

Planning Strengthened Programs for Gifted Elementary and Secondary Students

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Curriculum development for gifted and regular learners should take into account the context in which knowledge and skills will be used.

Dans le développement curriculaire pour les élèves doués et moyens, il y a lieu de tenir compte des contextes dans lesquels les connaissances et les aptitudes seront utilisées.

AN EVALUATIVE FRAMEWORK

We began by constructing an evaluative framework within which to judge what would count as “strengthened programming,” and did so with certain curriculum development tasks in mind. This did not mean we were biased for or against the practices of any province, since there are only minor variations in the various provincial guidelines (Robinson, Ross, & White, 1985).

The introductory sections of all curriculum guidelines describe course goals or aims, then turn to more specific objectives, “developing objectives from goal statements.” It is a primitive assumption of teaching that we measure growth against one or more objectives. Describing such growth becomes a central curriculum development task.

In detailed Ministerial and Board curriculum guidelines, the task of identifying instructional units and sequencing instructional objectives within them is inescapable. Once unit objectives are identified, more detailed guidelines—now usually produced at the Board or school level—describe instructional strategies and related student activities. Unit plans conclude with proposals for assessment—however sketchy—of the effect of teaching. But it is now an official doctrine of the most prestigious literature on planned change that the root problem in producing significant change may lie as much in the *implementation* of programs as in their development (Fullan, 1983). We thought our account would be judged inadequate unless it

included at least some comments on implementation. Although there is less consensus about implementation than about development, we believe recent research justifies our study of the implementation of programs for gifted learners.

In the late 1960s both the Ontario Ministry of Education and the Ontario Institute for Studies in Education established regional centres whose chief responsibility was to help local Boards develop and implement curricula. Given their common objective and close physical proximity, it was to be expected that the thinking of Ministry and OISE field personnel would move in parallel and complementary ways.

This unusually productive inter-agency collaboration has culminated in two publications. The Ontario Ministry of Education's *Curriculum Management: A Resource Guide* (1987) outlines Board curriculum managers' tasks during the development and implementation of curricula. The Institute's counterpart, *Planned Educational Change: A Manual of Curriculum Review, Development, and Implementation Concepts and Procedures*, outlines a set of procedures that can be used to execute these tasks (Leithwood, 1986).

The implementation tasks described by the Ministry parallel closely those we mentioned earlier on developing a curriculum for students, except that here they are to be undertaken in the course of developing a curriculum for teachers. They include choice of new or expanded teacher competencies, descriptions of professional growth to develop these competencies, strategies and incentives to stimulate this growth, and assessment and monitoring of inservice and its effects.

One dimension of our evaluative framework is a set of curriculum development and implementation tasks in common use, or that simply extend practice. This is not likely to be controversial, but the second dimension, a designation of *how well* the task has been executed in any specific case, is far more problematic.

Our conception of the quality of task performance has been greatly influenced by *Planned Educational Change*. There, curriculum development and implementation are considered to present *problems to be solved*, and the adequacy of task treatment is measured by the quality of the schema constructed for the problem. Low-quality schema have relatively fewer, and perception-dominated, elements, organized in immature pre-formal logic. High-quality schema have relatively more, and concept-theory dominated, elements, linked by formal logic or empirically determined relationships.

One way to assess the quality of execution of a curriculum task is to extract the schema or framework implicit in the curriculum product resulting from the task's completion. Although this is the dominant method of appraising the quality of most sophisticated pieces of intellectual work—books or theses

for example—it is hardly a universally accepted basis of appraisal. Its chief justification must lie in the plausibility of its criticism and suggestions for improvement, especially among mature readers unfamiliar with the framework and the schema. Of course, this is our aspiration for all our claims about each curriculum development and implementation task.

DATA BASE FOR THE STUDY

To obtain data on *intended* curriculum, we sent letters to all provincial Ministries of Education, asking them to forward relevant guidelines and resource documents. We also found reports thought to have contributed to the perspective or recommendations of these primary documents.

Two types of data were used to determine the *delivered* curriculum. We first studied practice that responsible officials considered “exemplary.” We asked provincial Ministry of Education officials for information on “exemplary” gifted programs in their provinces. We then followed up with telephone interviews the most promising leads from Nova Scotia to British Columbia. As our study proceeded, the net of contacts in Ontario grew, and we learned first-hand what reputedly exemplary teachers were doing in program development and implementation. In 1986 December, a provincial conference in Ontario on “Exemplary Practice in Special Education” included no less than 35 papers on education for the gifted.

Our knowledge of “typical” practice comes from intensive year-long interaction with educators of gifted learners in Northeastern Ontario including examination of guidelines, interviews, and classroom observations. Toward the end, in a 15–20 hour inservice course offered by us in five different Boards, we obtained the reactions of teachers of the gifted to our analyses of existing programs and to our suggestions for improvement.

Clearly, our information does not allow a definitive description of the status of curriculum development and implementation practices for the education of gifted learners in Canada. Our obvious difficulty was the lack of an official repository for accumulation or analysis of such data. Most of the people we talked to were in supervisory positions and had a good deal of information on identification of students and on logistical arrangements for classes for the education of gifted children. But most were reluctant to talk about their approach to curriculum development and implementation. In fact, most Ministry of Education officials insisted that in their provinces education for the gifted had not yet developed to their satisfaction and that work continues.

In summary, our research used (i) written descriptions of the intended curricula in the provinces, (ii) verbal descriptions of exemplary practice (especially in Ontario), and (iii) first-hand observation of “typical” practice in

a large geographical region of Ontario. We also know how a large group of teachers of the gifted reacted to our analyses and proposals for improvement.

GOALS FOR PROGRAMS OF EDUCATION FOR GIFTED CHILDREN

Since programs of education for the gifted are innovations in most school systems, we expected to find descriptions of their goals and how or if those goals differed from the goals of regular public education. In most programs, goals were not stated, although documents often mentioned a supposedly unique characteristic of the gifted (e.g., creativity) and offered general programmatic advice.

The vagueness of goals of education programs for the gifted makes comparison with general education goals difficult. Goal-setting has been practised as art or craft, with no explicit rules. However, beyond idiosyncratic expression lies the *form* (i.e., the framework) of goals, and at that level we find remarkable similarity. We claim on the basis both of cross-provincial and of longitudinal studies (e.g., Robinson, 1978), that fully-developed goal statements in provincial curriculum guidelines describe the purpose of schooling to be to nurture growth of six dominant qualities:

- (i) the ability to engage in complex intellectual performance (normally designated problem solving, inquiry, or decision making) in a set of life contexts or situations that range outward from the formal disciplines of the school to personal groups and the larger social community and institutions;
- (ii) the knowledge and skill prerequisite for intellectual performance at a sophisticated level; these include the comprehensive discipline-based knowledge structures and skills needed to retrieve and process information within the culture;
- (iii) the self-directed execution of these competencies;
- (iv) a reflective awareness of the ongoing use of these competencies (now designated metacognition);
- (v) a self-constructed value structure that incorporates shared societal values;
- (vi) a positive self-regard based on self-perceived achievement or competence.

The stability of such goals across contexts and over time suggest they are not capricious but rooted in some shared belief of what it means to be educated. They embody, for instance, some notion of the rugged individualism to be found in the frontier theory in of Canadian and American history and in popular conceptions of the small business entrepreneur.

Ministry policy implicitly defines giftedness as an unusual capacity for acquiring such qualities, thought desirable and educable in our culture. Of course, we could identify conceptions of giftedness in which the cognitive emphasis is not so preeminent—for instance, acknowledge an exceptional capacity for aesthetic or even psychomotor growth—but the public school's mandate has always put emphases on the cognitive achievement, moral

development, and affective growth hinted at in the above outline of dominant qualities.

Although we did not find it in our study, the goals of programs of education for gifted learners in the public educational system might have mentioned not just *qualities* to be developed, but also the *range of contexts* in which they might be applied. This contextual demand puts pressure on teachers of the gifted to broaden the situations to which their students' extraordinary problem-solving abilities are to be applied. Yet the best interests of a society might be served if students were accelerated through a radically reduced context, particularly in such pedigreed subjects as mathematics and science, when students are deemed likely to make a significant contribution to the discipline.

DEVELOPING INSTRUCTIONAL OBJECTIVES THAT EMBODY COURSE GOALS

The great majority of programs we examined were "assembled" from intact pieces, many of commercial origin. These included DeBono's CoRT materials especially, but also intact pieces from Bloom's Taxonomy, Guilford and Torrance's work on divergent thinking, and various thinking games, both traditional and computer-related. As a result, the de facto objectives of most programs of education for gifted learners are an accidental composite, not a deliberately constructed set worked up from a coherent set of program goals.

One problem in the "assembling" approach is that a set of objectives pursued in this way are likely to be highly redundant. Given the degree of overlap between the various commercial materials, it is not uncommon, for example, to find students pursuing essentially the same form of decision-making training from two different commercial packages in the same year. Moreover, there is little guarantee that the assembly method will generate objectives that fully represent the dominant qualities of the self-directed problem solver, and it is highly unlikely that it will develop any qualities to higher levels.

The route from clearly articulated goals to defensible consequent objectives is an arduous one, rarely traversed to a satisfactory degree in regular school programs. It is a commonplace among teachers that problem-solving and self-directedness goals featured in the introductory sections of guidelines written at the provincial and Board levels dramatically deteriorate into unit objectives stressing low-order knowledge objectives.

One antidote is to build an *organizing set* of objectives for each of the main qualities appearing in the goal statement (Leithwood, 1986). Objectives for individual units may then be drawn from these organizers in an order of priority that respects the original emphasis.

For example, many programs for gifted elementary and secondary gifted

students employ a “skill organizer” that takes the form of a general-purpose problem-solving model. The most common version is a five- to eight-step hypothesis-testing model similar to the one proposed by Dewey many years ago (Ontario Ministry of Education, 1979).

Critics have claimed that this model is a pure process scheme that does not necessarily require the student to acquire any comprehensive body of knowledge. Further, it applies directly only to problems in which alternatives are clearly identified.

In the early 1980s Ross and his associates began to test and disseminate a new general problem-solving model that was constructed to overcome these weaknesses (Ross, 1982). The main steps in this model were described as:

1. establishing a focus for the inquiry;
2. establishing a framework for the inquiry (the “framework” is an external—paper—representation of the problem elements and their relationships);
3. determining sources of data;
4. obtaining data at source;
5. judging the adequacy of data;
6. putting data into the inquiry framework;
7. reducing data to summary form;
8. observing relationships among data;
9. interpreting data;
10. extrapolating the interpretation;
11. communicating the results and process of the inquiry.

Each step in the sequence describes a generic inquiry skill with many linguistic variants, and considerable similarity across a variety of inquiries. If we modify the framework, the schema can accommodate decision making, cause-effect analysis, correlational studies, comparison making, the logical-quantitative problems of mathematics and physics, critical thinking, and most other forms of inquiry pursued in secondary school courses. Because of its versatility, this is now being recognized as an “interdisciplinary” model; its growing support among teachers has led to its appearance in both Board and Ministry guidelines (Ontario Ministry of Education, 1986).

While the form of the framework is determined by the problem *type*, parts of this framework are constructed from facts, concepts, and propositions the student already has about the subject under investigation. The framework thus forces the integration of process (represented by the structure of the framework) and content. In a series of studies, Ross and others have shown that teaching framework-building rules consistently leads to significant increases of integration (Ross & Maynes, 1985).

The inquiry model has been applied recently to definition of concepts. Teachers know that sending bright students to dictionaries won't satisfy their curiosity about what terms really mean—that is, about criterial attributes. If a problem-solving strategy is applied, students first think of concrete examples, then fashion a preliminary definition that fits the example. They test the definition with non-examples that fit the definition, true examples that don't fit, and terms appearing in the definition that themselves need definition. At each step the preliminary definition is refined, and the process continues until the student has fashioned a definition consistent with past experience or with new experiences (instances provided by the teacher). At this point the student tests his definition against the most sophisticated alternatives in a technical dictionary.

The evidence supporting this type of problem solving is mainly anecdotal, but nonetheless impressive. A strong theoretical reason for advocating this approach is that concept meanings established in this active way survive longer in memory than concept meanings taught in an expository manner (Hewson, 1981); the evidence on longevity in the latter case is so dismal that science educators have felt obliged to invoke a new "misconception" theory to explain it. The determination of concept meanings from personal data can also be defended on the ethical ground that transmitted concept meanings may be instruments of social control and of social reproduction.

Used as an organizer, the interdisciplinary skills list can go a long way toward ensuring that problem solving is included in unit instructional objectives. However, if high self-directedness is to be achieved, we must go beyond this general-purpose model to a more complex organizing scheme. Programs of education for gifted learners, taking direction from Renzulli's third level (1977), offer *opportunities* for the exercise of self-direction through such means as contracts, individual projects, and independent study. But superordinate strategies that give sophisticated guidance to these endeavours are conspicuous by their absence.

Many teachers of the gifted have sought to press the Bloom Taxonomy into service as a super-organizer. Although the taxonomy generates a sequence of qualitatively more and more sophisticated inquiries, they are not presented in real-life order, so are not cumulative in impact. The result is diverse and unconnected inquiries, sequenced in order of difficulty of execution.

Some recent pilot projects have sought to discover the flow of inquiries typical of an expert's development of a topic. Each phase of the so-called "Topic Development Scheme" is guided by a generic question, and each type of inquiry has a distinctive framework. A sense of this scheme can better be grasped if some common topic—bicycles, or government, say—are run through it.

Since the Topic Development Scheme (Robinson et al., 1985) allows a content-enriched problem-solving model to be cumulatively applied through

FIGURE 1
A Topic Development Scheme

<i>Phase of topic for development</i>	<i>Generic inquiry question</i>	<i>Framework inquiry</i>
Clarifying the development topic	What does the topic name mean?	Concept
Building a model building for the topic (identifying characteristics of interest)	How does it work?	Model
Observing changes in characteristic of interest	How does the characteristic of interest vary?	Comparison
Observing relationships	What are changes in the characteristics of interest related to?	Correlation
Imagined intervention	How can I make the characteristic of interest take a desired value?	Causal
Practical Action Making	What action should be taken?	Decision
	What plan is necessary to carry out this action?	Planning

a sequence of inquiries, the products of its use are likely to be quite impressive. Given demonstrable success in teaching the component inquiries, in principle there is no reason why students should not use such a disciplined approach by the end of elementary school. Our own ongoing pilot studies indicate this to be the case; bright and gifted grades 7 and 8 students have shown remarkable versatility in applying topic-development strategy to studies of novels, science topics, history themes, and a wide variety of self-chosen topics (Puk, 1986).

DESCRIPTION OF INTENDED STUDENT GROWTH ACCORDING TO OBJECTIVES

Teachers have always understood that a conception of growth is critical to effective teaching. Ausubel once summarized this belief as “the dominant

principle of educational psychology: discover where the students are in their learning and then teach them accordingly.” However, teachers generally have descriptions of growth for only such uncomplicated objectives as computational skills and simple communication skills. Not surprisingly we found no clearly articulated conception of growth for the much more complex objectives pursued in programs of education for gifted learners.

We should be worried that existing programs show no clear idea of what very bright students can do. We educators are occasionally jolted by concrete images of highly developed giftedness—an eleven-year-old on the verge of becoming a chess grand master, a twelve-year-old leading his honours physics class, or a sixteen-year-old who has completed a Ph.D. in mathematics. Such accomplishment is so far beyond our conception of reasonable aspirations for public education that we do not accept it as demonstration of what is possible through instruction applied relentlessly with a committed learner.

Although such achievement is not a sensible aspiration for all schools, a growth plan could offer self-directed problem solving at levels far exceeding present expectations for our very brightest students.

The dimensions and rough detail of this scheme can be derived from the various organizing sets we have described. As the overall strategy for developing such a scheme, we take—for the “level of realized self-directed problem solving”—the quality of thinking that goes into the student’s development of a self-chosen topic.

But quality of topic development depends on the number and sophistication of the component inquiries the student can link together, and quality of individual inquiry depends mainly on the maturity of the framework (representation of problem elements and their relationships). Maturity depends on sophistication of knowledge, particularly concepts used to describe the framework’s elements.

Growth in self-directed problem solving might then be conceived in three dimensions: the number of inquiries that can be cumulated in investigating a topic; the maturity of the framework governing the inquiries; and the quality of knowledge used to build and complete these frameworks. It is easy to discern levels in each dimension, the result being a three-dimensional growth scheme with several routes or paths to maturity.

Our preferred path is based on past and ongoing projects to stimulate high levels of intellectual performance among elementary and secondary students (Puk & Robinson, 1987). We find that the top third of our most capable junior grade students can be taught to engage in intellectually honest inquiry on all but two components of topic development, concept definition and model building. An intellectually honest piece of decision making compares alternatives under consideration against the *same* set of criteria, and sees in these criteria the best interests of people beyond the immediate group of decision

makers. An intellectually honest cause-effect analysis goes beyond changing something (presumed cause), and determining what happens (that is, if there is an effect), by identifying other potential causes and eliminating their effects.

By the end of grade 6, gifted students should be able to use a procedure to define concepts broadly. For example, in comparing friends, immature thinkers think of perceptually obvious physical characteristics and activities. Once a definition of friendship is worked out, attention shifts to the duration and nature of the interaction with friends, and to the needs this association meets. The student begins to distinguish categories or types of friends, and thus the scope of the comparison is extended. For convenience we could describe these inquiries as having "concept-enriched frameworks" (Puk & Robinson, 1987).

By the end of elementary school, gifted students can be taught to draw together the sequence of concept-enriched inquiries described previously as topic development. They can also learn to deal with the idiosyncratic forms of topic development that occur in particular school disciplines (for instance, history, geography, guidance).

In the senior high school years, the gifted student's intellectual maturity can be further enhanced by teaching model building for topics of interest. Of course, an expert student can profit most from interaction with a mentor who has a very sophisticated model and knows how to move the student toward this advanced representation.

We indicated that our grade placement estimates were based on past and ongoing projects, that suggested initial expectations for gifted students be set approximately one division level above those for average students in inquiry-training programs. However, none of these projects have been in operation long enough to show cumulative effects over a number of years. When such programs materialize, we expect our standards will seem "child's play" in comparison with the capacities of bright people stretched to their intellectual limits.

INSTRUCTION FOR GIFTED STUDENTS

Except in a few cases, we had no opportunity to observe classes of gifted students in action. Our data are therefore second-hand, consisting of conversations with teachers of the gifted about their instruction, and of such teachers' scarce writings in the professional literature.

Most teachers of the gifted that we had contact with consciously strove to assemble a strong cast of potential stimulators of student growth. These teachers bring high energy and commitment to their work. Regular classroom teachers must be considered part of the instructional team because

they have to deal with gifted students in the “normal” part of the school day or week. In some programs, students also have access to mentors, occasionally university professors, but most commonly high school teachers or community members who have a specialty with a disciplined basis. Rounding out the cast is a large and expanding body of materials that provide “activities” for programs for the gifted.

Two issues continued to bother us throughout our discussions with teachers: first, their views on instructional actions required in gifted education, and second, how these actions should be divided among the large cast of instructional agents.

Far too many teachers of gifted students hold the view that their students do not need specific instruction as less capable students do. According to these teachers, stimulating materials are sufficient in themselves to generate the creative capacity. In fact, many teachers argue that the gifted should not be subject to any instructional constraint or structure.

We believe these are dangerously simplistic views. They are supported neither by research data nor by the general accumulated wisdom of the species. Although there appears to be little hard data on the differential effect of different types of training for gifted students, there is some evidence that gifted students who are simply encouraged to write do not perform as well as one would expect (Shivratton, 1987) and that their writing in various transactional modes can be improved by providing rules for structuring ideas (White & Maynes, 1987).

Outstanding performance in almost any human sphere has been linked with intensive interaction with a human teacher. There is great optimism among cognitive psychologists that slow growth in the ability to represent and to solve problems can be sharply accelerated through instructional technology that encourages students to use the experts’ rules rather than the usual students’ rules (Case & Bereiter, 1983). Although this optimism is meant for students generally, there is no reason to exclude the gifted from its implications.

We found that teachers of the gifted had no very clear conceptions of how they might nurture student growth. Still, the regular classroom teacher might be expected to develop general problem-solving strategies, particularly variants of the interdisciplinary skills list described earlier. Gifted students in mainstream classes could themselves act as coaches for less able students. Teachers of classes of gifted learners would lead students to more sophisticated uses of each of the component skills, emphasizing students’ ability independently to construct the problem representations critical in determining the quality of inquiry. Mentors—specialists in particular topics—would help the students assemble these strategies in semi-independent in-depth investigations of topics of continuing interest, using as an assembling device their (experts’) sophisticated models.

Planned collaborative instruction in a team depends on agreement about objectives, about what constitutes growth towards these objectives, and about actions thought likely to stimulate growth.

ASSESSMENT

Teachers of the gifted are enthusiastic about their students' accomplishments. They are annoyed and incredulous that we would ask, "How do you know your program is effective?" The substance of the most common response was, "Just look at the students' work; the evidence speaks for itself."

Although such evidence does point to continuing fruitful interaction between teacher and student, students' completed projects are not sufficient basis on which to appraise instructional effect. For one thing, because of high teacher commitment and involvement, the product is evidence of a variable, if large, piece of teacher and pupil ability. The difficulty is not unlike that we face in considering a completed doctoral thesis: "How much was student and how much thesis supervisor?"

We want to know what the gifted student can do independently that can be attributed to instruction. Since it is hard to assess achievement in respect of complex objectives, those who seek to measure program impact will have difficulty.

One can hardly maintain that products of complex intellectual performance cannot be validly assessed, for this would discredit the basis on which advanced degrees and academic status are awarded. The appraisal of a thesis typically proceeds by examining the framework established to situate the thesis problem, and the quality of inquiries undertaken to answer questions posed under the framework. It is equally hazardous to judge the quality of the intellectual products of gifted elementary and secondary students by retrieving the model that guided the development of independently pursued topics and by determining the quality of the component inquiries undertaken in this development.

Those investigating the general problem-solving model described earlier have been able readily to agree on quality of student response by constructing a quality scale linked to a concept of growth. If a group of raters were trying to reach agreement on the quality of procedures in making a decision, for example, few would dispute that an increase in the number of criteria considered, the conceptual maturity or sophistication of these criteria, and the range of actors' interests, would each constitute growth in quality. Although this approach does not yield a precise statistical formula for computing a numerical score, it does give us a sensible three-dimensional scheme for appraising the quality of a decision procedure. Moreover, although still experimental, this type of assessment has been shown to be both acceptable to teachers (White, 1981).

IMPLEMENTATION CONCERNS

A formal analysis of the implementation of gifted programs would be premature and pretentious. It would nonetheless be useful to review briefly requirements for systematic implementation.

In describing our evaluative framework, we indicated that the heart of a systematic implementation plan would be a conception of practitioner growth—frequently expressed as a user profile or levels-of-use scheme. Practice in Ontario provides a realistic basis for judging how much progress has been made in thinking through such growth conceptions. In Canada's most populous province, the first exposure of prospective teachers of the gifted to their field usually takes place at a professional conference or workshop in which very general descriptions of programs are presented. To be legally qualified to offer courses for gifted students, however, the teacher has to have taken the first of three courses in "special education." In this course the gifted will be the topic of a chapter that presents definitions, methods of selection, and general principles that might be applied in a curriculum that is developed. A limited number of graduate courses expand these topics and require teachers to have as well in-classroom experience with gifted students.

Any thoughtful observer should be skeptical about the amount of growth likely to be stimulated in this sequence. Given the time limits, the most obvious gain is knowledge about giftedness or gifted students. The much more subtle concern that follows is that this knowledge may be about the wrong topic. Classroom teachers should not be studying giftedness or the gifted per se, but how to adapt to gifted students strong procedures for curriculum and instructional design. This is no mere play on words because it is logically impossible to construct powerful instructional programs for gifted students upon a weak basis of instructional knowledge and skill.

A plausible plan for teacher growth would involve acquisition of the sequence of intellectual strategies that form the main dimensions of the previously described students' growth scheme. To get more manageable substeps, mastery of a particular teaching strategy could expand from using it with a single student, to using it with a small group, to using it in the context of the normal classroom.

SUMMARY

Despite occasional bursts of interest, gifted education—though at different stages of development across Canada—is receiving the treatment normally accorded an innovation. As with most innovations, it has engaged the enthusiasm of many intelligent teachers, who see in it a cause to be advanced, and who frequently bring to it a large measure of personal ingenuity.

Unfortunately, the movement for education for the gifted is rapidly acquiring characteristics of other great innovations of the past—educational television, the Cuisenaire method, programmed instruction, open education, and computers readily come to mind. First an innovation becomes a novel subject in its own right, not connected in any vital way to mainstream thinking and research about education. The new movement rapidly acquires dominant theorists, who serve as its gurus, defining the “in” models and key terms in which the topic will be discussed. Enthusiastic practitioners attempt to work directly from these models and key terms, frequently drawing into service materials that have been hastily put together to exemplify them.

The weakness of this approach is painfully obvious if we view it from the perspective of curriculum development tasks and the procedures by which they might reasonably be undertaken. As we have argued earlier, the development of effective procedures requires that we view each task as a problem to be solved, and that we construct a high-quality schema or framework for it.

The difficulty with education for the gifted begins with failure to treat the first curriculum development task in this problem-solving way, and cumulates thereafter. It is not seen that the goals of education for the gifted should be extensions of the goals for general education, and that it is necessary to clarify that extension. Without a definitive statement of goals, it is not possible to construct those organizing schemes necessary to carry the intent of the goals into practice. And without such organizers, it is difficult to piece together a coherent account of growth.

The absence of any clear conception of growth has all kinds of disastrous consequences. For one thing, there can be no clear meaning of success in courses for gifted learners. And without clearly-defined levels of attainment, it is difficult to initiate serious discussion concerning what teaching actions are essential to attain such levels. Instead, the comfortable assumption is made that the gifted will rise to their level if presented with challenging opportunities. The result is that programs for the gifted very likely underestimate greatly the level of intellectual performance that might be achieved if systematic instruction were applied within a shared conception of growth. Finally, without precise descriptions of growth, it is impossible to determine the impact of programs for the gifted. Instead, any sense of inadequacy is dulled by an approach that equates the joint products of teacher and student efforts to growth in student ability to engage in self-directed inquiry.

We recognize that the foregoing is an uninhibited generalization, and as such, is unfair to the relatively small number of teachers we encountered in our study who viewed curriculum development for gifted students to be an application of the same principles that one would apply to good curriculum development generally. For these teachers, the central topic is not “giftedness,” but how to adapt good curriculum design and instruction to the

greatly enhanced capacities of the gifted. Failure to identify the appropriate starting point for programming for the gifted best explains the very unsatisfactory state the field now seems to be in.

Those responsible for education for the gifted at the Ministry and Board levels should encourage initiatives to rationalize curriculum for gifted students. In order to do this, it will be necessary for the Ministry guidelines themselves to discuss major curriculum development tasks for programs for the gifted in a way that ensures these tasks' connections with the general thrust of self-directed problem solving in our schools. Inservice and graduate programs for licensing teachers of gifted students should be developed around a conception of practitioner growth that extends upward from basic teaching competencies to include the skill necessary to teach the complex instructional strategies involved in self-directed problem solving. The continuing long-term effort required to undertake these tasks should be motivated by recollection that detached innovations have a dismal history of survival in Canadian schools.

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Lehrplanentwicklung für begabte und normal Lernende sollte den Kontext, in dem Wissen und Fähigkeiten angewandt werden, berücksichtigen.

El desarrollo curricular para niños excepcionales y estudiantes regulares debería tomar en consideración el contexto sobre lo cual los conocimientos y las habilidades serán usadas.

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