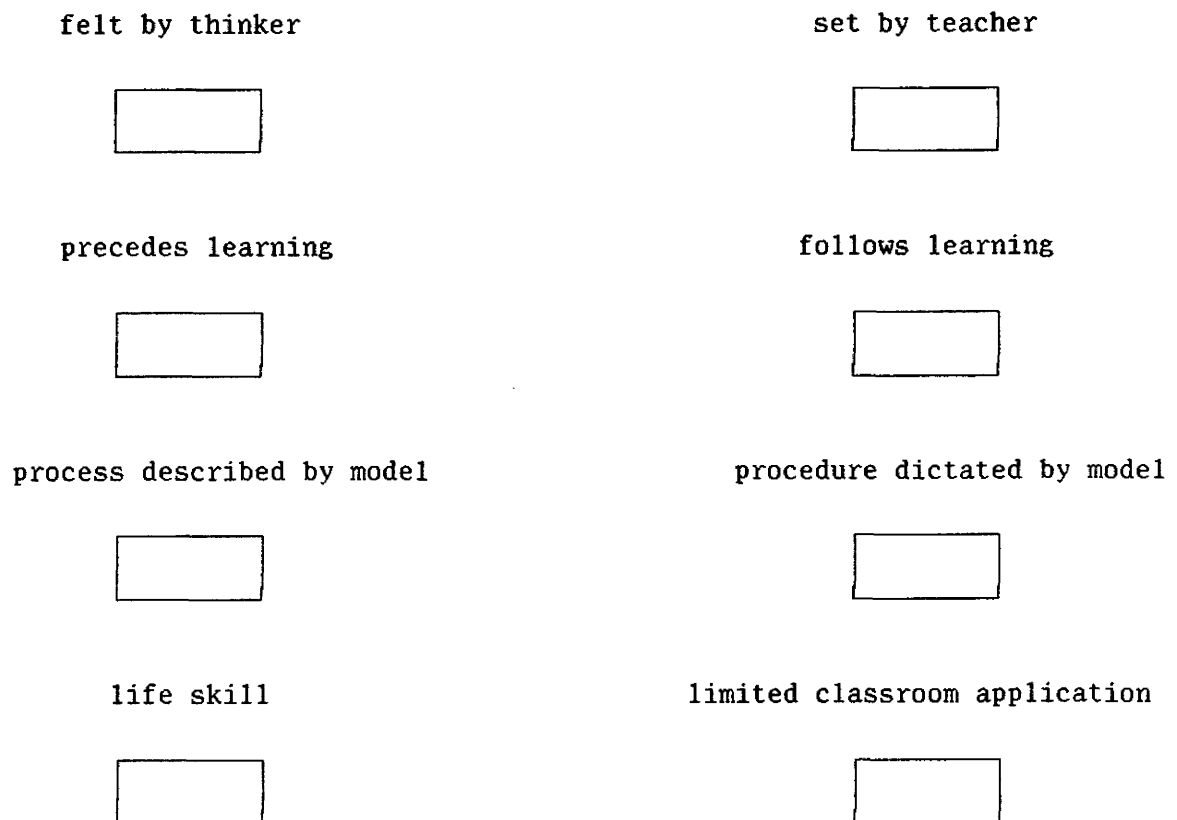
other members of their group, the issues raised by each specific problem. After the issues have been identified, the students work together to pinpoint what they need to know and develop a plan for finding it out. They are also expected to keep track of their own learning and match it with the program objectives, thereby developing skills in managing their work.

Even at first glance, the compatibility of the McMaster problem-based learning model with the structural features of the newly-adopted Westmount model is obvious. The fifteen weekly tutorial sessions fit almost exactly into the small-group delivery mode and the semester calendar, while the investigations the problems stimulate become the basis for the student's independent study between sessions. Philosophically, the model seems to agree with Robertson's assertion that "students are capable of doing more for themselves and (that) it is desirable that they be given more responsibility for their own decisions and education." The one obvious drawback is the disciplinary nature of secondary school studies. Dr. Branda warns that although problem-based learning can be done within the disciplines, it will not be as rich. One suspects, however, that it may still be infinitely richer than much present practice.³²

Ideas of what constitutes problem-solving education vary greatly ranging along a four part continuum. At one end is a rigidly imposed procedure for use on teacher-set classroom problems to test knowledge

³²Private communication from Luis Branda.

already formally "taught." At the other end is a perplexity felt by a thinker which will trigger him/her into learning and thinking critically all his/her life. Such a continuum might look like this:



The question is where on this continuum can a workable problem-solving curriculum for "Westmount 1990" be found. The answer is already beginning to suggest itself and will become clearer after an examination of both the concept of self-directed learning and the demands of the new *English Guideline*.

CHAPTER 3:
SELF-DIRECTED LEARNING

The lack of a clear definition of the concept of self-direction has led to considerable confusion among Westmount staff members since the concept was first introduced to them by the principal. Surprisingly little attention has been paid to the problem-solving aspect of the key phrase "self-directed problem-solvers," but the idea of self-direction has generated the almost constant and indiscriminate use of a whole variety of related terms such as independent learning, individualized instruction, self-pacing and life-long learning.

All of these terms are often used interchangeably both by novices and those who claim expertise in matters of curriculum but there are important distinctions among them which must be recognized. In fact, if 1990 is to succeed at all as a project of significant change, it is imperative that the participants have a clear understanding of the concepts involved. Paul Dressel and Mary Thompson, in accounting for the failure of independent study in many of the colleges they surveyed in the U.S., cite the lack of such an understanding as the key factor contributing to failure:

Failure to properly define independent study and its objectives and the resulting inability to communicate such an understanding to faculty and students were the major handicaps in most of the six colleges...There was some understanding that process was as important as product, but, for the most

part, faculty looked for standard results and students were ultimately forced to do likewise.¹

Later in the same work the authors warn that "faculty members trained in traditional patterns easily retreat to them or seek an alternate but equally rigid pattern."²

1. Life-long Learning

Life-long learning is one of the terms often lumped together with self-directed learning. Interest in it is a result of a growing realization that it is no longer possible to teach the student the skills and knowledge s/he will require for the future in the time normally set aside for formal schooling. The rapidly growing and changing body of knowledge, particularly in the sciences and the professions, demands a lifetime of learning. The life-long learner, then, is one who is able to identify what needs to be learned and how to go about learning it. Recognition of this has led to a call for school to teach students how to learn as much as, or perhaps more than, what to learn. Such a change in emphasis suggests that students should begin to practice this approach to learning while they are still in school.

Malcolm Knowles states the case for life-long learning forcefully:

In a world in which the half-life of many facts (and skills) may be ten years or less, half of what a person has acquired at the age of twenty may be obsolete by the time that person is thirty. Thus, the purpose of education must now be to develop the skills of inquiry. When a person leaves schooling he or she must not only

¹Paul L. Dressel and Mary M. Thompson, Independent Study (San Francisco: Jossey Bass, 1973), 64.

²Dressel and Thompson, 76.

have a foundation of knowledge acquired in the course of learning to inquire but, more importantly, also have the ability to go on acquiring new knowledge easily and skilfully the rest of his life.³

2. Individualized Instruction

In general, this term is used to refer to any way of packaging the curriculum so that it can be delivered to students individually rather than as a class. A curriculum can be individualized by putting it on computer, for example, or, as in the Bishop Carroll model in printed packages called learning guides. At one extreme individualized instruction can even mean individual students in individual study carrels working their way through extremely structured workbook exercises under the watchful and authoritarian eye of a teacher. In this sense, "individualized" may become synonymous with "isolated." Certainly there is nothing in the concept of individualized instruction to prevent it from being extremely structured and teacher-directed. In this respect, it has little, if anything in common with self-directed learning. Individualized instruction, however, can also mean a curriculum tailored to meet the needs of a particular student. In the province of Ontario, it most often means modifying the curriculum for a student identified as exceptional under the province's Bill 82. This bill requires that all Ontario school boards either supply or purchase educational services for every student within their jurisdiction, regardless of the student's particular special needs. The legislation

³Malcolm Knowles, Self-Directed Learning, (Chicago: Follett Publishing, 1975), 76.

provides a procedure for the identification, placement and review of special needs students for exceptionalities ranging from giftedness to severe mental, physical or emotional handicaps and requires that boards and teachers modify existing programs to meet the needs of these students. Consequently, to teachers in Ontario schools, the most common use of the term "individualized" is in reference to programs altered for individual students who fall within the provisions of Bill 82. The extent to which such a program is teacher or student directed can vary infinitely.

3. Self-Pacing

On the surface, this term appears self-explanatory, but it has important implications for "Westmount 1990." A self-paced curriculum is one in which the students are free to move at their own pace through work assigned by a teacher. Self-pacing has obvious advantages. The slow student need never be left behind nor the gifted student held back. Mastery of subject material is much more likely if slower students are not forced on with the rest of the class. However, in order to offer self-pacing, the school must structure the individualized curriculum so that each student has his or her own set of instructions, examples, readings and assignments. The danger in implementing self-pacing arises when the student's pace is not what the teacher feels it should be. When this happened at Bishop Carroll, the solution was to impose a minimum requirement of units to be completed within a certain time. This measure effectively negates the advantages of self-pacing by

removing any autonomy the system afforded the students and the approach became teacher-paced once more. Cochrane High School, which operates on the Bishop Carroll model, solved the problem differently by having teacher advisors negotiate with the students, helping them to set goals for themselves, and encouraging them to reach them. In this way, Cochrane teachers were able to preserve the integrity of self-pacing as a concept related to student needs as opposed to teacher demands or administrative convenience.⁴

4. Self-Directed or Independent Learning

The final two terms for consideration, self-directed learning and independent learning, are the only two which can, in fact, be used interchangeably. Even here, however, caution is advised because many writers clearly understand independent learning in the most limited sense. Dressel and Thompson explain that independent learning "has come to mean independent of classes, independent of other students, or independent of faculty" when it should mean "capable of self-directed study."⁵ Perhaps some of the confusion which surrounds these concepts is a result of the fact that two complementary educational traditions seem to have come together in the term "independent learning."

The first is the tradition of libertarian education in which the school is viewed as an arm of the political and economic establishment,

⁴Private communication from Michael Bulger, Vice-Principal, Cochrane High School, 1988.

⁵Dressel and Thompson, 4.

an agent of social control which indoctrinates young people in order to fit them into the system. Supporters of this tradition believe that the school preserves an already inequitable social order and in so doing closes doors which it should be opening. Such philosophers value freedom and democracy and worry about the constraints imposed by the school. Consequently, they are in favour of giving control of the learning to the learner.

A philosophical dilemma arises, however, when education is viewed as a requirement for the exercise of democracy by the individual. If education will set the people free, must the state compel them to be educated in a formal authoritarian setting for their own good? Gray and Chanoff reporting on the democratic Sudbury Valley School experiment, cite the contradiction between the end--the autonomous individual functioning in a democratic society--and the means--compulsory attendance, state-determined curriculum and the authoritarian classroom.⁶

Independent learning may be the furthest education is able to go in resolving this difficulty. Most people would agree that society has a responsibility to provide its young people with the opportunity to acquire the knowledge and skills required to be successful in that society. They may, however, disagree about how this can be achieved. Social critics such as Ivan Illich would remove the constraints of the

⁶Peter Gray and David Chanoff, "'Democratic Schooling': What Happens to Young People Who Have Charge of Their Own Education?" American Journal of Education, no. 94 (February 1986): 182.

state-run school system by removing the system, but such a revolutionary step seems an unlikely prospect.⁷ For the publicly-employed classroom teacher who recognizes the validity of libertarian concerns, the possibilities lie in designing curriculum which lessens the control of the school by increasing the control of the learner, that is by moving towards independent learning.

Dressel and Thompson define it as "the student's self-directed pursuit of academic competence in as autonomous a manner as he is able to exercise at a given time."⁸ The operative word here is autonomy, in which decision-making gradually passes from the teacher to the learner. Della-Dora and Blanchard identify areas in which this exchange might take place by describing the ends and the mid-point of the school-directed/self-directed continuum (see figure 4).⁹ The possible areas in which student autonomy might be exercised under their scheme correspond roughly to the areas curriculum writers would label objectives (what is to be learned), strategies (how it is to be learned), resources, and evaluation (how the student's performance in meeting the objectives will be assessed).

This continuum is particularly useful since it suggests areas in which self-direction may be introduced gradually. For example, at the

⁷Ivan Illich, Deschooling Society (New York: Harper and Row, 1971).

⁸Dressel and Thompson, 1.

⁹Delmo Della-Dora and Lois Jerry Blanchard, eds., Moving Towards Self-Directed Learning (Virginia: Association for Supervision and Curriculum Development, 1979): 4-7.

earliest level students might be involved only in the self-pacing aspect of the Westmount model, learning to make decisions about what to do when. Having mastered this, they might then become involved in making decisions about materials and learning activities which would meet the objectives of the course. At the third stage, students could be given autonomy in the types of evaluation applied to their work and the weighting given to each type. Complete autonomy in these areas is, of course, impossible because the law requires that the curriculum comply with the Ministry guidelines for the specific subject. These requirements will be dealt with in a later chapter. Finally, students could become involved with setting their own objectives--deciding what they need and want to learn as well as how they will learn it.

The second educational tradition underlying the concept of independent learning is the tradition of adult education in which curriculum has often been packaged to allow adults who cannot because of the conditions of their employment or factors of distance attend classes to continue with education. Even adult evening classes characteristically involve fewer meetings than day school and, consequently, require the students to work more on their own. In this tradition, independent learning does mean, as Dressel and Thompson suggest, independent of classes and teachers, and it is for this reason that the Ministry of Education now calls its correspondence course division its Independent Learning Centre. There are, however, some features of autonomy also present in this tradition. While the

curriculum may be prescribed, the decision to study it belongs to the student and arises out of a need which the student perceived. The student also has greater responsibility in managing his or her time and the compulsion to attend classes, where they are offered, may be considerably less. It must also be recognized that teachers tend to treat adult students differently, respecting their personal freedom more and allowing them to make more of their own decisions. Nevertheless, it would be a serious error to assume that Independent Learning Centre materials are in any conscious and deliberate way designed to be self-directed.

It is perhaps worth noting here that the staff at Cochrane High School, who made the change to the Bishop Carroll model in a few short months, drew heavily on these Independent Learning Centre materials when designing many of their learning guides. Some departments at Westmount intend to follow their example and it is difficult to see how this will contribute to fulfilling Robertson's primary objective. The two pages which follow are taken from a course of study for Grade 12 advanced English prepared by the Independent Learning Centre of the Ontario Ministry of Education. They follow a knowledge transmission model in which the student is directed not only about exactly what to do ("Now read Act II up to the end of the scene...") but also how to respond to the play: "There is a feeling of hope and expectancy in this scene --a feeling which makes later events all the more tragic and ironic."

 ■ ■
 RISING ACTION TO CRISIS

Now, read Act II up to the end of the scene where Willy visits Howard at the office. By the time you finish reading the scene you will know why it is the play's crisis or turning point.

Willy
and Linda

Act II: Willy and Linda talk as he gets ready to go and see Howard about transferring to a city job. Biff has gone to ask his old friend and employer, Oliver, for a loan to start a business. The boys are planning to treat their father to dinner that evening. Thus, as with classical tragedy, this drama becomes very hopeful in the middle. There is a feeling of hope and expectance in this scene--a feeling which makes later events all the more tragic and ironic.

1. What is Willy's dream in this scene?
2. What is there about the American way of buying (time payments and debts) that Willy feels is a trap?
3. Contrast Willy's treatment of Linda in this scene with that in the last scene of Act 1. Can you account for it?

Linda
and Biff

In this scene Linda has a telephone call from Biff.

1. By what she says to Biff, how does Linda encourage Willy's escape from reality?

Willy and
Howard

Willy talks and finally pleads with Howard in this scene, only to discover that Howard does not plan to give him a city job but to fire him. Howard tells Willy he needs a good long rest. This scene suggests that the play is a protest against the American business ethic which puts profits before people.

1. What is the effect on the atmosphere and mood of the tape recorder sequence?
2. How does Willy attempt to plead his case with Howard?
3. What has been the effect of the salesman, Dave Singleman, upon Willy's life?
4. Do you see any significance in the names Single man and Lo(w) man?
5. What is the result of Willy's plea?

III ASSIGNMENT 2

6. At the beginning of Act II, what causes for optimism are there?
7. Examine the dialogue between Linda and Willy as Willy prepares to leave for his interview with Howard. Discuss to what extent you feel Linda and Willy are facing the situation realistically.
8.
 - a. Outline the appeals that Willy makes to Howard and explain Howard's reaction to them.
 - b. To what extent do you sympathize with Willy's or Howard's position? How do you think Miller wanted the audience to feel? Support your position.
9. Show how Miller creates great tension and suspense in building this scene to the crisis when Howard fires Willy.

■ ■ CHARACTER DEVELOPMENT

One of a playwright's purposes is to show how different people respond to given situations. Well drawn characters emerge as real people with strengths and weaknesses common to all humanity. We, the audience, tend to sympathize with these characters when we consider how we would behave in their position.

Generally, we can classify characters as either major or minor. The major characters reveal many facets of their nature because of the important role they play; the minor characters are less fully developed, and tend to be more functional. Usually, the minor characters serve by contrast to reveal aspects of the major characters. Frequently the minor characters have only a one-sided nature, or one dominant trait. For example, Ben, although important in the play, is not a fully developed character, nor is Bernard or even Linda.

The challenge which confronts the English Department then is that of designing a curriculum which will recognize and develop self-direction while at the same time increasing the students' ability as problem-solvers in the broadest sense. That this must be done within the constraints of Ministry regulations brings the designers face-to-face with the philosophical dilemma mentioned earlier.

How compatible is teacher-direction with the commitment to fostering self-direction? To what degree can coercion and independence co-exist? This is much more than a purely academic argument if one examines the so-called Independent Study Unit for the Ontario Academic Course (previously grade 13). In this unit students are expected to pursue a literature or language related interest using an undefined mixture of in-school and out-of-school time to produce an oral and written presentation. Little direction is given about how the unit should be implemented and, as a result, implementation varies greatly across the Hamilton system. Some departments allow students to choose their own topics and some departments assign topics. Some teachers negotiate deadlines and methods of presentation with students while others impose them. In several departments efforts to monitor the independent study have resulted in a paper avalanche of forms students must complete at specified stages of their work. It must be admitted that part of this is a direct consequence of the fact that teachers are often attempting to keep track of the progress of upwards of fifty students at a time, but the imposition of such an elaborate structure

recalls the warning of Dressel and Thompson that traditionally trained teachers will fall into equally rigid structures in the quest for independence, unless they understand the concept thoroughly.

This dilemma is explored at length, but without resolution, by Joseph Agassi and John Wettersten in two articles in a recent issue of *Interchange*. Agassi begins by stating the case for autonomy.

...the basis for that--the view that without coercion transmission of knowledge is impossible--is empirically refuted; students can be autonomous. Without doubt, it is hard to avoid using force even against autonomous individuals in such a violent institution as the current educational system where, as a matter of course, youths have to prove their innocence daily in order to keep floating. But the very existence of autonomous students, of autonomous classes of any improvement within the current coercive educational system comprises as powerful an argument as can be.¹⁰

Wettersten, commenting on Agassi, reviews the work of the German philosopher, Selz, who, like Dewey, believed that thought processes are given direction by problems, and that knowledge and intelligence grow by the discovery of problems and their solutions. The task for educators is to help students learn to learn. Selz's method consisted of having students do problem-solving exercises in groups where they could correct each other and where the process could become clear to them.¹¹

This early marriage of group problem-solving exercises with notions of student autonomy suggests that problem-based learning may be

¹⁰Joseph Agassi, "The Autonomous Student," *Interchange* 18:4 (Winter 1987): 20.

¹¹John Wettersten, "On Education and Education for Autonomy," *Interchange* 18:4 (Winter 1987): 21.

a very suitable model for achieving the goals of "Westmount 1990." But the question remains: "How do we help students to move on (towards autonomy) without imposing frameworks?"¹² The fact is that if the English department at Westmount chooses problem-based learning as the best approach to helping students become self-directed problem-solvers, the students will have no choice about that. Paradoxically then, they will have autonomy thrust upon them. One opportunity to minimize the external coercive nature of the innovation has already been missed. Aside from one representative on the Advisory Committee, there is no opportunity for student input into the decision-making process for "Westmount 1990." Now, the only possibility for making the venture a co-operative one between students and teachers lies with the curriculum design. Within the constraints of the legislation which governs them, teachers must allow students as much autonomy as possible. Also, they must bear in mind that within the classroom or group, it is a mistake to assume that just because the teacher is not at the front of the room, s/he is not in control. Teacher direction or coercion need not be overt and must be carefully examined. Although such issues may be resistant to, or incapable of, solution any serious commitment to the notion of students as self-directed problem-solvers must surely require adherence to Peter Gardner's call that educators search "out of respect for

¹²Wettersten, 24.

freedom, for educational means to our desired end that involve the least or no constraint."¹³

¹³Peter Gardner, "A Consideration of Liberty, Compulsion and the Curriculum," *British Journal of Educational Studies*, xxxiii:3 (October 85), 1987): 238.

CHAPTER 4:

"WESTMOUNT 1990" AND THE NEW *ENGLISH GUIDELINE*

In the fall of 1987, the Ontario Ministry of Education published a new *Curriculum Guideline for Intermediate and Senior Division (Grades 7-12) English*. All English courses offered in the province's schools are expected to conform to the requirements of this guideline by the end of the proposed five-year implementation period. Traditionally, English guidelines have allowed the classroom teacher considerable latitude and, like its predecessors, the new document has few concrete prescriptions and prohibitions; nevertheless, it constitutes a serious philosophical departure from current practice.

Prescriptions

1. Media Study is to be considered integral to the English curriculum and visual media are to be integrated into lesson plans.
2. Each of poetry, prose fiction, prose non-fiction and drama is to be offered in four out of five compulsory English credits.
3. Independent study is to be considered "a core topic."
4. One-third of classroom time is to be spent in the process of writing using writing folders.
5. Media Study is to constitute one-third of the curriculum in every two courses.
6. Students are to know and frequently share in selecting assessment techniques and criteria used.

7. Exams are compulsory in senior general level courses and in senior and intermediate advanced level courses.
8. Evaluation is to include assessment of process.
9. Evaluation is to be weighted according to the following scale:

Writing as Process	20-30 percent
Small group/oral language	20-30 percent
Work and study habits/independent learning	20-30 percent
Summative tests/exams	20-30 percent
10. Oral activities such as monologues, role-playing, improvisation, etc., must be part of the program.
11. Teachers are to write with students and share their work.
12. Students should read and produce visual media.
13. Students should have sufficient knowledge of the terminology of grammar to enable them to discuss their own writing.

Prohibitions

1. Instruction in formal grammar should not exceed ten percent of course time.
2. Data for the study of formal grammar is to come from the students' own writing.
3. No lists of punctuation rules are to be memorized.

4. Students are not to be given exercises with words which they already know how to spell.¹

Many of these prescriptions do not seem difficult to implement, nevertheless, several have serious implications for the writing of curriculum and for the role of the teachers. The most obvious is the shift away from tests and examinations as the predominant form of student assessment. This shift represents an attempt on the part of the curriculum framers of the *Guideline* document to move classroom teachers away from the current emphasis on product and towards a recognition of process. The commitment to process is a key factor in developing the learner of the future who will need to know how to learn in order to keep up with the explosive growth of knowledge. This image of the learner is the same as that conjured up by such phrases as "life-long learner" and "self-directed problem-solver." S/he is also the individual whom principal Robertson wishes to develop in "Westmount 1990." Without specifically dealing with the image of the learner, the new *English Guideline* alludes vaguely to the concepts of problem-solving, independent learning and self-direction.

The references to problem-solving reflect a certain vagueness in terminology which the document never clarifies. "Problem-solving" is mentioned as a way of learning to deal with challenges and change² and

¹Ontario Ministry of Education, *English Curriculum Guideline* (Toronto: Queen's Printer, 1987).

²*Guideline*, 5.

as one of the activities students pursue in small groups.³ Citing one of the provincial goals of education, the document points out that students should "acquire skills that contribute to self-reliance in solving practical problems in everyday life."⁴ The examples which follow range from the art of parenting to the basic technology of home maintenance and suggest either a laudable breadth of definition reminiscent of Dewey or an inexcusable sloppiness of language. The only allusion to the relationship between problem-solving and the English curriculum is the passing comment that in "the English and language arts curriculum, students learn to use language to communicate (and) to solve problems..."⁵ No indication of how problem-solving strategies might be applied to the study of English is provided.

On the subject of independent or self-directed learning the document fares slightly better. Once again, however, no attempt is made to define either concept or to relate them to each other, although they appear to be used interchangeably. The document does state that "by the time these students (those educated under the *Guideline's* provisions) graduate from secondary school, they should be self-directed learners."⁶

That self-directed learning has something to do with student autonomy is suggested in at least three passages:

³*Guideline*, 25.

⁴*Guideline*, 6.

⁵*Guideline*, 7.

⁶*Guideline*, 28.

The supportive environment of the classroom, with its respect for student autonomy and for learning with and from other persons, further encourages inter-cultural understanding and an appreciation of the strength in cultural and racial diversity.⁷

Before beginning a task students should know the assessment techniques and the criteria that will be used to determine their progress and achievement, and they should frequently share in the selection of both.⁸

As students become more self-directed they need the freedom to choose topics for interaction and to select strategies for achieving objectives.⁹

All three passages suggest a recognition of the growth in student decision-making which underlies the philosophy of self-directed learning.

A fourth passage refers to independent learning as a way of achieving the provincial goal of developing personal responsibility.¹⁰ Presumably, the author(s) mean by this taking responsibility for one's own actions. Such responsibility is an important part of autonomy and must be encouraged; however, it is critical that it be freely assumed responsibility if it is to be truly independent. In any educational system it is ultimately the student who is responsible for doing the reading, completing the assignments and studying for the exams, and a student may still carry out this role with a high degree of

⁷Guideline, 7.

⁸Guideline, 11.

⁹Guideline, 26.

¹⁰Guideline, 6.

responsibility in a system which affords him/her no autonomy with regard to strategies, resources, objectives or evaluation techniques. There is a critical difference between externally imposed accountability for carrying out tasks and freely assumed responsibility for the decisions, directions and consequences of one's own learning.

The document also suggests that "independent study involving original research" might be offered as a separate course for the fifth credit now required for graduation.¹¹ One wonders how such a course would differ from the self-direction the *Guideline* requires of the other four compulsory credits. Although the difference may be one only of degree, some clarification would have been helpful.

The passage which presents the most difficulty, however, appears at the end of the document in reference to the role of the teacher. Quoting from *Partners in Action*, the Ministry document for teacher-librarians, the *Guideline* notes:

"The teacher's role is to facilitate independent learning:
"Planning and directing learning experiences are now central to the teaching role."¹²

It is difficult to understand the choice of this quotation because the words planning and directing hardly seem descriptive of the facilitator role, in which, generally, the teacher is seen as one more resource at the student's disposal. Either the passage is indicative of confusion about independent learning or the writer is unconsciously

¹¹*Guideline*, 9.

¹²*Guideline*, 31.

reflecting the dilemma discussed earlier: To what extent can students be constrained to exercise their freedom? This question is encountered again when the *Guideline* exhorts teachers to provide opportunities for students to learn the record-keeping and note-making skills required for independent learning.¹³

The danger inherent here is that the teacher will decide how, when and why the student will practice these skills and will lapse into once more imposing a rigid structure on the students. A similar direction seems to have been taken where the model of problem-solving has become a structure imposed on the processes of learning from without, rather than a description of organic growth. This recalls once again Dewey's warning that the teacher must not force upon the student a structure which s/he has only come to recognize in retrospect.¹⁴ Although it may be conceded that "to move the learner who is not self-directed towards self-direction may at times require a directive approach,"¹⁵ a commitment to the philosophy of self-directed learning logically requires an equal commitment to the attainment of that level of student autonomy of which the learner is capable.

¹³*Guideline*, 28.

¹⁴John Dewey, 61.

¹⁵Ernest M. Schultenberg and Sandra J. Tracy, "The Role of the Adult Educator in Fostering Self-Directed Learning," *Lifelong Learner*, no. 10 (Feb/March 1987): 4.

CHAPTER 5

SELF-DIRECTED LEARNING AND PROBLEM-SOLVING

What happens when an attempt is made to combine self-directed learning with models of problem-solving? An examination of the two approaches suggests they have a great deal in common. In fact, Malcolm Knowles states that one of the central assumptions of self-directed learning is the belief that the students' natural orientation in education is "task or problem-centred, and that therefore learning experiences should be organized as task-accomplishing or problem-solving projects."¹

1. Emphasis on Process

Both self-directed learning and problem-solving suggest that the processes of learning are as important as the content of what is learned. This view has generated a heated controversy between proponents of content and proponents of process. The content side of the argument is probably best represented by E. D. Hirsch, Jr., who believes every educated American should possess a definable body of knowledge. Hirsch has gone so far as to itemize pieces of information with which he believed such a person should be familiar.² The opposite view is expressed by one of the professors surveyed by Dressel and

¹Knowles, 20.

²E. D. Hirsch, Jr.

Thompson, who stated this opinion:

I think it is immaterial what the student has in his head. You can give marvellous courses which teach him an incredible number of facts and destroy his interest in the subject so that in five years he has forgotten the facts and hates the subject. In theory, I am almost totally unconcerned with what the student learns. I think it is important for students to make decisions for themselves.³

Another professor interviewed by Dressel and Thompson expressed the more commonly held view that:

...the fact that someone should come out with a Chemistry B.A. and not know some little detail would reflect badly on all chemists at this institution who certified him.⁴

It is this persistent ambiguity about the relative importance of process over content which plagues many Westmount staff members as they consider the changes proposed for 1990. The same concern was raised repeatedly around the province in response to the new *English Guideline*. Criticism has also been levelled at the problem-based learning model in use at McMaster's School of Health Sciences. In this instance, it has been largely refuted by the fact that graduates of the school fare well in the medical board examinations taken by graduates from all Canadian medical schools.⁵

Teachers at Cochrane High School also faced parental concerns about content when they adopted the self-paced model of Bishop Carroll School. Parents wanted to know if the same amount of work was "covered"

³Dressel and Thompson, 85.

⁴Dressel and Thompson, 82.

⁵Private communication with Luis Branda.

under the new system. They worried that students who finished eight credits a year under the old system and now managed only six were learning less. In many cases, however the student going at a slower pace was earning significantly higher marks than previously and was not proceeding until s/he had mastered the work. A year earlier the same student could have advanced with a mark of fifty percent. The Vice-Principal lamented, "I wish we had been more honest about the old system because often we're compared to something which never really existed."⁶

To a large degree, however, the distinction between content and process is an artificial one. It is clearly not possible to learn in a vacuum: one must learn something, be it knowledge, skills, behaviour, attitudes. By the same token, it is equally impossible to acquire any of these without the processes of learning having taken place. The recent emphasis on process is simply an attempt to make the processes of learning more explicit to the student and, consequently, more transferable and longer-lasting. Knowles argues that emphasizing process simply changes the focus from the transmission of content to the acquisition of content; that is, from teaching to learning.⁷

2. The Role of the Teacher

In both the self-directed and problem-solving approaches, the most commonly used term to describe the teacher's role is facilitator or

⁶Private communication with Michael Bulger.

⁷Knowles, 38.

co-learner. Dewey described the teacher's role in his critical problem-solving as follows:

This does not mean that the teacher is to stand off and look on: the alternative to furnishing ready-made subject matter and listening to the accuracy with which it is reproduced is not quiescence, but participation, sharing in an activity. In such shared activity the teacher is a learner, and the learner is, without knowing it, a teacher--and upon the whole, the less consciousness there is on either side, of either giving or receiving instruction, the better.⁸

Dewey believed that any idea, when conveyed by one person to another, ceased to be an idea and became a given fact. He feared that such transmission of facts by the teacher would suppress thinking in the student, thinking which only the presentation of problems would stimulate. He described the role of the teacher in the following terms:

Only by wrestling with the conditions of the problem at first hand, seeking and finding his own way out, does he (the student) think. When the parent or teacher has provided the conditions which stimulate thinking and has taken a sympathetic attitude towards the activities of the learner by entering into a common or cojoint experience, all has been done which a second party can do to instigate learning.⁹

Malcolm Knowles, commenting on his change from content-transmitter to facilitator, describes it as a "fundamental and terribly difficult change" through which he endeavoured to join his students

⁸Dewey, *Democracy and Education*, 160.

⁹Dewey, *Democracy and Education*, 160.

"honestly as a continuing co-learner."¹⁰ A facilitator is literally one who makes something easy. The teacher's job, then, is to make it easy for the student to learn, to make decisions, to investigate resources and to achieve goals. Knowles has analysed his own job description of his new role.

1. Climate setting.

How can I most quickly get the learners to become acquainted with one another as persons and as mutual resources for learning? How can I help them to gain an understanding of the concept of self-directed learning? How can I provide them with a simple preliminary experience in practising the skills of self-directed learning? How can I help them to understand my role as a facilitator and resource to self-directed learners and ensure that they will feel comfortable in relating to me this way? How can I present myself to them as a human being so that they may trust me? How can I provide them with a short but meaningful experience in working together collaboratively? How can I create an atmosphere characterized by both mutual caring and support and intellectual rigor?

2. Planning.

At what points shall I decide what procedures to use, and at what points shall I present optional procedures for them to decide about? On what ethical basis shall I make this decision, and how will I explain it to them and invite their modification or veto. What mechanism will I propose for involving them in the decision-making process--consensus or voting by the total group, delegation of responsibility to subgroups, or delegation to an elected steering committee?

3. Diagnosing needs for learning.

How shall we construct a model of the competencies (or content objectives, if you prefer) this particular learning experience should be concerned with? If I start with a model I have constructed, how can I present it so that they will feel free to change it or build upon it? If I start with their suggestions for a model, how can I introduce my own ideas or the requirements from the outer environment without denigrating their

¹⁰Knowles, 34.

contributions? How can I make it possible for them realistically and nonthreateningly to assess the gaps between their present level of development of the competencies and the level required by the model?

4. Setting goals.

How can I help them translate diagnosed needs into learning objectives that are clear, feasible, at appropriate levels of specificity or generality, personally meaningful, and measurable as to accomplishment? How can I suggest changes constructively?

5. Designing a learning plan.

What guidelines for designing a learning plan will I propose? What optional models of plans will I present? What kinds of help will I give particular learners in designing their plans? How will I expose them to resources and strategies for using resources that they may not know about or may not have thought of? What mechanisms (e.g., consultation terms) can I suggest to facilitate their helping one another in designing their plans?

6. Engaging in learning activities.

Which learning activities shall I take responsibility for to meet objectives that are common to all (or most) of their learning plans, which activities should be the responsibility of subgroups, and which should be individual inquiry projects? How can I make myself available to subgroups and individuals as a consultant and resource as they plan and carry out their learning activities? What is my responsibility for assuring quality performance of the learning activities?

7. Evaluating learning outcomes.

What should be my role in feeding data to the learners regarding my perceptions of the accomplishment of their learning objectives? How can I do it so as not to create a dissonance with the learners' self-directedness? What is my responsibility for making judgments about the adequacy of the evidence of accomplishment of the learners' objectives and the adequacy of their criteria and means for validating their evidence? How can I present these judgments in

such a way that they will enhance rather than diminish the learners' self-concepts as self-directed persons?¹¹

The great virtue in Knowles' analysis is that it recognizes in a practical way the philosophical dilemma mentioned earlier of coercing students into freedom. By questioning the ethical basis on which he can make decisions about the degree of student autonomy in his course, Knowles makes explicit the contradiction inherent in any attempt to direct students to self-direction. His solution is to make his own view of the course and procedures to be followed open to negotiation, at the same time recognizing that students educated in the traditional system, where the only agenda is the teacher's, may have problems understanding that certain aspects of the curriculum are subject to change through co-operation.

3. Student Autonomy

The degree to which student autonomy, the key component of self-direction, is present in models of problem-solving varies a great deal. If the model is imposed on the student to assist him/her in solving problems set by the teacher then there is little or no room for student autonomy. If, on the other hand, the student participates in the selection of problems which interest him/her in order to meet objectives s/he has helped to set, then the level of autonomy may be quite high.

The importance of student autonomy in self-directed/independent learning has already been emphasized, particularly in the work of

¹¹Knowles, 34-37.

Dressel and Thompson. It is further supported by William Glasser's concept of control theory. In Glasser's view, the stimulus-response theory of human behaviour is no longer adequate, particularly in a society in which questions of survival are frequently no longer pressing. Glasser suggests that most human beings are attempting, by their behaviour, to satisfy needs from within rather than to respond to stimuli from without. The educational system, then, because it continues to work on stimulus-response patterns, is clearly failing to satisfy the needs of more than fifty percent of the student body. The answer, for Glasser, lies in altering the system in order to satisfy these needs. In Glasser's system one of the most important needs is the need for what he calls power, or control over one's environment. Accordingly, he argues for a much greater degree of student autonomy.:

I believe that the need for power is the core--the absolute core--of almost all school problems. Even the good students don't feel all that important in school, and the students who receive poor grades certainly can't feel important from the standpoint of academic performance. So they say to themselves, "I won't work in a place in which I have no sense of personal importance, in which I have no power, in which no one listens to me." Literally no one in the world who isn't struggling for bare survival will do intellectual work, unless he or she has a sense of personal importance.¹²

Such a sense of personal importance could be achieved for students, in a problem-solving model which permitted them a high degree of control over their own learning.

¹²Pauline Gough, "The Key to Improving Schools: An Interview with William Glasser," *Phi Delta Kappan* (May 1987): 658.

4. Common Skills

Various attempts have been made to identify the skills of both the self-directed learner and the expert problem-solver. Of the five versions offered here, Della Dora and Blanchard's (see Figure 6) is at first glance remarkably like that of Knowles (see Figure 7). One important difference, however, is the emphasis placed by the former on group skills. Three of the eleven characteristics they list refer specifically to working in groups. Mowbray's analysis (see Figure 8) shares many of the same features but divides them into knowledge, skills and affective areas. All three are interested in those characteristics which will enable the learner to learn successfully in any situation.

Woods and Costa, (see Figures 8 and 9, respectively) on the other hand, attempt to describe the specific behaviour of expert problem-solvers faced with a difficult problem set for them. Yet, even given these differences in circumstances, certain common features still link the two areas:

- a) intellectual curiosity--Mowbray calls this "prizing knowledge and the personal pursuit of knowledge." (see Figure 8). For Costa (Figure 9) it is "the enjoyment of problem-solving," but the essence is the same.
- b) an organized and systematic approach--Whether this is described as setting priorities, carrying out learning plans, or decreasing impulsiveness, it requires the ability to adopt a step-by-step approach to a task. It is important to remember at this point that

such an approach must be developed by the student through experience rather than imposed by the teacher, if the latter is to conform to the role of facilitator, as opposed to that of director.

c) awareness of process--Costa calls this metacognition (see Figure 9) and it manifests itself when a student knows where s/he is in the task or problem, knows what s/he needs to find out, and knows when to seek help or information.

d) self-evaluation--This ability is a direct result of a growing awareness of process. Students who can reflect on their own thinking and the processes of their own learning can eventually assess the degree to which they are being successful.

e) care and patience--For Newton, this was the essential ingredient of his success as a thinker, and it still appears in various guises as a key component. Woods identifies the expert problem-solver as one who can use "care and precision" and "carefully keep options open" (see Figure 10).

f) skill in the use of resources--These resources may be in the form of past knowledge, teacher or peer assistance, print or audio-visual material, computers, etc.

An examination of one of the evaluation sheets from the problem-based learning program at McMaster University's School of Health Sciences reflects many of the same emphases. Aspects evaluated in judging the student's success include data gathering, hypothesis generation, synthesis of information, and its application to the

Students who are making significant progress toward self-directed learning will:

- Want to take increased responsibility for their own learning
- Be willing and capable of learning from and with others
- Participate in diagnosing, prescribing, and evaluating their own progress
- Clarify their values and establish goals consistent with their values
- Develop individual and group plans for achieving their goals
- Exercise self-discipline
- Understand their own learning style and be willing to try other potentially useful learning styles
- Become familiar with and know how to use a variety of resources for learning
- Be capable of reporting what they have learned in a variety of ways
- Know when and how to ask for help or direction from others
- Analyze the dynamics of groups and become capable of using group decision-making process.

In addition to the key characteristics cited here, self-directed learners share the need to display characteristics common to all kinds of learners, such as healthy self-concept (self-respect, self-appreciation), regard for individual rights, and sensitivity to the need to balance off "my" rights against those of other individuals and those of society as a whole. They will also learn to prize human differences, including those related to race, sex, ethnicity, religious affiliation, and social class. Students will use these differences to clarify and develop their own ideas about and their own understandings of self and others.

Fig. 6. Della-Dora and Blanchard, 1979.

The Skills of Self-Directed Learning

On the assumption that the primary purpose of schooling is to help individuals develop the skills of learning, the ultimate behavioral objective of schooling is: "The individual engages efficiently in collaborative self-directed inquiry in self-actualizing directions." I believe that these skills of learning include at least the following:

1. The ability to develop and be in touch with curiosities. Perhaps another way to describe this skill would be "the ability to engage in divergent thinking."
2. The ability to perceive one's self objectively and accept feedback about one's performance nondefensively.
3. The ability to diagnose one's learning needs in the light of models of competencies required for performing life roles.
4. The ability to formulate learning objectives in terms that describe performance outcomes.
5. The ability to identify human, material, and experiential resources for accomplishing various kinds of learning objectives.
6. The ability to design a plan of strategies for making use of appropriate learning resources effectively.
7. The ability to carry out a learning plan systematically and sequentially. This skill is the beginning of the ability to engage in convergent thinking.
8. The ability to collect evidence of the accomplishment of learning objectives and have it validated through performance.

Fig. 7. Knowles 1984.

Demonstrated:

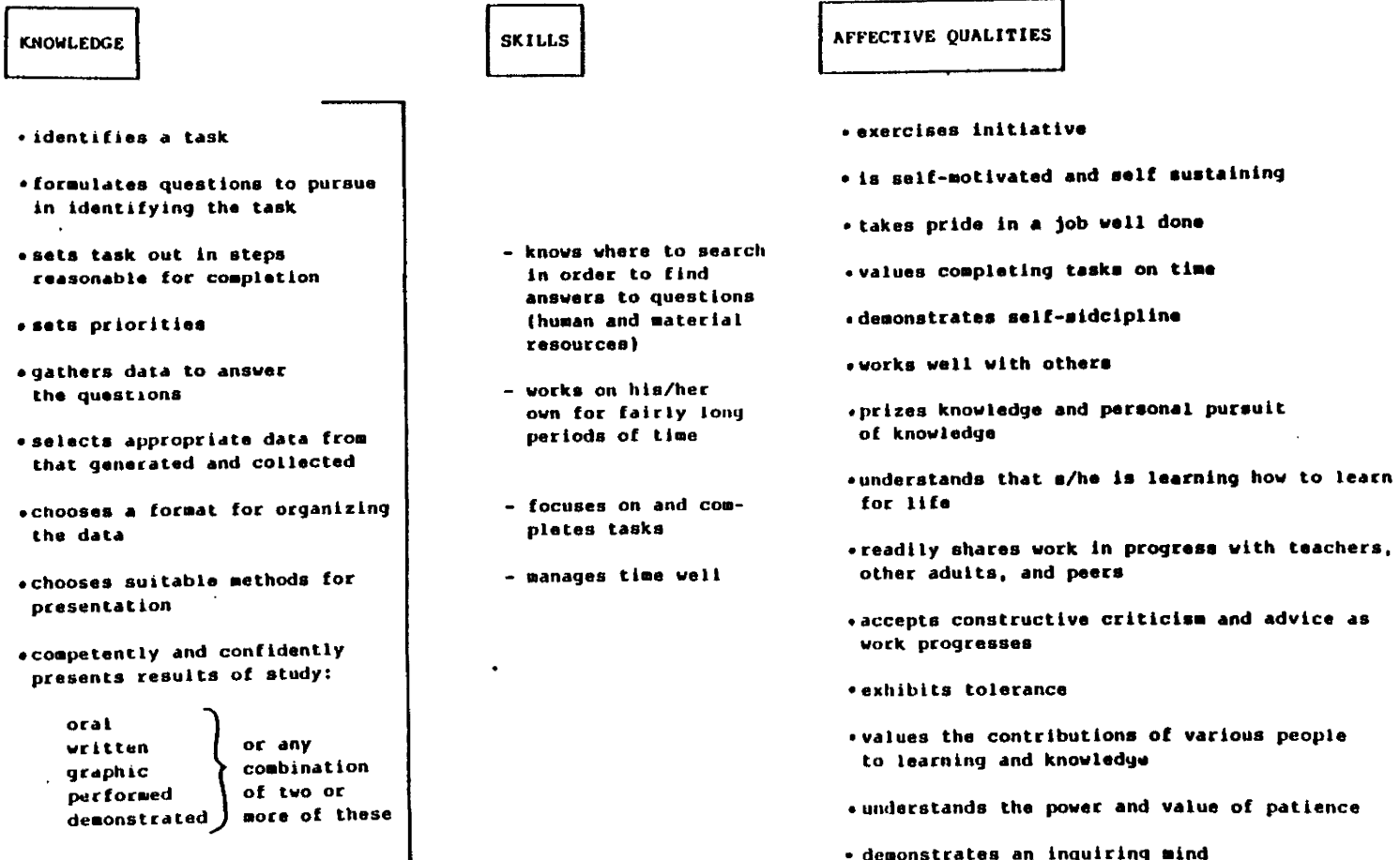


Fig. 8. Characteristics of an independent learner.

Gwen Mowbray, (February, 1987)

THINKING: HOW DO WE KNOW STUDENTS ARE GETTING BETTER AT IT?

Arthur L. Costa

Students' progress toward educational goals is usually assessed using achievement tests. Assessment of students' growth in thinking abilities, however, requires alternate techniques. Since thinking is most often performed in problem-solving situations, teachers can become the best observers of it by providing situations in which students can practice and demonstrate intelligent behaviors. Some indicators include: perseverance, precision of language, problem-finding, decreased impulsivity, meta-cognition, checking for accuracy, transference, flexibility, drawing upon previous knowledge and enjoyment of thinking.

Arthur Costa is Professor of Education and Chair of the Department of Educational Administration at California State University. He is the author of several books, active in many professional organizations including a member of the Board of Directors and Executive Council of the Association for Supervision and Curriculum Development.

A Almost all human beings move. With training, movement can be performed with precision, style and grace. For a gymnast or ballerina, this takes years of

rehearsal, concentration, and coaching. Improvement is assessed by the demonstration of increasing mastery of complex and intricate maneuvers performed repeatedly on command with sustained and seemingly effortless agility. Distinction between awkwardness and nimbleness is obvious to even the most undisciplined observer.

Almost all humans think. Some do more than others. Like strenuous movement, thinking, too, is hard work. With training, human thought processes can become more broadly applied, more focused, more spontaneously generated, more intricately complex, more metaphorically abstract, and more insightfully divergent. Such refinement also requires rehearsal, concentration, and coaching. Unlike athletic performance, however, thinking is most often covert--inside the head. Assessment of its increased mastery and stamina is therefore illusive. Awkwardness and nimbleness in thinking, however, may be distinguished by the keen observer.

When considering how evidence of students' achievement is collected, we most often think of testing--using some form of paper and pencil instrument to determine how many questions a student answers correctly. While there may be some types of thinking that can be assessed in this fashion--lower level comprehension, for example--we must seek other means of determining growth in intellectual abilities. In teaching gifted students to think, the emphasis is not on how many answers they know. Rather, the focus is on how they behave when they don't know. We are interested in observing how students produce knowledge rather than how they merely reproduce knowledge. A critical characteristic of intellectual giftedness is not only having information, but knowing how to act upon it.

B By definition, a problem is any stimulus, question, or phenomenon, the explanation for which is not immediately known. Thus, student performance is assessed under challenging conditions which demand strategies, insightfulness, perseverance, and

Fig. 9. Thinking: How do we know students are getting better at it?

craftsmanship to resolve the problem.

Many teachers are unimpressed with standardized tests [Harootunian and Yarger, 1980; Lazer-Morrison et al., 1980]. The results are often unavailable for several weeks or months after administering the test; thinking skills are contaminated by the degree to which students are acquainted with the subject matter; behavior is influenced by the mental and emotional state of the students at the time of testing; performance is subject to the vicissitudes of the situation; scores yield neither diagnostic clues as to how the student derived the answer (metacognition) nor how the student processed the data and emotions necessary to arrive at the best answer (cognitive mapping) [Anderson, 1981; Coffman, 1980].

Teachers know that many students are deemed gifted because they are test wise. They also know that other gifted students are often overlooked because they do poorly under testing conditions. While competency may be demonstrated in a single test, effectiveness is demonstrated by sustained performance in a variety of situations which demand the selective and spontaneous use of clusters and linkages of problem-solving strategies rather than singular, isolated behaviors.

As students interact with real life, day-to-day classroom problems, what might teachers search for as indicators that their instructional efforts are paying off? Following are ten suggested characteristics of intellectual growth which teachers can observe and record [Feuerstein, 1980]. Keeping anecdotal records of a student's acquisition of these types of behaviors provides more useable information about growth in intellectual behaviors than typical norm-referenced, multiple choice, standardized achievement tests.

Persevering when the solution to a problem is not immediately apparent. Students often give up in despair when the answer to a problem is not immediately known. We can observe them

crumple their papers and throw them away saying, *I can't*, or *It's too hard*. They lack the ability to analyze a problem, to develop a system, structure or strategy of problem attack.

Thinking students grow in their ability to use alternative strategies of problem-solving. If one strategy doesn't work, they know how to back up and try another. They realize that the theory or idea must be rejected and another employed. They have systematic methods of analyzing a problem, knowing ways to begin, knowing what steps must be performed, what data need to be generated or collected, this is what is meant by perseverance.

Decreasing impulsivity. Often students blurt the first answer that comes to mind. Sometimes they shout out an answer, start to work without fully understanding the directions, lack of a plan or strategy for approaching a problem, or make immediate value judgements about an idea before fully understanding it.

As students become less impulsive, we can observe them decreasing the number of erasures on their papers, gathering much information before they begin a task, taking time to reflect on an answer before giving it, making sure they understand directions before beginning a task, listening to alternative points of view, and planning a strategy for solving a problem.

Flexibility in thinking. Some students have difficulty in considering alternative points of view or dealing with more than one classification system simultaneously. Their way to solve a problem seems to be the only way. They are more interested in knowing whether their answer is correct or not, rather than being challenged by the process of finding the answer. They are unable to sustain a process of problem-solving over time and therefore avoid ambiguous situations. They have a need for certainty rather than an inclination for doubt.

As students become more flexible in their thinking they can be heard considering,

Fig. 9. continued

Thinking: How do we know students are getting better at it?

expressing, or paraphrasing another person's point of view or rationale. They can state several ways of solving the same problem and can evaluate the merits and consequences of two more alternate courses of action. When making decisions they will often use such words as *however, on the other hand, if you look at it another way or John's idea is..., but Mary's idea is....*

Meta-cognition: the ability to know what we don't know. Some people are unaware of their own thinking processes. They are unable to describe the steps or strategies they use during the act of problem-solving. They cannot transform into words the visual images held in their minds. They seldom evaluate the quality of their own thinking skills.

We can determine if students are becoming more aware of their own thinking as they are able to describe what goes on in their heads when they think. When asked, they can list the steps and tell where they are in the sequence of a problem-solving strategy. They can trace the pathways and blind alleys they took on the road to a problem solution. They can describe what data are lacking and their plans for producing those data [Sternberg and Wagner, 1982].

Checking for accuracy. Students are often careless when turning in their completed work. When asked if they have checked over their papers, they might say, *No, I'm done*. They seem to feel little inclination to reflect upon the accuracy of their work, to contemplate their precision, or to take pride in their accomplishments. Speed of getting the assignment over with surpasses their desire for craftsmanship.

We can observe students growing in their desire for accuracy as they take time to check over their tests and papers, as they grow more conscientious about precision, clarity, and perfection. They go back over the rules by which they were to abide, the models they were

to follow, and the criteria they were to employ to confirm that their finished product matches exactly.

Problem-posing. One of the distinguishing characteristics between humans and other forms of life is our ability to find problems. Yet, students depend on others to solve problems, to find answers, and to ask questions for them [Brown, 1983].

Over time, we want to see a shift from teachers asking questions and posing problems, toward students asking questions and finding problems for themselves. Furthermore, the types of questions students ask should change and become more specific and profound. For example:

We seek an increase in requests for data to support conclusions and assumptions. Such questions as, *What evidence do you have...? or How do you know that's true?* will be heard.

We want to hear more hypothetical problems. These are characterized by *iffy* type questions: *What do you think would happen if..., or If that is true, then....*

We want students to recognize discrepancies and phenomena in their environment and to inquire into their causes: *Why do cats purr? How high can birds fly? Why does the hair on my head grow so fast, but the hair on my arms and legs doesn't? What would happen if we put the saltwater fish in the fresh water aquarium? What are some alternative solutions to international conflicts other than wars?*

Drawing on past knowledge and experiences. Too often students begin each new task as if it were being approached for the very first time. Teachers are often dismayed when they invite students to recall how they solved a similar problem previously and students don't remember. It's as if they never heard of it before, even

Fig. 9. continued
Thinking: How do we know students are getting better at it?

though they had the same type of problem just recently. It is as if each experience is encapsulated and has no relationship to what has come before or what comes afterward.

Thinking students are able to abstract meaning from one experience and carry it forth to apply it in the next experience. Students can be observed growing in this ability as they are heard saying. This reminds me of...or This is just like the time when we...They explain what they are doing now in terms of analogies with or references to previous experiences. They call upon their store of knowledge and experience as sources of data to support, theories to explain, or processes to solve each new challenge.

Transference beyond the learning situation. Probably the ultimate goal of teaching thinking skills is for the students to apply school-learned knowledge to real life situations and to content areas beyond that in which it was taught. Yet, we find that while students can pass mastery tests in mathematics, for example, they often have difficulty in deciding whether to buy six items for \$2.38 or seven for \$2.88 at the supermarket.

When parents and other teachers report how they have observed students thinking at home or in other classes, we know students are transferring. Parents, for example, may report increased interest in school, more planning in their child's use of time and finances, in increased organization of their room, their books, and their desks at home.

We might hear, for example, the social studies teacher describe how a student used a problem-solving strategy which was originally learned in the science class. We might hear the woodshop teacher tell how a student volunteered a plan to measure accurately before cutting a piece of wood: measure twice and cut once, an axiom learned in the math class.

Precision of language. Some student's language is confused, vague, or imprecise. They describe attributes of objects or events with such non-specific words as weird, nice, or O.K.

Names for objects are such as stuff, junk or things. Their sentences are often punctuated with ya know, er, and uh.

As students' language becomes more precise, they can be heard using more descriptive words to distinguish attributes. They will use more correct names, and when universal labels are unavailable, they will use analogies such as crescent shaped or like a bowtie. They will speak in complete sentences, voluntarily provide supportive evidence for their ideas, elaborate, clarify, and operationally define their terminology. Their speech will become more concise, descriptive, and coherent.

Enjoyment of problem-solving. Some children and adults avoid problems. We often hear them saying something like, These types of thinking games turn me off, I was never good at these brain teasers, or Go ask your father; he's the brain of the family. Many people never enrolled in another math class or other hard academic subject after they didn't have to in high school or college. Many people perceive thinking as hard work and therefore recoil from situations which demand too much of it.

We want to observe students moving not only from an I can attitude, but also towards an I enjoy feeling. We will notice students seeking out problems to solve for themselves and to submit to others. They will make up problems to solve on their own and request them from others. Furthermore, students will solve problem with increasing independence, without the teacher's help or intervention. Such statements as Don't tell me the answer, I can figure it out by myself, will indicate growing autonomy.

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Novices or Persons Where Improvement Is Needed	Experts or Experienced Problem Solvers
Emphasis on speed, on recalling past experience, and on assuming that these apply precisely to the situation at hand.	Emphasis on care and precision, on checking on seeing each situation afresh with fair exploration of alternatives, and on doublechecking.
Unaware of mental process used when solving problems.	Aware of process and have developed explicit mental activities to bring care, diversity and completeness to the issues, hypotheses, and alternatives considered.
Confuse and mix different states of the problem solving process. Unaware of and so do not apply an organized plan of attack or strategy.	Consider the problem state by stage, identifying a stage for problem definition, exploration and assessment, planning, implementation of the plan, and evaluation or checking back (or similarly described mental activities).
Fail to ensure they know the evidence in the problem situation.	Refresh their memory about meanings of all words in the problem situation, and seek clarification where ambiguity exists.
Jump into the problem, quickly limit the initial problem statement, and select a "first-impression solution" without adequately defining or exploring the problem situation. This is later manifested as having solved the wrong problem or as heated justification of initial incorrect judgments, or as blind fixation.	From the initial problem statement, identify that a problem does indeed exist over which they have control, identify constraints and criteria, explore issues or pertinent variables or factors that impinge on the problem, identify short and long time scale implications, carefully keep options open before formulating and identifying precisely.
Tend to make decisions based on given information and their past experiences. Fail to openly address the question of new information needed or else dismiss the problem completely by--- it is impossible to solve because they do not know enough.	Identify information that must be obtained.

Fig. 10. Differences between problem-solving styles of novices and experts.

problem, ability to prioritize, and evaluation of the progress of self and others (see Figure 11).

5. Potential for Group Approaches

The final feature which links self-directed learning with models of problem-solving is the potential for group learning. Small group curriculum delivery is an important part of the original vision of "Westmount 1990," but it is in danger of being neglected in favour of rigid, individual learning packages designed for solitary work. As far as the English department is concerned there are several reasons why this must not happen. First, this direction would effectively prevent the development of self-directed problem-solvers because it would not offer the key ingredients of autonomy and student-perceived difficulties as triggers to learning. Second, it would be impossible for the English department to meet the *Guideline* requirement of fostering oral language and of basing twenty-five percent of the student's final mark on group and oral work. The *Guideline* also requires the department to bring the students together to provide opportunities for peer evaluation.

PROBLEM SOLVING EXERCISE *

Student Name

Assessor's Name

Instructions to Evaluators

At the beginning of Part 1 of the Exercise the student is given the problem/situation.

The evaluation of items 1 through 4 is to be based on the initial discussion with the student during the Part 1 of the Exercise.

The evaluation of items 5 through 8 is to be based on the discussion with the student during Part 3 of the Exercise and based on the issues identified in Part 1.

For each of the evaluation items, please read both Statements I and II and then check the most appropriate point in the scoring scale.

* Modification of the McMaster Triple Jump Exercise
Dec. 1985; July, 1987. L.A.Branda

Fig. 11. Evaluation Sheets for McMaster Model.

Part 1 of the Exercise

1. Data Gathering

1.a)

Statement I : The student did not seem to know where to start.

Statement II : The student was able to readily start to ask relevant questions.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

1.b)

Statement I : The gathering of information was disorganized.

Statement II: The student requested information in an organized and rational manner.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

2. Data Interpretation and Hypothesis Generation

Statement I : Unable to suggest any logical explanation for the data collected; interpreted the significance of information inaccurately.

Statement II : Accurate and appropriate description of the most likely explanation of the data collected.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

Fig. 11. continued. Evaluation sheets for McMaster model.

3. Issue Identification

3.a)

Statement I : The proposed issues/questions for exploration were irrelevant to the problem at hand.

Statement II : Identified clear and relevant issues for study.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

3.b)

Statement I : Taken into account their importance and relevance to the problem at hand (as well as time constraints), the student was unable to list the issues/questions identified in order of priority.

Statement II: The student was able to list in order of priority the issues/questions.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

4. Knowledge Base

Statement I : Taken into account the programme objectives, the student demonstrated poor knowledge base (i.e. understanding of the concepts) related to the issues relevant to the problem at hand.

Statement II: Demonstrated to have an excellent knowledge base and understanding of concepts related to the programme objectives.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

Fig. 11. continued. Evaluation sheets for McMaster model.

Stage 2 of the Exercise
Work/Study Period

Stage 3 of the Exercise

5. Information Search

5.a)

Statement I : Study period disorganized and unbalanced.

Statement II: Study period well planned.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

5.b)

Statement I : Resources used haphazardly and inappropriately.

Statement II: Resources used were appropriate in number and relevance.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

6. Issue Exploration

6.a)

Statement I : Did not explore the issues identified in Stage 1 of the Exercise.

Statement II : Explored the issues identified in Stage 1 of the Exercise.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

Fig. 11. continued. Evaluation sheets for McMaster model.

6.b)

Statement I : Did not summarize the key concepts or mechanisms relevant to the problem.

Statement II: Summarized clearly key concepts and mechanisms.

1	2	3	4	5
---	---	---	---	---

Essentially like I				Essentially like II
-----------------------	--	--	--	------------------------

Comments: _____
_____7. Synthesis of Information and its Application to Problem

7.a)

Statement I : Little progress from the interim formulation of issues related to the problem (Stage 1 of the Exercise).

Statement II: Excellent synthesis of old and new information and demonstration of understanding by its application to the problem.

1	2	3	4	5
---	---	---	---	---

Essentially like I				Essentially like II
-----------------------	--	--	--	------------------------

Comments: _____

7.b)

Statement I : Attempting to explain the problem, arrived at inaccurate conclusions with little evidence to support them.

Statement II: Able to discuss how much of the problem can now be explained.

1	2	3	4	5
---	---	---	---	---

Essentially like I				Essentially like II
-----------------------	--	--	--	------------------------

Comments: _____

Fig. 11. continued. Evaluation sheets for McMaster model.

8. Identification of Further Work

8.a)

Statement I: Unable to identify what was not learned.

Statement II: Identified areas not explored of relevance to the problem.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

8.b)

Statement I: Unable to identify alternative hypothesis or issues that need examination.

Statement II: Discussed alternative hypothesis and/or issues to be explored.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

8.c)

Statement I: Unable to discuss possible solution/management of the problem at hand.

Statement II: Discussed possible solution/management of the problem at hand.

1	2	3	4	5
Essentially like I				Essentially like II

Comments: _____

Fig. 11. continued. Evaluation Sheets for McMaster Model.

The Group Format and Problem-Solving

These two concepts have been effectively combined in many instances but perhaps the two best-known examples are the Japanese Quality Circle concept and the problem-based learning program at McMaster University's School of Health Sciences.

The Quality Circle is a method developed by industrialists in Japan to improve productivity, motivation and workmanship. Some variation of it is now used by sixty percent of Fortune 500 companies and the format has been adapted to education, especially with gifted students. Circle groups use problem-solving skills to generate real solutions to current problems.¹⁷ A similar approach has been adopted by the Gifted Program in the schools of the Wentworth County Board of Education where students from area schools form teams of four or five students and participate in a County wide Think Bowl, competing to solve a variety of problems devised for the competition.

It is important to clarify the distinction between problem-based learning and the kind of problem-solving group represented by the Quality Circle or the Think Bowl. Although many of the same skills are used in both, the emphasis is quite different. In problem-based learning the goal is to use the problem and the questions raised by it as a basis for further learning, while in the other two examples the goal is to find the best solution to the problem at hand. It is, of

¹⁷Jim Bellanca, "Can Quality Circles Work in Classrooms for the Gifted," *Roeper Review*, 6:4 (April 1984): 199.

course, inevitable that in the search for the solution to some problem research may be required and learning will take place, but the problem is not chosen because of the opportunities it presents for such learning; in fact, in the case of the Quality Circle, the problem is not chosen at all but is part of the real corporate situation. Nevertheless, each of these examples illustrates how suitable the group format is for problem-solving.

The Group Format and Self-Directed Learning

Group learning and independent learning may initially appear incongruous; nevertheless, the two may be used in complementary fashion. Dressel and Thompson strongly advocate further experimentation with group independent learning on the following grounds:

Group independent study has an important role in the development of student capabilities for self-direction. It should in fact be a significant part of any phase of an independent study program, because independent study in the extreme traditional sense would tend to cast the student into the role of a hermit, while the structure of modern society forces most people to exercise their independence in a situation in which they are also dependent on others. This is true even in the modern university where scholars, especially those in the sciences and social sciences, frequently find that their contributions must be geared to the activities of their colleagues. Major problems seldom lend themselves to solution or even to understanding by the efforts of one individual. However, attempts to develop group independent study risk taking on the characteristics of a structured course. The corrective to this, it seems to us, is to move in the direction of task forces which reach agreement initially with the professor on the general nature of their task and then move out on their own for periods of time, with meeting scheduled as required to coordinate their efforts and make plans.¹⁸

¹⁸Dressel and Thompson, 115.

Here the writers warn of the dangers of isolation alluded to earlier. At the same time, however, they recognize that the complexities of modern society require the pooling of intellectual resources in solving problems. Much of the learning done by human beings is, after all, conducted in the family, in social gatherings, and in the workplace together with others. As William Glasser explains:

In today's typical classroom, each student works alone. he or she is told, "Keep your eyes on your own work; don't share; don't compare; don't talk; don't help." This approach is totally contrary to the basic human need to belong. It also ignores the need for personal importance. How can you feel important if you're working by yourself? Who recognizes you? Who talks to you? Who pays attention to you?¹⁹

The same point was made by Albert Shanker, president of the American Teacher's Federation. Shanker, commenting on recent research by Lauren Resnick into the difference between learning inside a typically traditional school and learning outside, points out that:

On the job, in the family and at play we are expected to ask those close to us to show us, to explain, to help. The important thing is to get something done right, and usually that means doing it together with others. In school, asking others for help is called "cheating."²⁰

Since so much of an individual's learning is accomplished in a collaborative setting, it is vital that the "Westmount 1990" model emphasize group approaches, if it is to be a model for life-long learning. It is worth noting that the format recommended by Dressel and

¹⁹Glasser, 659.

²⁰Albert Shanker. "Exploring the Missing Connection," *New York Times* (19 June 1988): E7.

Thompson is very similar to the format of the McMaster problem-based learning described earlier. They suggest the following procedure:

...task forces which reach agreement initially with a professor on the general nature of their task, and then move out on their own for periods of time with meetings scheduled as required to coordinate their efforts and make plans.²¹

Such a structure would fit the organizational plan for "Westmount 1990" very well. Students could arrange group meetings co-operatively with their teachers and spend the time in between pursuing whatever investigations they had undertaken into the problems chosen by the group.

²¹Dressel and Thompson, 115.

CHAPTER 6

PROBLEM-SOLVING MODELS AND THE ENGLISH CURRICULUM

Very little work has been done on the use of problem-solving models to teach English Language and Literature in high schools; moreover, the materials available are very limited. Some attempt has been made to apply problem-solving to early reading difficulties and to reading comprehension, particularly in terms of decoding, but these are hardly helpful to the secondary school teacher of English. Arthur Whimbey describes a program designed by English professor Albert Upton at Whittier College in the United States, in which classes met in small groups with tutors to work on exercises in verbal comprehension and reasoning but he gives no indication whether the material with which they worked fell within the traditional notions of English study.¹

In the *Complete Problem-Solver*, John Hayes uses composing a writing assignment as a problem and takes the student through it using a verbal protocol.² This approach has possibilities for the English curriculum, not only because composition of some sort is a common English assignment and one with which many students have difficulty, but also because the verbal protocol itself is a way of reaching an understanding of the thinking process through language. It is

¹Arthur Whimbey, "Students Can Learn to Be Better Problem Solvers," *Educational Leadership* 37:7 (April 1980): 562.

²John Hayes, 61-63.

particularly valuable at a time when new emphasis is being placed on clarification of ideas through oral communication.

The work of Popp and Robinson has been discussed already, but the use of their models seems to represent a degree of teacher direction incompatible both with concepts of student autonomy and with Dewey's original view of critical problem-solving.

One success story closely related to English involved the use of problem-based learning in a media course. The instructor, Christian, gave his students a set of problems or inquiry questions which he felt raised important issues for media study. Although Christian refers to his course as problem-solving, it is closer to the problem-based learning concept since he points out that the problems are not as important in terms of their specific solution as they are in terms of the further learning they offer the students.³

If the most appropriate model for the English Department for "Westmount 1990" is that based on student autonomy, Dewey's critical problem-solving, and a group learning format, then problem-based learning is the most likely candidate for the following reasons:

- a) In problem-based learning the problem precedes the learning becoming the trigger for investigation and inquiry.
- b) Problem-based learning has a record of successful use in the kind of

³Clifford G. Christian, "Problem-Solving in a Mass Media Course," *Communications Education* no. 28 (May 1979): 139-143.

group format which major theorists believe is compatible with self-direction.

- c) It most closely reflects the conditions under which human beings learn in the "real world."
- d) It permits a high degree of student autonomy when students are permitted to
 - (i) select and suggest problems
 - (ii) negotiate the format and weighting of evaluation
 - (iii) work out their own schedule of meetings and apportion tasks within the group
 - (iv) set at least some of the objectives for their own learning.
- e) It fits the organizational structure of "Westmount 1990."
- f) It can be adapted to conform to
 - (i) the new *English Guideline*
 - (ii) the Westmount model
 - (iii) the learning guide checklist

The task that remains then is to devise a series of interesting problems for a Grade Twelve Advanced Level course based on the problem-based learning model.

The next chapter comprises such a set of problems, grounded in the discipline of English and chosen because they invite the students to consider questions and issues fruitful for further learning. The set of problems also conforms to the requirements of the *English Guideline* and to the learning guides checklist prepared by the "Westmount 1990" steering committee. Within these limits every attempt has been made to

allow students as much autonomy as possible in the choice of problems, the management of time and resources, and the methods of evaluation. Each problem is accompanied by objectives and by a list of issues which the designer felt might be raised by the students. It is, of course, hoped that the students will raise questions unforeseen by the designer.

Westmount English Department

ENG4A Course of Study

1990-91

Objectives:

- To enable students to develop as self-directed problem-solvers.
- To provide students with the opportunity to explore the four literary genres specified by the *English Guideline*. (mandatory)
- To encourage students to practise the process of writing through the use of the Writing Folder. (mandatory)
- To provide opportunities for peer and self-evaluation. (mandatory)
- To encourage students to develop the ability to identify problems, share tasks, and seek solutions as members of a group.
- To help students develop their skills in oral language. (mandatory)
- To enable students to exploit wherever possible the inter-disciplinary nature of learning.

Students are to identify up to three additional personal objectives and consult with the teacher about how these may best be achieved and evaluated. Objectives may be related to knowledge, skills

or student behaviour (affective domain). Some examples might be:

- To learn to use the microfiche reader in the library.
- To make at least two contributions to group discussion each session.

General Comments

1. Week 1 of the course will involve 3 or 4 whole class meetings to plan co-operatively:
 - a) organization of groups
 - b) times and dates of meetings
 - c) type and content of final exam (compulsory)
2. Students are encouraged to suggest objectives, materials, strategies or types of evaluation they would like to have included in the course.
3. In addition to the work done in the group, each student is to produce an individual piece of work for evaluation based loosely on each problem chosen. Included here is a list of possible "products." At least one must be oral.
4. In the selection of problems students must be sure to cover the four literary genres (prose fiction, drama, poetry, prose non-fiction), one language study problem and two writing folder problems.
5. The objectives given for each problem represent what the teacher hopes will be accomplished. They are subject to revision by the group.

6. The issues and questions are those which the teacher identified and will be available to the group only on the completion of their work.

Problem No.1

(Novel Study)

An English class has been asked to select a novel for study. They are to choose between *Anne of Green Gables**, by L. M. Montgomery, and *The Handmaid's Tale**, by Margaret Atwood. A small committee of class members has been struck to make the decision. You are that committee.

*Students may substitute any other two Canadian novels after consultation with the teacher.

Objectives

1. To experience two Canadian novels.
2. To learn to establish criteria for selecting curriculum material and apply them consistently.
3. To examine a wide variety of issues raised by the problem of choosing a novel for study. Some of these might be:
 - a) the factors which govern textbook selection in schools
 - b) the question of whether students are capable of selecting material
 - c) what constitutes a good selection?
 - literary merit--relevance
 - popularity
 - absence of offensive material
 - Canadian content
 - d) can science-fiction be good "literature"?
 - e) what is worth exploring in these two novels?
 - f) can anything general be said about adolescent tastes in reading?
 - g) is it significant that both authors are women?
 - h) what, if any, supplementary material is available for each novel and how good is it?

Problem 2**(Novel study)**

Is the character, Mary Dempster from Robertson Davies' *Fifth Business*, a morally good woman?

Compulsory

I propose that this problem be undertaken first with each group in order to practise the process.

(I suggest that the students begin by working in pairs employing the verbal protocol described earlier to examine the ways in which they approach problems.)

Objectives

1. To become familiar with the novel, *Fifth Business*.
2. To explore the methods of characterization in the novel.
3. To appreciate the effect of point of view on the perception of events and characters.
4. To practise arriving at a consensus within the group.
5. To continue to develop the skills which were used in problem one of establishing and applying criteria for making judgments about characters.
6. To continue the practice of oral skills.
7. To explore issues and questions raised by the problem, such as:
 - a) What does the reader know about Mary Dempster and how does s/he learn it?
 - b) What standards can be applied to evaluate goodness?
 - c) Where do individuals get their understanding of what is good?
 - d) Do moral standards change with time and place?
 - e) Do moral standards change with gender and social position?
 - f) What is the relationship between intention and result in terms of judging people's actions?
 - g) What is the relationship between "saintliness" and goodness?
 - f) What are the actual criteria for sanctification? Have these changed since the time of the novel?
 - g) What is the relationship between religion and morality?

The Lord's Prayer¹*Authorized version (1611)*

Our father which art in heauen, hallowed be thy name. Thy kyngdome come. Thy will be done in earth, as it is in heauen. Giue vs this day our daily bread. And forgiue vs our debts, as we forgiue our debtors. And lead vs not into temptation, but deliuer vs from euill.

Wycliff's version (late fourteenth century)

Oure fadir þat art in heuene, halwid be þi name; þi reume or kyngdom come to þe. Be þi wille don in herþe as it is doun in heuene. Ȝeue to vs to-day oure eche dayes bred. And forȜeue to vs oure dettis, þat is oure synnys, as we forȜeuen tu oure dettouris, þat is to men þat han synned in vs. And lede vs not in-to temptacion, but delyuere vs from euyl.

Old English (West Saxon, ca. 1000)

Fæder ure þu þe eart on heofonum, si þin nama gehalgod; to-becume þin rice; gewurþe þin willa on eorðan swa swa on heofonum; urne gedæghwamlican hlaf syle us to dæg; and forgyf us ure gyltas, swa swa we forgyfað urum gyltendum; and ne gelæd þu us on costnunge, ac alys us of yfele.

Modern German

Unser Vater in dem Himmel. Dein Name werde geheiligt. Dein Reich komme. Dein Wille geschehe auf Erden wie im Himmel. Unser täglich Brot gib uns heute. Und vergib uns unsere Schulden, wie wir unsern Schuldigern vergeben. Und führe uns nicht in Versuchung, sondern erlöse uns von dem Übel.

1

N.B. Both this problem and problem #11 are also available on audiotape.

*Do either this problem or problem 11.

¹T. Bynon, *Historical Linguistics* (Cambridge: Cambridge University Press, 1977) 8.

Objectives

1. To appreciate the concept that language is constantly changing.
2. To become familiar with historical periods in the development of English.
3. To explore some of the questions raised by the selections:
 - a) What causes language to change?
 - b) What were the characteristics of the historical periods to which each of these examples belonged?
 - c) Who would have spoken or written this way?
 - d) What accounts for the obvious similarities between English and German?
 - e) What factors have influenced the development of English as we know it?
 - f) Is English still changing?
 - g) What is the significance of the way in which the letters u and v are used in the samples?
 - h) What is the significance of the fact that the Lord's Prayer is the text used to illustrate the changes in language?

Problem 4

(Poetry study)

What is poetry? Examine the samples provided.

THE corn was orient and immortal wheat, which
never should be reaped, nor was ever sown. I
thought it had stood from everlasting to
everlasting. The dust and stones of the street
were as precious as gold: the gates were at first
the end of the world. The green trees when I saw
them first through one of the gates transported
and ravished me, their sweetness and unusual
beauty made my heart to leap, and almost mad with
ecstasy, they were such strange and wonderful
things. The men!

Thomas Traherne, *Centuries of Meditation*,
Third Century, 3, 1637-1674

This Is Just To Say

I have eaten
the plums
that were in
the icebox

and which
you were probably
saving
for breakfast

Forgive me
they were delicious
so sweet
and cold

William Carlos Williams (1917)

But most by numbers judge a poet's song,
And smooth or rough by them is right or wrong.
In the bright Muse though thousand charms conspire,
Her voice is all these tuneful fools admire,
Who haunt Parnassus but to please the ear,
Not mend their minds; as some to church repair,
Not for the doctrine, but the music there.

Alexander Pope, *An Essay on Criticism*, 337-343.

*This problem is also available on audiotape.

Objectives

1. To review previous knowledge and experience of poetry.
2. To explore the nature of poetry and the ways in which it differs from prose.
3. To become familiar with the concepts of rhythm, rhyme, stanza form, figurative language, metre, simile, allusion, etc.
4. To explore the difference between traditional and modern poetry.
5. To examine questions and issues raised by the selections given:
 - a) Why is Traherne's piece prose and Williams's poetry?
 - b) What does format have to do with the reader's assumptions about which is which?
 - c) Was Williams serious about this "poem"?
 - d) What criteria can be established to identify poetry?
 - e) Have the characteristics of poetry changed with time?
 - f) Does how a piece of writing is perceived have anything to do with who wrote it? (Could you, for example, have Williams' poem published?)
 - g) How have poets and critics defined poetry?
 - h) Does poetry have to be "deep"?

Problem 5

(Drama study)
(Media study)

Polanski's film version of Shakespeare's tragedy, *Macbeth*.

*Available on videotape in the resource centre.

Objectives

1. To acquaint the students with the story of Macbeth.
2. To provide opportunities to compare the treatment of the same content in two different media.
3. To satisfy the media requirement of the *English Guideline*.
4. To raise issues and questions for exploration by the group.
 - a) What is the setting of the events and how accurately has Polanski portrayed it?
 - b) What can be learned about witches and the practice of witchcraft in the time of the play?
 - c) What is a thane and how is he related to the kingship?
 - d) What methods of execution were used in Macbeth's time?
 - e) How was the decapitation of Macbeth managed by the director?
 - f) What departures, omissions or additions were made to Shakespeare's text and why?
 - g) Are there other film versions of *Macbeth* with which this might be compared?
 - h) What is Polanski suggesting by the way he chose to end the film?

Problem 6

(Drama study)

Who is the third murderer in *Macbeth*.

Objectives

1. To undertake a close examination of a short passage of text.
2. To become familiar with some aspects of Shakespearean criticism.
3. To develop hypotheses and have an opportunity to test them.
4. To develop research skills.
5. To learn to evaluate among several alternative hypotheses.
6. To think critically about the role of murderers in the play, in the society of the time and in today's society.

Problem 7

(Drama study)

Your group is a travelling troupe of young actors trying to promote interest in drama at the high school level. Your budget is very limited and the time you are given to present in each location is approximately one hour. What will you do?

Objectives

1. To fulfil the *Guideline* requirements for the use of drama as a methodology and for the practice and evaluation of oral language skills.
2. To explore the wide field of dramatic works and the area of adolescent interest.
3. To work with concrete material such as costumes, props, sets, lights and audio equipment.
4. To develop resourcefulness.
5. To select, arrange, modify and present scripts.
6. To learn problem-solving skills in dealing with practical problems.

Problem 8, 9, and 10

(Writing folder)

These problems are to be identified by the student from his or her own writing. The student is to consult with the teacher about strategies for solving the problem by the end of the semester. Possible problems might include:

- a) inability to paragraph correctly.
- b) poor spelling.
- c) problems in organizing material.
- d) integration of quotations with text.
- e) tense inconsistency.
- f) lack of ideas for creative writing.
- g) weak research skills.
- h) sentence structure errors.
- i) ignorance of grammatical terminology.
- j) failures of agreement.
- k) lack of knowledge about a specific form of writing; e.g., resumé, report, review, essay, sonnet, screenplay, business letter.
- l) lack of ability in developing arguments based on logical structure and empirical evidence.
- m) lack of ability in evaluating arguments and identifying the premises on which they rest.

*This is not a group problem.

Problem 11

(Language study)

A Question of Dialect

or

"You can't write good if
you don't speak proper."

"...My 'usband often talked of you and wondered how you were getting on in that outlandish place, and if your poor wife could put up with it...I suppose it's all according. Some people don't mind. Some people are brought up to it, raised, as they say 'ere. I do so 'ate to 'ear slang...."

Frederick Niven, *The Flying Years*
(1935). The speaker is an Englishwoman
whose husband had been the Indian agent
on a reserve near Calgary.

1. "He don't bother bein' lonsome for no one these days. He's gettin' so much pasturin' he looks like a rainbarrel with legs."
2. "...and Grampa and I holding our hands to our ears and shouting out at the top of our lungs, "Regs, cloze, botels! Regs, cloze, botels!"
3. "A gentleman 'as been calling you sir," he said in that voice of his. "Most important 'e said it was, sir, so I left you 'is number in your box.
4. She could of shut the gate and she didn't. She just open' it up and Flora run out."
5. "You don't deserve to eat anyhow...You didn't bring nuthin'. Flowers! I saw watcha brung. A buncha flowers. I betcha you stole 'em."
6. Young folks is different now. Cant tell em nothin. They figger more excitement in the city.
7. "Quite a ways. All of thirty mile, we figger. But that really ain't so much in this country. Back east, it's different."

Sources

- | | | |
|--|--|--|
| <p>1. E.G.Perrault:
"The Silver King"
(1952). Rural
B.C. An old man
is talking to a
boy about a pony.</p> <p>2. Ted Allan: "Lies
My Father Told
Me." Montreal.
The grandfather
is Russian Jewish
--not strictly a
dialect but a
mixture of
features from two
languages--in
Weaver and James
(1952).</p> <p>3. Hugh MacLennan:
<i>The Watch That
Ends the Night</i>
(1959). Montreal.</p> | <p>Speaker is the
college porter, "
Englishman, a
former
Grenadier."</p> <p>4. Alice Munro:
"Boys and Girls,"
in <i>Dance of the
Happy Shades</i>
(1968). Western
Ontario a
generation ago: a
boy is talking
about his sister,
who let loose a
horse that was to
be shot.</p> <p>3. John Marilyn:
<i>Under the Ribs of
Death</i> (1957).
Winnipeg in the
late 1920's; some
boys at a girl's
birthday party</p> | <p>are taunting
another boy, a
poor immigrant
who has followed
the custom of his
own culture and
brought flowers
for the girl.</p> <p>6. Earl Birney:
"Prairie Coun-
terpoint" (1947).
An old man is
talking.</p> <p>7. Edward McCourt:
<i>Music at the
Close</i> (1947).
Farmer in
Saskatchewan,
early in the
century: <i>back
east</i> is the usual
western term for
Ontario and
Quebec.</p> |
|--|--|--|

Objectives

1. To explore further the differences in language.
2. To learn or review basic facts of Canadian geography and history.
3. To identify and understand the use of dialect in writing.
4. To find amusement in the endless varieties of English.
5. To recognize the link between language and social position.
6. To explore some of the issues and questions raised by the selections.
 - a) What is dialect?
 - b) Is dialect the same as slang?
 - c) What is the relationship between where you live and how you talk?
 - d) Why do people speak dialects?
 - e) How many Canadian dialects are there?
 - f) Is Canadian English a dialect different from British or American and if so, how?
 - g) Why is the language of immigrants, blacks, native people and the poor often considered inferior? Is there any justification for this?

Problem 12

(General)

The Ministry of Education has proposed that OAC students must include English in the calculation of their final marks for purposes of scholarship eligibility and university entrance, regardless of the number of OAC's the student has earned.

Objectives

1. To explore the validity of high school English studies
2. To appreciate and attempt to overcome the presence of personal bias in dealing with a problem
3. To appreciate the complexity of educational decisions
4. To explore the questions and issues raised by the problem
 - a) the relationship between success in English and post-secondary success
 - b) the relationship between success in English and success in other subjects
 - c) the requirements of university admission
 - d) the effect of such a change on individual students
 - e) the process of extrapolation
 - f) the history of changing requirements and its effect on marks and standards
 - g) the concept of literacy and literacy testing at colleges and universities

- h) the political, economic and educational factors which influence such decisions
- i) the relationship between literacy and worldly success.

Problems 13 and 14

(Poetry study)

For these two problems, the group is to select two poems which present difficulties for the group members in terms of appreciation or understanding. The poems will be the problems and coming to understand them will constitute the solution.

Objectives

1. To read poetry extensively.
2. To establish criteria for selecting the poems.
3. To generate strategies which will illuminate the problem.

Possibilities include:

- a) looking up new vocabulary and allusions.
- b) analysing figures of speech.
- c) examining the historical context or social milieu of the work.
- d) looking at other work done by the same author.
- e) reading critical works.
- f) researching the author's life.
- g) reading, listening to or viewing an interview with the poet.
- h) reading the poem dramatically.
- i) questioning the purpose.

Problem 15

(Short prose)
(Media study)

With the help of the group, each individual member is to produce an original short story. Stories may be of any type (science-fiction, mystery, etc.) but must follow the conventions of the form. Manuscripts are to be prepared using the computer.

Objectives

1. To become acquainted with the short story as a literary form.
2. To explore writing as a process.
3. To practise peer-evaluation.
4. To identify roles for others in helping the writer. These might include:
 - a) brainstorming ideas
 - b) identifying areas of interest or knowledge
 - c) suggesting resources
 - d) assisting with editing and revision
 - e) proofreading
 - f) teaching use of word processor program
5. To learn or teach the use of the computer as a word processor.

Problem 16

(Prose Non-Fiction)

This problem will consist of two or three accounts of a major current event taken from publications which represent opposite ends of the political spectrum. It is not possible to choose the problem in advance.

Objectives

1. To foster a healthy scepticism about the media.
2. To explore the major political philosophies.
3. To become acquainted with the format and techniques of newsmagazines.
4. To explore issues raised by the samples:
 - a) the question of bias
 - b) the role of editing
 - c) the use of photography
 - d) the basic beliefs of conservative, liberal and socialist thought.
 - e) the question of what is the truth?
 - f) the role of the reader
 - g) propaganda

*Students may wish to examine instead the writing representing the various sides of any major conflict such as: Northern Ireland, Palestine, Nicaragua, abortion, hawks vs. doves in the U.S., etc.

Content tests are available for:

1. *Anne of Green Gables*
2. *The Handmaid's Tale*
3. *Macbeth*
4. The history of the English language
5. Specific poems from the text *Sound and Sense*
6. Polanski's *Macbeth*
7. Poetics (based on the text *Sound and Sense*)
8. Any of the short stories in *Man and His World*
9. Specific exercises in grammar or sentence structure difficulties

Tests may be chosen as the individual pieces of work for the problems to which they relate. No more than four may be taken. Other possible products include:

- | | |
|------------------------|------------------------|
| ■ essays | ■ dramatizations |
| ■ interviews | ■ debates |
| ■ audio or video tapes | ■ computer games, etc. |
| ■ role-playing | ■ models |
| ■ research reports | ■ maps |
| ■ readings | ■ conferences |

Appendix 1

THE ABC (ADVANCEMENT BASED ON
COMPETENCY) PROGRAM OF THE CALGARY
BOARD OF EDUCATION

PURPOSE:

To develop and explore alternative models to the CARNEGIE unit, the traditional time-for-credit model used in most high schools.

GOALS:

To develop more responsible, self-directed learners.

To allow students to progress at their most appropriate pace.

To allow selection by student/teacher of methods of learning which "fit" the student. (appropriate learning style)

To allow the introduction of better programs of remediation and enrichment.

To reduce failure and drop-out rates.

To more closely monitor student progress and to increase the efficiency of feedback on progress to students and parents.

To make more effective use of staff and resources.

Appendix 2

ABERHART**NATURE OF INDIVIDUALIZATION**

At Aberhart the individualization occurs within subject areas. Some subjects offer their curriculum in an individualized self-paced manner while other departments offer their curriculum in a traditional manner. The Business Department was the first area to individualize their curriculum. During those periods which students have Business Education they go to the Business Resource area or to Business Labs where they work at their own pace. At any one time, there may be students in the resource areas working on as many as six different courses. As with all three other schools, well designed Learning Guides are an essential component of the individualized curriculum. English and Mathematics have followed the Business Department in individualizing curriculum although the English department was having some difficulties and was considering abandoning the individualized approach. (The superintendent of the Calgary Board thought that the problems related to staffing and lack of time for curriculum preparation.)

The individualized approach in Business allowed 27% of the students to complete courses ahead of time while 15% of students were allowed extensions to complete courses in Business.

Students and teachers were generally positive towards the program at Aberhart although no significant difference in achievement levels has been noted between Aberhart and other schools. Affective responses from both students and teachers at Aberhart towards Business courses were more positive than in other schools.

Appendix 3

EARNEST MANNING

NATURE OF INDIVIDUALIZATION

Earnest Manning Secondary is a neighbourhood school in Calgary's southwest sector. Earnest Manning has 1100 students and is in a low socioeconomic neighbourhood. In order to individualize their curriculum, Earnest Manning allows students to finish courses six weeks earlier than the "norm" or expected finishing time. In addition, students may, with permission, finish courses six weeks later than the norm. No extensions are given beyond this six week extension period. Earnest Manning has six dates throughout the year for entering and leaving courses.

Students in wood-working could thus finish the requirements for the grade eleven course six weeks early and immediately enter the grade twelve course. As an alternative, the student who finished a course early could "double-up" in a course in which they were having difficulties. In some areas students could enter an enrichment program relating to the course which they just completed.

At any one time, 15% of the school was accelerating. 10% were taking extra time to finish courses and 75% of the courses were being completed at the expected pace.

There was a great deal of difference from one department to another in the nature and degree of individualization of curriculum although all departments had been instructed to design curriculum to take advantage of the early or late leaving times. The Math and Business departments had self-paced individualized curriculums whereas Social Studies delivered most of their courses in a traditional manner.

Although Earnest Manning had a traditional school timetable involving periods, bells, etc., the curriculum delivery in most classrooms was fundamentally different than that of a traditional classroom. In the math classrooms, for example, we

Appendix 3 continued

observed students working on their own, students working in pairs and small groups, peer teaching, and small seminar type lessons involving the teacher. The math teachers noted that they seldom addressed the "large group" as a body. As in other subjects, students were tracked by units completed or projects completed. On the wall of each room was a list of students, their progress and marks and a clear indication of whether or not they were ahead, behind or working at the norm.

Students and teachers whom we talked to spoke positively of the school and of the way in which curriculum was being addressed in most subject areas. As with all four schools which have individualized curriculum in the Calgary board, the teacher advisor program was an important part of the school. The teachers had had intensive inservicing and saw their role as T.A. as at least as important as their subject teaching role. As with the two other Calgary public schools (Diefenbaker, and Aberhart) a high degree of emphasis has been put on the learning styles of students. By their third year at the school, students had been exposed to seven different inventories or tests of their learning style. Senior students at Manning spoke with a good degree of insight and intelligence about themselves, the manner in which they learned and their strengths and weaknesses.

Students took four courses at a time. Manning had a five period day. Each period was an hour long and there was no unassigned time for students. Once each day one of the periods was repeated. This was called Demand Time and students during this period would meet in large group sessions or work in the classroom on their projects, learning guides, etc. These Demand Times could be used in many ways. All History students, for example, could be instructed to attend an auditorium session with the Mayor of Calgary, or grade nine History students could be directed to an area to see a film, or the subject teacher might want to see certain students for remedial work. The VPs coordinated these Demand Times and encouraged departments to be creative in the use of this Time.

If a student was having difficulty and "falling behind" the subject teacher would contact the

Appendix 3 continued

Teacher Advisor who would contact the parent and possibly direct the student to Student Services or the Administration. A progress check for each student was made every three weeks. Students who missed more than 10 classes were interviewed by the VPs and removal from the course sometimes occurred.

As with Bishop Carroll, the test centre at Manning was extensively used. Over 1,000 tests were on file and last year 17,000 tests were written in various subjects. As with Bishop Carroll the use of the test centre varied widely from subject to subject.

Teachers spoke highly of the program at Manning and Department Heads noted that the coverage of the curriculum was much greater than in the past. Administrators noted that failure and drop-out rates at the school have been reduced and that achievement levels at the school have risen significantly since the program was implemented. Manning is an intercity school and traditionally their results have been much lower than city and provincial averages. In each of the five years of the new structure achievement results have risen and in many areas are now above the city and provincial averages.

Appendix 4

DIEFENBAKER

NATURE OF INDIVIDUALIZATION

Diefenbaker offers courses in a traditional structured manner and also in an individualized approach. The individualized courses are called PEP courses - Personalized Education Program. Students in the program are called PEP students, while teachers are called PEP teachers. Teachers taught either in the PEP program or in the traditional program, not both. (Note: Some teachers in the fourth and fifth year of the program taught in both structures due to timetabling difficulties. Although some problems arose, these teachers generally felt that teaching in both structures was a positive experience, however, the administration's goal is not to timetable any teachers in both areas.) Students however could take some courses in one manner and other courses in the alternative approach. The four core subject areas of English, Social Studies, Math and Science are offered in a flexibly scheduled, individualized manner. If students are taking PEP courses in these areas then they will plan their weekly timetable with their Teacher Advisor. Optional subjects would be taken in a traditional manner.

Diefenbaker had a traditional eight period timetable. If a course was being taken in a traditional manner then the student would show up in the correct class at the correct time. However if during period three, the student was taking a PEP course then the student would go to a resource area to work on the individualized curriculum by herself, or with her peers. The PEP teacher would be there to assist the students and at times conduct small groups sessions.

Students at Diefenbaker qualified to be in the PEP program. Past marks and academic success, learning style, teacher recommendations, parent interviews, etc., all determined whether or not the students could participate in the PEP program.

Appendix 4 continued

Once in the PEP program, the students were given a great deal of freedom and responsibility. Students could be removed from the PEP program if they were not performing.

As with the other two Calgary public schools (Manning and Aberhart) the Teacher Advisor program was an integral part of the school and a good deal of emphasis was placed on learning styles. The staff had been intensively in-serviced. Hunt's work at OISE on the degree of structure which each student requires was used as one of the many learning style inventories which students were exposed to.

It should be noted that all courses at Diefenbaker ended at the same time. The idea of self-pacing or advancement based on competency was achieved in the PEP program by allowing students to allocate their time for each subject. A strong English student who is weak in Math might spend 130 hours in Math to complete the course by the given date (i.e., the end of the year) and 90 hours in English.

A sample timetable under this structure appears below.

Appendix 4 continued

The PEP program at Diefenbaker has had very strong achievement levels and a very positive affective response on the part of all project groups (staff, administration, and students.) Students in the PEP program indicated that the following were significant in developing positive attitudes towards the program:

- i) Satisfaction with Achievement
- ii) Satisfaction with Organization of Program
- iii) Satisfaction with Challenge
- iv) Teacher Interest in Students
- v) Student-student Communication

Teachers in the PEP program indicated that the following were significant in developing positive attitudes towards the program:

- i) Coverage of the Alberta Curriculum
- ii) Placement Appropriate to Learning Style
- iii) Varied Learning Environments
- iv) Stop Mechanism
- v) Flexible Timetable
- vi) Advancement based on Competency, Not time
- vii) Use of Equipment and Resources
- viii) Student feedback concerning the PEP program

The problem facing the staff at Diefenbaker at the moment is that the balance which they envisioned between PEP and non PEP students no longer exists. Students are demanding to take the majority of their courses as PEP courses and the courses offered in the traditional structure have suffered.

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