A QUEST OF THE POSSIBLE? EVALUATION OF THE IMPACT OF THE PIXIE PROGRAMME ON 8-10 YEAR OLDS

INTRODUCTION

Curriculum programmes are conventionally expected to produce outcomes or specific results demonstrated in the performance of learners. Usually the intended outcomes are expressed in the conceptual framework or design of the curriculum. Programme assessment is intended to collect data that will provide evidence for these effects on learners.

What first appears to be simple becomes complex. Educational researchers are, by the nature of the domain, subjected to an array of methodological traps, uncontrollable variables, conventions, preconceived notions, and interpretations vulnerable to biases. The process is situated in a multidimensional context of interactive human beings.

Given the human capacities for complex personal interactions, thinking, wonderment, and the unpredictable, the assessment enterprise is severely challenged to accommodate these human dimensions to, at least, some of the canons of scientific models. In support of the need for a "broader view" of assessment of cognitive skills (Marzano & Costa, 1988), many educational researchers practice assessment using both qualitative and quantitative techniques. Justifiable criticism has been expressed both about assessment of thinking skills and about programme evaluation in general: "There is little, if any, evidence on the long-term impact of instruction in critical thinking, despite the fact that the vision of such impact is central to the justification of critical thinking instruction . . . We do not learn what specifically makes these students better thinkers and in what specific ways they can still improve" (Norris, 1985, p. 44).

Freda Holly (1988, p. 7), noted research practitioner of the Austin (TX) Independent School District, said in a recent interview: "Programs are the warts on the hide of education. Program evaluation is peripheral. As long as our evaluation resources are focused on programs and not the people running our schools, evaluation will be peripheral." Acknowledgement for initial grant support is made of the Social Sciences and Humanities Research Council of Canada.

In 1984, when the research project described here was being conceptualized and funding sought, the state of the art of evaluating thinking/reasoning programmes was in its earliest infancy.

A search of the literature confirmed that, although there was a large quantity of published material on most aspects of reasoning, published results of specific programme evaluations were severely limited. This is not unexpected given the increasing number of conditions required for appropriate research designs applicable to this type of research .

Perhaps, the three most useful sources of programme evaluation relevant to those engaged in teaching reasoning in elementary and secondary schooling are:

(1) articles or reports on projects in Analytic Teaching (Texas Wesleyan University, Fort Worth, TX), particulary Allen Henderson's (1988, p. 43-54);

(2) articles in Thinking (Institute for the Advancement of Philosophy for Children [=IAPC], Montclair, NJ); and

(3) articles in two monographs, The Teaching of Thinking, by Raymond S. Nickerson, David Perkins, and Edward E. Smith (1985) which contributed a substantial review of implemented programmes on thinking and an important chapter on "evaluation"; and "Evaluating Thinking Skills in the Classroom," by Joan Boykoff Baron (1987).

Unfortunately, most of the relevant sources had not been published during the preparation and submission of this research proposal.

TYPE OF PROGRAM

What follows is a descriptive abbreviation of a report of an educational programme evaluation formally conducted during one school year and concluded after an informal second year.

The particular program selected on the basis of its familiarity, popularization, and essential educational soundness (Lipman, 1987) was the Pixie module of The Philosophy for Children program. Published reports indicated completed assessments and gains in achievement using modules designed for children in grades 5 and above.

However, there was a noticeable absence of similar evidence for those components of the total programme designed for students in grades three to five. This is also understandable when one realizes that the Pixie module was developed only after several other modules had been implemented. There was no apparent evaluation component included in that development nor were there appropriate measures available.

This presentation will first consider the limitations imposed by multiple factors and then lead the reader through the various components of the project. The statistical details are available for consultation but they have been omitted here to comply with stylistic and space considerations.

RESEARCH DESIGN

Limitations:

Empirical research in education shares with other social sciences the evolutionary process of both commencing with limitations and accommodating emerging constraints as the research is in progress. This project provides a prime example of such antecedent and concurrent limitations. Contextual variables determined many of the probable outcomes. For example:

(a) Prior to the implementation of the research design, the funding agency reduced the proposed duration of the project from three years to one year. This included a reduction in the first year's budget by 60%.

(b) After the sample subjects in three Provinces had been identified through the collaboration of contact teachers, one site replaced the reading comprehension measure with a cognitive abilities measure.

(c) The preparation and teaching experience of the instructors varied from one brief introduction to certification as a "trainer." The only significant commonality was the determination that all of the teachers of the comparison groups were judged to be seasoned, flexible, and master teachers.

(d) The delivery of the instruction commenced at different months of the school year and for weekly periods of time ranging from 60 to 120 minutes. This was partially due to lack of the programme materials and pretesting operations. In two groups, it was six months into the school year before delivery of instruction took place.

(e) For the most part, the population groups were heterogeneous. However, at one provincial site, appropriate control groups could not be identified, measures differed, and teachers in the comparison schools were much more experienced and trained than in the two other provincial sites. Thus, initial data from this site was not used in the analytical and reporting phase of the project.

Single classes ranged in abilities from exceptionally gifted to reading problems in second language instruction.

(f) The nature of the programme and the context of the implementation required at least two school years operation, delayed posttesting, continuous cooperation and monitoring, and teacher inservice. None of this was possible given the restrictions externally imposed.

(g) The usual cited measures were not appropriate for measuring reasoning skills in learners younger than about 10 years old. Resources were not available to construct an original measure that would assess either programme objectives or generic reasoning skills.

We are now cautioned about the use of any standardized tests for such purposes (Marzano & Costa, 1988).

In an attempt to frame the research design in problem and hypotheses terms, initial perception was to respond to the comprehensive problem question: Will an implementation of the PIXIE programme--one of six programs developed by the IAPC--significantly enhance the reasoning and reading comprehension abilities of 3-4th grade children in three different provincial Canadian school settings?

This question was further refined into three hypotheses: (1) Given a prescribed repertoire of reasoning skills, children will acquire these skills at significantly enhanced levels of achievement compared to a control group. (2) Given the lack of teacher preparation in both philosophy and the programme and the brevity of implementation opportunities, no significant difference will be found in the growth of reasoning skills and reading comprehension when comparing experimental and control groups of third-graders. (3) Whatever reasoning skills are acquired can be inferred to transfer to core curricular contexts of the school day. The program is designed to elicit thinking with a format that encourages an open, "socratic-style" dialogue method. For Lipman, the originator of the program, the classroom should be transformed into a "community of inquiry" (Lipman, 1987, p. 153f.). Would this stimulate a more reasonable, accurate approach to thinking and relationships in a free society requiring mutual respect? Could such an approach also stimulate a sense of wonder about life and an awareness of its complexities that might preclude attitudes of intolerance, indifference, and insensitivity to others? (Allen, 1988)

Definition:

For purposes of the study and in order to avoid definitional problems, reasoning skills were defined as the skills of: defining, comparing, classifying, categorizing, assuming, inferring, distinguishing error--contradictions--alternatives--and judgments. These specific mental operations function within the context of a "frame of mind" or a disposition that includes:

(a) an alertness to the need to evaluate data;
(b) a willingness to test opinions
(c) a desire to consider various viewpoints
(d) a desire for a community of inquiry.

Programme Objectives:

The Institute (IAPC) provided a list of five objectives and twenty-two skills that were foundational to the Pixie programme and were intended outcomes. These were synthesized into essentially four competencies that correspond to the dispositions noted, namely, (1) the ability to recognize and generate alternative ways of thinking, (2) initial mastery of criteria to do better reasoning and make distinctions, (3) awareness of another's point of view as worth considering, and (4) the ability to engage in dialogical discourse in the promotion of a community of inquiry.

The content and the supporting instructional materials are designed to promote the achievement of these objectives. But no curriculum materials are or perhaps should be "teacher proof."

It was assumed that in this project because of the wide variance in teacher preparation of those sufficiently interested to participate there would be no expectations of a philosophical basis. Rather experience, disposition, and the ability to continuous learn would be the prerequisites.

The only assistance affordable was a two day introductory inservice conducted by a trainer initially involved in the project. At one site, a philosophically trained research assistant visited the classroom on a weekly basis to assist the teacher. In all cases, the teachers demonstrated their disposition to engage in the delivery of the programme as

suggested with the same mental framework as expected in the student outcomes.

They wished to promote an atmosphere of open dialogue and a community of inquiry. They were informed that this community of inquiry develops over time with the practice of the dialogical mode of instruction, through sharing and cooperatively questioning all interpretations of the contents of consciousness.

Tinder (1980) wrote about such a community of inquiry. The plurality of beings and, therefore minds, imposes "the necessity of inquiring not only about, but with, other persons." More recently, Ann Scharp (1987) and Julie E. Urner (1988) spoke from experience about this dimension. It begins with the teacher and may be manifested in any number, e.g., seventeen, of behaviours.

PROCEDURES

Population:

The final population used for analysis of data consisted of the following sites and parameters:

CODE	NO.	Ss	GRADE	TYPE	PROV.	CONTROL	
O-1	1	27	3	public	(Ontario)	1	
S-1	1	23	3	public	(Sask.)	1	
S-2	1	10	2-3	public	(Sask.)	0	
Q-1/2	2	40	3	French Cath.	(Quebec)	2	
TOTAL	5	100				4	(100)

Content & Instructional Methods:

Classroom delivery was executed according to the suggestions of the IAPC and practices of trainers. The process of dialogue as two-way communication was emphasized. Sometimes a randomly selected student recorder was used. Students were encouraged to speak directly to their peers and to develop the habit of listening. As Sharp (1987) has noted, this sharing leads to "inner dialectical and dialogical discourse." Through such discussions all learners have the opportunities to examine the credibility of their own beliefs and actions and to learn how to respond in love and respectfulness to those who may differ. All ideas do not have easy closure, nor are they always able to be completely understood, boxed and finalized.

DESIGN

Only quasi-experimental designs were used as follows: Ontario site: Interrupted time-series with comparison group:

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        O   X   O   X   O
        ---------------
        O       O       O
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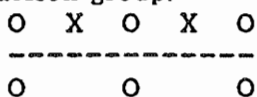
The observations in the form of pre-post-delayed post-tests were administered only after at the beginning of the program implementation, after six months, and after another 8 months.

Quebec Site:

Equivalent pretest-posttest control group
Francophone:

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        O   X   O
        -------
        O       O
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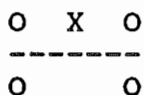
Saskatchewan Site:
> Equivalent pretest-posttest control
>
> O X O
> ————————
> O   O

DATA COLLECTION PROCEDURES
Written Measures:

(a) New Jersey Test of Reasoning Skills (modified); and, (b) the Metropolitan Achievement Test-6 (reading comprehension section).

(A) The New Jersey Test of Reasoning Aptitude (modified): The version modified by the francophone group for use in first language French classrooms was a reduction of 50 to 20 items. Since there is no information about the validation of the modified measure, it is impossible to determine its validity. The assumption was that the modification to the original measure did not adversely effect the measure.

The researchers responsible for the modification and first use of this measure reported (Schleifer, LeBuis, Caron, 1987) "marked improvement" in transitivity, awareness of ambiguity, inductive reasoning, reasoning with relationships, references to premises, and the non-logical structural aspects of deductive reasoning.

(B) The "Reading Comprehension" section of the revised Metropolitan Achievement Test (MAT6), (The Psychological Corp., Hartcourt, Brace, Jovanovich, 1986). The publishers state that the "test measures how well students understand what they read, and if they understand the author's meaning through interpretation of printed symbols. The test assesses the student's performance on literal and inferential comprehension, and critical analysis."

Rowe and Rayford (1987) support this revision: "Reading theorists now suggest that reading comprehension tests best demand the activation of students' network of background knowledge as they encounter each passage; MAT6 was the first revised test to apply this theory by the inclusion of a purpose question before each passage. This may be one way of providing cues to help test-takers activate appropriate background knowledge. The purpose of the question is to focus on higher order information contained in or inferred from the passages they precede."

Therefore, the rationale for use of MAT6 is:

(a) organization of thinking in relation to passage content; active global schemata to 'get into' passage; and

(b) it may serve a motivational function, building interest in the passage, i.e., textual cues plus motivation.

The results of this measure are to be compared to the norms established with 5000 students in the USA. The single limitation in the administration of this measure was that the timing of 40 minutes was not strictly adhered to in all sittings. Therefore, some slow readers might not be detected.

INTERVIEWS
It was determined that other data collection procedures would also be used to provide some triangulation. It was important to obtain verbal responses from a random sample of subjects as to their justifications for answers on questions 3, 14, and 16. This also would replicate some of the work of prior research [items 4,9,13,14,17,19,20 from modified NJTRS] (Schleifer et al. 1987).

The interview usually was timed for approximately 20 minutes maximum. The student either responded to a written question by writing the best answer or looked at the written question and answers and asked why he/she responded so. These answers were then classified according to types of answers. Again there were variations in the question

item asked according to locality. The Montreal anglophone group asked question no. 14 from NJTRS and then 4 questions (items 24,15,7,13) from the CCAT-VB.

The following data was collected from taped interviews of a selected sample of students in the experimental groups in Ontario and Saskatchewan. The Ontario sample responded on two occasions, the posttesting period (=May 1987) and the delayed posttesting period (=June 1988). Numbers have been substituted for names, thus, Ontario students = O1,2 . . . & Saskatchewan students = S1,2, . . .

SAMPLE QUESTIONS & RESPONSES FROM MODIFIED NJTRS
1) Louis says: "Not one panda born in a zoo has survived." Michael replies: "I just heard about a panda that was born in a zoo."

If both Louis & Michael are right, then the animal that Michael heard about . . .
   A. could not have been a panda.
   B. maybe will not survive.
   C. was not born in a zoo.

REASONS FOR CHOOSING ALTERNATIVE ( ) [Students' similar answers will be grouped into patterns or clusters].
  (A) O1,S1 *"just guessed"*
      O7 *"because most pandas survive"*
      O10 *"maybe other one looked like a panda"*
      S6 *"because he heard on the radio that a panda died"*
      S7 *"because none have survived in a zoo yet"*
  (B) O2 *"zoo may not be right place to live for a panda"*
      O3,14 *"because all other pandas died"*
      O4,6,S4,3,5 *"this choice was the best of the three"*
      O9 *"the 'maybe' makes it possible"*
       "probably won't survive if Louis is right"
      O5 *nonsense response;*
      O5,13,15 *"because Louis says that"*
      O12 *"it follows logically"*
  (C) O8 *"probably went to animal hospital, haven't heard of a panda being born in a zoo".*
      S2 *"zoos are too hot or too cold, so born somewhere else"*

2) Jocelyne's father works at the Ministry of Transport. If it snows. He must work late. Last Tuesday, he had to work late. Does this mean that it snowed on Tuesday?
   A. Yes, it had to snow.
   B. We cannot know if it snowed or not.
   C. No, it could not have snowed.

  (A) O2,8,S5.2 *"it follows that snowing & working late go together"*
  (B) O3,5,9,12,14,S4,7 *"doesn't say anything about snowing that night"*
      O4,9,S3 *"answers A & C didn't seem to be good answers"*
      O11 *"it could have been something like snow . . . rain, sleet"*
      O7,S6 *"he might have had to stay late for some other reason"*
  (C) O6 *"both A and B poor answers"*
      O11 *"it probably didn't even snow"*
      O15 *"may have worked late to make more money"*

3) Gustave says: "The moon is very far away from the sun." Denis replies: "That

means that the sun is very far away from the moon."
  A. Denis is right.
  B. Denis is wrong because the sun is close to the moon.
  C. Denis is wrong because what he said does not follow what Gustave said.

  (A)   O2,5,9,10,12,14,S4,5,6,7 *"both say same thing except reversed"*
         O3 *"if they were close we would be able to see both at the same time instead of the moon at night and the sun during the day"*
         S2 *"night gets cold, and day gets warm"*
         O4 *"best of the alternatives"*
         O8 *"If they were close, the moon might explode or burn up"*
         O13,15,S3 *"it is true that sun and moon very far apart"*
  (B)   O1,7 *"just guessed"*
         O5,6 *"looked in a space folder or book and learned that they are close"*
  (C)   O9 *"because Denis sort of changed the topic from the moon to the sun"*

4) & 5) [TRANSFER OF SKILLS]:
4) Do you think about any of these ideas from Pixie outside of school? Where? When? With whom?

O1,3,7 *"Yes, I think and talk about them at home, with Mom, dad, and brothers; with friends on way home from school, e.g., with my cousin."*
O2,5 *"Yes, with friends . . . at home when I get in trouble, Mom says don't leave door open or a thousand flies will come in." I say that will never happen because aren't that many flies in our backyard. I talk at table and sometimes with my older brother; . . . at table since my parents like also to learn new words.*
O3 *"Mostly when I eating diner, I often talk about it with my family (two sisters, mother, brother); my younger sister (5 yrs) not too interested but my older sister (10 yrs) is interested . . . sometimes on way home from school, with classmates . . . . I sometimes think about these ideas in reading."*
O9 *"With my brother & sister. They thought it weird at first and then later they began to understand. My parents asked me when they were bored. Also on way home from school when I disagreed with many things.*
O13 *"Have older brothers but never home, or plays with others . . . sometimes I respond to my brother who calls me "stupid" by saying I wouldn't be in grade 3 if I were stupid. I sometimes talk with my parents, but I say stupid things. I bring work home in my folders . . . my parents like the programme. I talk with Fernando sometimes about Pixie ideas.*
O8 *"Talk with friends when I visit their house. . . . don't talk with mother since she doesn't live with us, father doesn't know the language . . . I think about ideas in my mind (alone), think about my leg going to sleep or my head going to sleep."*
O13 *Sometimes, if I really want to. My mother doesn't really understand Pixie so I try to let her understand. I keep telling her and she keeps saying, why? why? Sometimes, I talk to S.*
O5 *Talk with friends . . . sometimes grade 8 because they think I am taking big stuff . . . we talk, can disagree, talk to other children & teachers . . . can sit next to friends . . . teacher very nice . . . because I enjoy the teacher, I enjoy the program. I will go to the club next year. Learned some big words my parents didn't even know...learned how to think more . . . our stories are more creative and longer.*
10,11,14 *Only talk about ideas in the classroom.*

5) Do you like the Pixie programme? Why?

O1,2,4,6,7,11 *"I like this programme because it is fun. I mean I can discuss, argue with others; I was lucky to do this . . . get to talk more; you can answer questions with whatever you want to say."*

O3 *"I like it because I enjoy the ideas in the book and discussing them . . . I thought the idea about Brian not talking as interesting . . . thought idea about 'real' and 'artificial' was boring." I like arguing things, evidence for reasons . . . I ask more 'why' questions at hope . . . depends on how much I ask. I like reading novels. I find the newspaper boring."*

O6 *"Helps with conversations . . . get to show off with your mind . . . bring ideas to anothers'mind; involves reading; writing when recording,homework. I like to see it continue next year.*

O9 *"Use to want to be a psychologist & could talk about many things . . . learned new words like analogies . . . I like who teaches it, because I have known her for a long time. I never missed a philosophy club session on Thursday from January on. Next year we wanted to make it the "Harry" Club but the teacher didn't want it called that.*

O12 *"Better than other classes because don't have to do writing, lots of paper work, writing is tiring . . . get bored; next year I will be taking "Harry."*

O14 *"I think its really neat because you never know the right answer . . . sometimes you hardly ever find the answer . . . it is neat . . . get to talk more in class;*

O15 *"It's good because, I say, educational . . . good when you have a good teacher . . . You learn more and new ideas . . . our regular teacher wouldn't ask us about analogies and such stuff. Gets you wondering about things.*

OTHER COMBINED RESPONSES TO QUESTIONS ABOUT TRANSFER OF LEARNING & ATTITUDE TOWARD PROGRAMME FROM SASKATCHEWAN

". . . liked story best, reading Pixie book; helps me understand other people's feelings; others think like I do; no help to other subjects. . . . get to talk about stuff; hard & easy; like hard questions because it takes longer; find it easy to talk; helped in regular classroom, on tests; enjoyed all sessions; some sessions hard; like hard sessions because like to think; thinking harder in maths;

". . . enjoyed really "thinking"; gets your mind moving; not very much help in other work; learn lots of stuff; gives ideas for looking at things in different ways.

". . . helps me understand other peoples' feelings."

INTERVIEW WITH TEACHER [EXP. GROUP] (Jan.1987; June,1988)
Programme Content/Objectives:
--it will take at least two years to systematically complete the programme.
--the students' choices of topics and ideas tend to be similar to those presented in the manual;
--there is congruence with objectives . . . continuity with reading, listening, etc., except I didn't focus enough on writing; needed time second year but I was teaching it only about 60 minutes per week and not in my own classroom;
--they learned to listen to one another; not just one answer all the time;
--they look at things much differently than other groups;
--learned much more vocabulary;
--small group work and monitor it was useful the second year;
--learning technique of how to discuss and listen to one another very important;

TEACHER'S MANUAL, ETC.
--didn't get into an "idea book" enough; wanted to complete book;

--you need a solid introduction to the programme, not necessarily two weeks in New Jersey; always looking for specific directions at first but now very useful for whole language and any similar programme;
--teacher does not weekly help for some of the content in philosophy and the style of teaching needs initial support;
--the art of discussion very important;

CONGRUENCE WITH OBJECTIVES OF PROGRAM
--the students performance seemed to improve in congruence with the program objectives; even their choices of topics or ideas for discussion were very often similar to those in the Manual;
--their was evidence of growth in supporting ideas with evidence, listening, communicating, building on others' comments;
--some students need a long period of incubation for simply developing skills in listening and discussion (verbalizing);
--some ideas or topics appear too difficult in the first phase or year of the project, e.g., "ambiguities", "mystery".

LEVEL OF STUDENT PARTICIPATION
"Brained" Students of Year One:
--signs of growth in 1st year; even some of the more "scattered" began to blossom in the second year;
--small group work very important, allows them to talk;
--some of the non-verbal types appeared to gather something through a type of osmosis;
--size of the class has a lot to do with it; 30 is normal but limiting;

STUDENT INTEREST
--seemed to pick up; the "philosophy club" started in January of the second year with some 17 out of 25 students attending;
--they didn't have to write much and this was attractive to them as they mentioned from time to time; less typical work;
--now they have some incentive to come to the Club, they get points and a certificate;

TRANSFERENCE TO OTHER CLASSES
--there is transference, e.g., story in my class and pickup issues about reality that they associate with a "Pixie" question, i.e., more profound;
--they demand more evidence for statements;
--the television programme (CBC=Canadian Broadcasting Corp., April, 1988) stimulated considerable interest;

TEACHER'S EXPERIENCE AS AN INSTRUCTOR
--enough preparation is needed in philosophy to enable the teacher to be less dependent on others and comfortable with content and some aspects of the methodology;
--teacher instructional style needs to be adjusted to a more open-ended, less directive style; can be done if disposition present;
--it is very helpful in terms of comfort level if there are other teachers in the school, system, or a reasonable distance in order to visit and share;
--it was supportive to have the research personnel and one with a critical thinking background to visit and communicate with the teacher frequently (sometimes, once per week);
--it is probably easy for an experienced teacher to use the various methods in the Manual without much inservice;
--very insecure at first without initial formal preparation;

CLASSROOM OBSERVATIONS

At all the sites, there was a determined attempt to utilize classroom observations. Existing and project designed recording devices proved inadequate for the task again due to time, personnel, fiscal, and contextual constraints. Too many students, interactions, and record items were present in any given classroom session. Isolating students for restricted observation and recording demanded more session and observation time. There were also problems with attempting to audio record and transcribe sessions. It was impossible but perhaps more desirable to use video taping.

Whatever data was collected confirmed many of the results of other reports, i.e.:

(a) a slow but decisive increase in discussion skills, e.g., more listening to the speaker, building on other statements, contra opinions stated;
(b) an increased demand for a response to the WHY questions, i.e. more evidence was asked for as the sessions progressed.

Some Examples of Taped Classroom Sessions:
Topic: "Freedom"
Student=(S) "freedom means no rules like in some countries.
Teacher =(T) Your saying that it is the absence of rules? Is that happening in this world?
(S) We don't have wars in Canada like Africa, Vietnam, Russia.
(T) Your saying freedom is the absence of war so Canada is free because no wars; but we sent troops to war in Second World War.
(S) But it wasn't going on here, so we had freedom to send to other countries.
(S) We are free to walk even though some rules.
(T) What is happening to this word freedom, like other words in Pixie? You have some excellent ideas about freedom. You are not wrong, really.
(S) People have different ideas about it.
(S) I kind of disagree with P. You can walk down street and know no one is going rob you.
(T) Are you free to take a walk in J's house?
(S) Yes, if she is selling the house.
(S) You should still ask.
(T) I am free to drive any route to school, but I had to still obey the traffic rules.
(S) There are rules in this world but not everywhere.
(T) Freedom then only goes so far and depend on what you mean by it. Where do you have the most freedom?
(S) When you are alone . . . your inner most thoughts.
(S) In the bathroom, its private.
(T) Everybody anywhere in the world has this type of freedom . . . where is it?
(S) In your mind, in your brain.
(T) You can think anything, good, evil, beautiful in your mind whether your in prison, a ruler, whatever. Another kind of freedom is freedom of what?
(S) Where you can choose.

Topic: "Rules"
(T) What are these rules we have been talking about.
(S) They are words, orders, that you must follow.
(S) Sometimes you don't have to follow them.
(T) Can you give me an example?
(S) You were told not to steal a chocolate bar.
(T) Talking about choice again.
(S) You have to follow rules to save your life, sometimes.
(S) When your mom tells you take out the garbage, you have to do it, otherwise you will

be punished.
(S) Rules are for your own good. Stop signs are there for your own good.
(S) An order is like a rich person giving a maid an order . . . go get me a cup of coffee now.
(T) Do we agree that sometimes we make our own rules and sometimes others make them. Are rules always orders? For next week, I would like you to write down in your IDEA BOOK ten rules that you think are very important in life; try to write down at least ten. See if they are the type that you have to do for your own good. [Pixie, Epis. 3, Chapt.7] What ideas did you come up with?
(S) The difference between rules and principles.
(T) What is the difference in the story?
(S) Rules are made up of all kinds of people. Principles are not made up by people . . . not sure.
(T) Let's look at the story again to perhaps end some confusion . . . p. 53. (Groups work through an exercise from the Manual & the teacher gets the response from each group.) [Epis. 4, chapt.7]

Topic: Memory & History
(S) If you are hit on head, you still have a memory in the brain but it is not working at the moment.
(S) Sometimes you loose some of your memory but not everything.

Topic: Practice
(S) If you swim and then don't do it for awhile, you need to practice to improve.
(S) Something you do over and over again.
(S) If you practice singing, it helps you sing better.
(T) Is there anything you do in your life that you have never practised?
(S) It is impossible, because if you do something you have to had done it before.
(S) I disagree, because you have to start once from scratch.
(S) If you watch TV, you don't have to practice.
(S) I picked up the flute and the first time it worked.
(T) What do you (class) think about that?
(S) You need some guidance to play anything. To get better, you need practice.

Topic: Parts and Whole
(T) What thoughts did you come up with when you were looking at parts and whole.
(S) Different by shapes and sometimes the same.
(S) We know that the "middle" of anything is the "centre".
(T) What are we thinking when we talk about the "middle" of anything?
(S) I looked at the edges, the space, and the then the middle.
(S) I was comparing, looking at relationships.
(T) How about the book cover?
(S) Paper is rectangular.
(S) One colour is darker than other; etc.

DISCUSSION/RESULTS

The statistical results using the scores from the two measures (Reasoning Aptitude and Reading Comprehension) administered to the more controlled classes with pre-post- and one delayed post class do not support the hypotheses. There is no evidence that the programme interventions had a significant impact (quantifiable) on the learners.

Extraneous variables such as maturation could have accounted for the marginal gains in mean scores. The results of the correlational procedures used on the two measures indicated that there were moderately high correlation (.36-.67).

However, other data would suggest that there were significant educational gains as a result of the programme. This does not mean that only this programme would have influenced the changes in the students. The non-standard measures, i.e., interviews and observations, are suggestive that the Pixie programme did support the hypotheses. The results gathered from the qualitative techniques, with all the limitations of the design, indicated those positive outcomes similarly expressed in the recent report on the Pixie program (Martin, 1988) with gifted 3rd graders and the Harry S. program (Gunther,1988).

In addition, certain positive reactions from parents, teachers, and a resulting public affairs (local CBC) television report suggest that there was development in some reasoning skills and in forming a community of inquiry. One very important unexpected outcome and probably the result of internal motivation was the volunteer organization of a philosophy club that met, and continues to meet, on a weekly basis during lunch hour with a high attendance rate. This occurred in the second and third year once the programme became totally voluntary.

IMPLICATIONS
Curricular programmes intended to enhance thinking or reasoning skills are sufficiently available judging from the publications, conferences, and networks (ASCD, National Diffusion) devoted to the issue. But what is lacking is more rigorous empirical evaluation including longitudinal, multidimensional, and contextual dimensions.

Reed (1987) has aptly expressed several problems associated with the general Philosophy for Children programme but which can readily be applied to other similar programmes. His seventh problem reinforces judgments about time-consuming innovations. This is further compounded in some districts by continuous curriculum reform of "preserved" territories like language arts, maths, and science.   In sum, the cumulative "intuition" from this empirical research project seduces me into strongly advocating that:

FUTURE EMPIRICAL EDUCATIONAL RESEARCH ON THE EVALUATION OF CURRICULAR PROGRAMMES IN REASONING SKILLS COMMENCING IN THE PRIMARY GRADES BE SUPPORTED AND INCLUDE CONDITIONS ASSURING
1. PRODUCTION & VERIFICATION OF IMPROVED DATA COLLECTION MEASURES (written, observational, interviews, audio-video camera recording);
2. LONGER-TERM & CONTINUOUS EVALUATION (ideally successive modules from K through senior secondary);
3. IDENTIFICATION OF COMMITTED PARTICIPANTS (TEACHERS AND SUBJECTS) FOR THE LONG-TERM WITH ASSURANCES OF INSERVICE AND OTHER BENEFITS;
4. ADEQUATE TEACHER PROFESSIONAL DEVELOPMENT (satisfy requirements of given programme and variable commonality);
5. THE SUPPORT OF ALTERNATIVE COMPARISONS WITH OTHER SIMILAR PROGRAMMES (e.g. Talents Unlimited, Odyssey, Cort, Paul et. al, 1986-87).
6. ANALYSIS AND APPROPRIATE USE OF EFFECTIVE COMPONENTS OF THE PROCESS OF DISCOURSE AND COOPERATIVE LEARNING METHODS (Johnson & Johnson, 1988); and
7. MORE COLLABORATION WITH SPECIALISTS IN SOCIAL AND COGNITIVE PSYCHOLOGY, PSYCHO-LINGUISTICS, MEASUREMENT, AND CURRICULUM.

· John R. Meyer

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