Mathematics Curriculum Impact Study

Prepared by:
Committee to Study Mathematics Programs and Skills
Sub-committee of the NSTU Curriculum Committee
April 24, 2003

At its meeting on April 23-24, 2003 the Provincial Executive passed the following recommendations concerning this report.

1. **The report should be made available to delegates at Council 2003.**
2. **It is recommended that the report be forwarded to the Mathematics Teachers Association following NSTU Annual Council 2003.**
3. **It is further recommended that the MTA be asked to include a session at the Annual General Meeting devoted to the presentation of the report and involving a dialogue concerning the findings contained in the report. NSTU staff would facilitate the session.**
4. **Following Council 2003, a link to a PDF file of the report should be made available on the NSTU Web site and information about the link should subsequently be published in *The Teacher*.**
5. **It is recommended that one or more copies of the report be forwarded to the Department of Education following NSTU Annual Council 2003.**
6. **The Curriculum Committee recommends that the substance of this report be included in discussions between the Curriculum Committee and representatives of the Department of Education.**
7. **Copies of the report should be made available to the Special Associations Coordinating Committee for possible distribution to other special associations.**
8. **The Curriculum Committee asks that the President consider including the conclusions and findings contained in the report in discussions with the Minister of Education.**
9. **The Provincial Executive adopted the Report of the *Mathematics Programs and Skills Sub-Committee* Mathematics Curriculum Impact Study.**

Background

In May 2002, NSTU Annual Council passed resolution 2002-37.

> **Be It Resolved That** a committee independent of the Department of Education be formed to determine the effect that new math programs have had on the acquisition of math skills and concepts for students in the province.

Brief

> Too many students in Nova Scotia are experiencing difficulty in math in grades 9, 10, 11 and 12. Many of these students did not have trouble in elementary and junior high school. The students placed on new textual materials in upper elementary are now in grade 10. Parents are being told that these students don't have the skills, concepts and number sense to do well in math in grades 9 and 10. We have "thrown out the baby with the bath water."

At its November 15 meeting, the Curriculum Committee addressed this resolution by forming a subcommittee that was given the task of determining the parameters of this study and subsequently implementing it.

The subcommittee consists of Ambrose White – chairperson and liaison with the Curriculum Committee; Norm Brown, Mark MacLeod, Florence Roach, and Anna Spanik, all members of the Mathematics Teachers' Association. NSTU staff liaison was Anne Rodrigue, Coordinator of Research.[1]

The first meeting of the subcommittee was held November 29th and 30th, 2002. At that time, a three-prong approach was suggested for the research:

- A review of the history of the program changes obtained through an examination of relevant documents.
- A survey to determine teachers' perceptions about the impact, effectiveness, and implementation process of the new mathematics curriculum.
- Focus groups to examine teacher recommendations.

Committee members researched the documents in late December.

The second meeting was held on January 10, 2003. The research process was further refined and the survey instrument was developed. A copy of the survey is attached as *Appendix A*. The committee also decided to conduct interviews with teachers and Department of Education personnel involved in the development and implementation of the new mathematics curriculum.

The third meeting took place January 24th. The survey was further refined and adopted. A letter was drafted for all school representatives to forward to all teachers who teach mathematics as part of their responsibilities. This includes secondary level teachers who teach mathematics in

[1] In January 2003 Anne Rodrigue left NSTU for a temporary appointment with EFTO. As an interim measure she was replaced on the Math Sub-committee by Donnie MacIntyre. In March 2003, Ron Brunton was appointed to NSTU staff to assume Anne Rodrigue's research responsibilities and took over the liaison with the Math Sub-committee.

dedicated courses and elementary teachers who teach it as one of the many curriculum areas they deliver to students. This letter is contained in *Appendix B.*

While the survey was available to complete in the more traditional paper-based manner, the primary vehicle for collecting data was a web-based presentation of the form. The survey was on-line from February 10 until March 10 2003.

Mathematics Curriculum Development Background

Richard MacKinnon was hired as Math Consultant by the Department of Education in July 1993. It was decided in September 1993 to hire someone to write a framework for grades 10-12 Mathematics for the Maritime Provinces Education Foundation (MPEF). David DeCoste was chosen and the MPEF grade 12 framework was to be based on the 1989 NCTM[2] Standards Document. In May of 1994, the framework was completed and Richard MacKinnon, in consultation with high school mathematics teachers from across the province, began writing drafts of the grades 10-12 curriculum guides based on this framework. The curriculum had one other stipulation; it had to be outcomes based.

In 1993, the Department of Education was audited and it was decided that the Department was to be the designer and purchaser of curriculum and was not to be responsible for Professional Development. The responsibility for the delivery of the curriculum to the teachers was given to the school boards.

Newfoundland joined the other three provinces in April 1995. The MPEF then became the APEF (Atlantic Provinces Education Foundation) and took on a P – 12 focus.

[2] National Council of Teachers of Mathematics (USA)

Mathematics Curriculum Development Background

YEAR	*P - 6*	7 – 9	10 - 12
1994		Junior High Task Force was being set up to look at grades 7 – 9 and how they can prepare for the upcoming changes in 10 – 12.	Richard Mac Kinnon and Department of Education conducted a three-day provincial Math/Science/Technology in-service to which one Math and one Science teacher from each school were invited. A follow-up meeting at Dalhousie University was scheduled to discuss the strengths and weaknesses of the Math 441 program. A Senior High Task Force met to review documents from MPEF at a Summer Institute at Mount Allison University.

YEAR	*P - 6*	7 – 9	10 - 12
1995	In April, MPEF became APEF when Newfoundland joined, under the agreement that outcomes would be rewritten to include **G**eneral **C**urriculum **O**utcomes and **K**ey **C**urriculum **O**utcomes.		
1995	New Brunswick was lead province. David McKillop was hired and his main focus was P-6.	Newfoundland was lead province. A pilot was planned for September 1996.	Nova Scotia was lead province. Draft copies of the grade 10 – 12 guides were handed out at AIM[3]. Richard MacKinnon and David DeCoste developed AIM to keep teachers informed about the new curriculum change and to provide training. It was held annually until 2002. Work on the grade 10 curriculum guide was deferred to focus on P-6.

[3] AIMS – Activities Integrating Mathematics and Science; see on-line reference http://www.unc.edu/depts/cmse/curriculum/AIMS.html (March 26, 2003)

YEAR	*P - 6*	7 – 9	10 - 12
1996	February: Board Lead Teams were in-serviced on the curriculum in APEF draft guides. In November, guides were sent out to each board but there were holes in them (i.e. geometry and data management), with response forms, looking for feedback. Final version planned for September 1997. There was extensive piloting of the texts Interactions and Quest 2000, to attempt to link the guide to an appropriate text. Reports from this piloting said that either text would be a satisfactory resource to the guide and not meant to be the program. Neither textbook addressed the geometry outcomes. The intended plan for the guide was to have enough detail in it so that teachers could teach the geometry by using the guide.	The guides were written, and teachers were piloting the new curriculum and texts at all grades, 7 – 9. A review committee was in place at the grade 7 level. Selection of text was being planned.	Grade 10 materials were being piloted in all provinces. One of the materials was Baker's Choice, for which an in-service was scheduled in December. Nelson won the tender to write the textbook and began writing to the grade 10 guide.

YEAR	*P - 6*	7 – 9	10 - 12
1997	In September, new guides were completed, (including a geometry section, refined by David McKillop and LaJune Naud) and sent out to the boards. New Brunswick chose to not distribute their guide until 2 years later. In February, each board sent 8 teachers to work with David McKillop and LaJune Naud on the new curriculum. Boards were then given money to provide 5 days of in-servicing to all staff. The Valley Board followed through with the recommendation while other boards received fragmented pieces of PD.	The second revision of the grade 7 guide was released. The APEF directors made a decision to not have a text written to the outcomes because of cost. Three textbooks were piloted; Minds on Math, Interactions and Math in Context. As a result, Interactions was selected based on cost and piloting reviews. The Department of Education purchased Interactions for grades 7 and 8 for all schools and schools were able to purchase Making Math 9, which was already on the authorized list. In April, the Department of Education provided in-servicing for 6 teachers from each board and money to the boards for a recommended 5 full days of in-servicing for their Junior High Math teachers. Only the Strait Board completely followed through with the plan. Teachers seemed pleased with the quality of the grade 7-9 guide, but found the Interactions text to be adequate at best. The drafts of the grade 7 and 8 guides were being piloted.	In Nova Scotia, the terminology was changed and Y level became Academic, X became Graduation and Z became Advanced. The Department of Education hoped to pilot at least one unit of the grade 10 curriculum in the spring and implement the program in the fall of 1998. Implementation of the grade 10 curriculum was postponed until September 1999 due to a perceived need to in-service teachers.

YEAR	*P - 6*	7 – 9	10 - 12
1998		Implementation of curriculum for grade 7 and 8.	A 5 day Implementation Support Team workshop for grade 10 was rescheduled to March with the expectation that boards would arrange in-service opportunities for other teachers.
1999		The final guide for grade 7 and 8 was to reach teachers by September. The Grade 9 interim guide and program implementation were also planned for September.	The Department of Education provided textbooks and copies of the teaching resource, and supplied each school with a class set of graphing calculators. These arrived in the schools at the end of August / beginning of September. The grade 10 curriculum guides could not be ready in time for implementation although implementation drafts were available.

YEAR	*P - 6*	7 – 9	10 - 12
2000	David McKillop planned a grade 5 teacher meeting to discuss grade 5 assessment scheduled for the spring.	Richard MacKinnon was working with Board Lead Team and ongoing in-servicing while Sharon McCready was compiling resources for grades 7 – 9.	All boards were expected to fully implement the grade 10 program in Sept. A provincial in-service was scheduled for teams of grade 11 and 12 teachers with the expectation that the boards would provide five days of in-servicing for all their grade 11 and 12 Math teachers. Grade 12 was being piloted. The grade 11 implementation was scheduled for September and textbooks were in the schools in time for the implementation.
2001			Changes were made in the grade 10 – 12 draft curriculum documents to address issues of scope and sequence. Grade 12 curriculum had to be implemented by all.
2002	A group of teachers was seconded to work on a support document at each level from P – 9. The document included yearly, unit and lesson plans, so that teachers could use these as models to create their own. Also included was level of questions that teachers could ask to stimulate discussion and higher level thinking among their students.		Draft curriculum guides for grades 11, 12, and Pre-Calculus 12 at the Academic / Advanced and Foundation levels are available. Grade 10 guides were not yet available. Implementation of Pre-Calculus was scheduled for January 2002.

Math Subcommittee Survey

Survey design

As previously noted, a letter was sent to all teachers involved with teaching mathematics at all levels through the NSTU school representatives. This letter encouraged mathematics teachers to participate in the survey and to complete the on-line form, reachable by clicking a link located on the NSTU website (http://www.nstu.ca). Participation was encouraged by providing randomly drawn prizes for those who completed the survey.

Each respondent was asked to provide an email address, their professional number, their current teaching level (P-6, 7-9, 10-12, Community College), and their employing school board.

Ten specific questions were asked in the questionnaire and opportunity was provided on the form for additional comments.

The questions were:

	Survey Question or Statement	Choices
1.	Changing to an outcomes-based mathematics curriculum has improved students' performance in mathematics.	Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree
2.	If any perceived difficulties with the implementation of the math curriculum could be addressed to your satisfaction, rate your overall perception of the quality of the math curriculum at your grade level.	Very Poor Poor Fair Good Very Good
3.	I feel that the math curriculum at my grade level adequately prepares students to proceed to the next level.	Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree
4.	Rate the usefulness and quality of the curriculum guide.	Very Poor Poor Fair Good Very Good
5.	I have access to the resources necessary to meet the outcomes at my grade level.	Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree

6.	I have enough instructional time to cover the outcomes listed in my guide.	Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree
7 a)	How many hours of in-servicing would you expect to receive in the first year of implementing a new curriculum?	a) 0 – 5 b) 6 – 10 c) 11 – 15 d) 16 – 20 e) more than 20
7 b)	How many hours of in-servicing have you received in implementing the math curriculum?	a) 0 – 5 b) 6 – 10 c) 11 – 15 d) 16 – 20 e) more than 20
8.	Rate the degree of board support in the implementation of the math curriculum since the introduction of the guide at your level.	Very Poor Poor Fair Good Very Good
9.	I am satisfied with the approach taken by the Department of Education in communicating implementation of the math curriculum.	Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree
10.	Recently the Department of Education has promoted the "Lead Teacher in each school" model for in-servicing math teachers in the new curriculum. Rate the effectiveness of this model.	Very Poor Poor Fair Good Very Good

Survey Results

Surveys were completed by 213 teachers who were involved with teaching mathematics, either at the elementary level as one of the core subjects or at the junior and senior levels as dedicated mathematics courses. Of these 213 teachers, thirty-three were teaching at the high school level (grades ten to twelve), fifty-one were teaching at the junior high or middle level (grades seven through nine) and one hundred twenty-eight were teaching at the elementary level (grades primary through six). One of the respondents was teaching at the Nova Scotia Community College.

There were varying responses from regional school boards. Twenty-seven responses were from the Annapolis Valley Regional School Board, twenty-six from Cape Breton Victoria Regional School Board, forty-six from Chignecto Central Regional School Board, three from the Conseil

Scolaire Acadienne Provincial, fifty-eight from the Halifax Regional School Board, twenty-four from the Strait Regional School Board, twenty-eight from the South West Regional School Board and, as previously mentioned, one response from a teacher at the Nova Scotia Community College.

The overall results are[4]:

Item 1:

Changing to an outcomes-based mathematics curriculum has improved students' performance in mathematics.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
7%	20%	32%	37%	5%

42% of mathematics teachers believe that the new mathematics curriculum has improved students' performance in mathematics as compared to 27% who believe that this is not the case. Despite the support for the outcomes-based curriculum, many of the comments suggest a discontinuity between theory and practical implementation.

> There are too many outcomes for the time available. (I am not advocating an increase in instructional time to accommodate the number of outcomes.) The number of outcomes needs to be reduced. Also, the emphasis seems to be on teaching the outcomes and not on whether or not students understand the concepts being taught. We are told "As long as you are teaching the outcomes, you are doing your job." This leads to poor moral among math teachers and disillusioned students. Too many students are falling through the cracks as they are not able to handle the volume of material and the speed with which it has to be taught in order to meet the requirements of the outcomes. Outcomes based education implies that students are to be able to do what is stated in the outcome, mastering the outcome before moving on. This is not what is happening. Often times teachers must move on even if students have not developed a basic understanding of the concept, let alone achieved mastery.[5]

A middle level teacher from the Annapolis valley stated:

> The high school curriculum is designed for the best students, the thinkers. This is not most students. You don't create thinkers. Students need more skill development.

And similarly:

> There are too many outcomes to cover adequately in a "real" school year. There is no identification of "essential outcomes" for students who cannot achieve the regular outcomes in class. I think there should be different levels of outcomes so everyone can achieve something rather than the one size fits all approach. The outcomes are a good start by curriculum designers, however there needs to be

[4] The sum of the percentages in each table may not equal 100% as a result of rounding for display in these tables.

[5] A middle level teacher from Chignecto Regional School Board

> feedback from teachers who are teaching and struggling with the curriculum. This is a start.[6]

Item 2:

If any perceived difficulties with the implementation of the math curriculum could be addressed to your satisfaction, rate your overall perception of the quality of the math curriculum at your grade level.

Very Poor	Poor	Fair	Good	Very Good
2%	10%	28%	47%	13%

This is A similar result to what is seen from Item 1; 60% believe that the quality of the mathematics curriculum is good or better at their grade level. This is in comparison to only 12% who believe that the curriculum is substandard. The category "*Fair*" is ambiguous. Some perceive a fair rating as acceptable while others perceive labelling something fair as indicating substandard. The data do not differentiate between these two competing interpretations.

Item 3:

I feel that the math curriculum at my grade level adequately prepares students to proceed to the next level.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
5%	13%	23%	52%	8%

Again we see strong support for the new mathematics curriculum, as 60% believe it adequately prepares students to go on to the next level in mathematics. Only 18% believe that it fails to achieve this objective.

Item 4:

Rate the usefulness and quality of the curriculum guide.

Very Poor	Poor	Fair	Good	Very Good
0%	9%	27%	40%	23%

There is also a general consensus that the curriculum guide is serving teachers in the delivery of the mathematics curriculum with 63% registering support for the guide in contrast to 9% who believe it falls short.

> I like the math curriculum and each year I find it goes more smoothly. I think I am becoming more familiar with it and that teachers in the grades below me are using it more.[7]

[6] A middle level teacher from the Halifax Regional School Board.

[7] A P – 6 teacher from the Halifax Regional School Board.

> The quality of the guide is excellent, but I think the sequence of presentation deters many teachers from following it well. It would be much more useful if it were organized into units that would fit well with the year outlines that have been suggested.[8]

Item 5:

I have access to the resources necessary to meet the outcomes at my grade level.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
3%	19%	16%	46%	15%

61% of teachers indicate they have access to the resources required to implement the mathematics curriculum at their grade level. 22% feel they do not have access to these resources.

There are some concerns, however, and these were expressed.

> This approach to math, hands on, is excellent, but requires the Board, Department and school administration to be on board for the acquisition of resources. We have had to go hat in hand to receive money from the Parent Support Group, Board personnel, and administration to get the resources we have. We, the concerned teachers, created a school Math Committee to deal with resource acquisition, storage and borrowing.[9]

> Curriculum guides are very useful, but not readily available. I ordered one in September. It is now February and I have not received it. If such documents are required and contain mandated information, they should be more readily available.[10]

Item 6:

I have enough instructional time to cover the outcomes listed in my guide.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
25%	41%	11%	22%	1%

In marked contrast to the positive evaluations seen so far, it is very clear that teachers do not have adequate time to cover the curriculum. 66% of the respondents indicate that there is insufficient time to cover the required topics properly.

The comments received in conjunction with the responses to the survey item, illustrate that this is a major problem for teachers. There is a close connection between the perception of adequate time and the number of outcomes.

[8] A P – 6 teacher from the Chignecto Regional School Board.

[9] A P – 6 teacher from the South West Regional School Board, Tri-County District School Board.

[10] A P – 6 teacher from the Halifax Regional School Board.

> The greatest problem is the number of outcomes that we are expected to have taught. In the outline provided for me by the Department of Education I am given five weeks in which to teach ten outcomes about decimals. My students just cannot grasp the level of understanding they expect within the time frame despite the manipulatives used or the two hours spent daily on math. As I teach at the grade 6 level, I need a few years in which to be able to teach the expected outcomes within the expected time frame.[11]
>
> The use of investigation is very time consuming and although there are some good investigations in the books, time **does not** permit us to teach the course in this way.[12]
>
> I really like the guide and the program, but feel that I am always "behind" on my yearly plan. This is very frustrating to most teachers. If we try to rush through the concepts without providing enough practice and experiences, we are only doing a token job and the concepts are never internalized. As a result, the students quickly forget the concept.[13]
>
> The main problem with all of this, as I see and feel, is that there is much too much written in the curriculum to be adequately covered in a school year. I certainly have time to touch on all of it, but I strongly feel that not enough time is allowed to teach, practice, reinforce and assess any of those skills properly. Would it be more effective in some way to cover less each year, but to cover those fewer topics to a degree that a much higher percentage of the students master the concept to a significant level?[14]

Item 7a:

How many hours of in-servicing would you expect to receive in the first year of implementing a new curriculum?

0 to 5	6 to 10	11 to 15	16 to 20	> 20
8%	18%	24%	23%	25%

Item 7b:

How many hours of in-servicing have you received in implementing the math curriculum?

0 to 5	6 to 10	11 to 15	16 to 20	> 20
35%	24%	11%	12%	17%

[11] A P – 6 teacher from the Annapolis Valley Regional School Board.

[12] A senior high school teacher from the Halifax Regional School Board.

[13] A P – 6 teacher from the Annapolis Valley Regional School Board. (Not the same teacher referenced in footnote 11.)

[14] A P – 6 teacher from the Strait Regional School Board.

The contrast between the amount of in-service time expected and received is dramatic. Almost three quarters of the teachers surveyed (72%) expected eleven or more hours yet 61% received ten or fewer.

> In-servicing must be on-going. Even after having taught the new curriculum for a few years, I feel I need to be encouraged and refreshed. It always gives me a positive outlook on the curriculum after an in-service. Even one new idea for the classroom helps.[15]

Item 8:

Rate the degree of board support in the implementation of the math curriculum since the introduction of the guide at your level.

Very Poor	Poor	Fair	Good	Very Good
3%	12%	41%	36%	8%

In general, teachers believe they are receiving adequate or better support from their school boards. Unfortunately, this support is not uniform.

> We have been presented with a new way of thinking about what we are doing, but the resources have not been invested at the Board or the Department level to make it work. The curriculum and the outcomes would be fine if Math was all we had to do. In elementary school (and probably other levels as well) there are similar demands on the teachers' personal resources of time, energy, and attention from every subject. It's just too much![16]

> I am very pleased with the outcomes-based curriculum. The guide is very useful and I have adequate resource materials. Whether or not outcomes-based curriculum has or will improve the performance is difficult to say. With the large number of students I teach (approximately 200) and the large class size (all over 30) and considering the range of abilities it is difficult for me to say if I am better preparing my students.[17]

> In AVRSB how effective can a math consultant be when the board does not allocate any in-service days or budget for the consultant to work with?[18]

> My board person is very good at getting information to us or helping where we need it.[19]

> Our board is doing a great job of in-servicing some grade levels. Hopefully the other grade levels will soon have the same opportunity.[20]

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[15] A P – 6 teacher from the South Shore District School Board.

[16] A P – 6 teacher from the Halifax Regional School Board.

[17] A middle level teacher from the Chignecto Regional School Board

[18] A P – 6 teacher with the Annapolis Valley Regional School Board.

[19] A middle level teacher from the Halifax Regional School Board.

[20] A P – 6 teacher from the Chignecto Regional School Board.

Item 9:

I am satisfied with the approach taken by the Department of Education in communicating implementation of the math curriculum.

Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree
10%	33%	32%	22%	2%

There are communication problems associated with Department of Education initiatives in mathematics. 43% of teachers are not satisfied with the Department's approach to conveying the implementation process for the mathematics curriculum in contrast to only 24% who expressed satisfaction.

> The Department in-services teachers the first year they implement a new program. After the first year, there is little or no follow-up. With new teachers coming into our system, it is imperative to have a continuous model of professional development. Also, PD in-servicing focuses only on content and how to teach it. It rarely deals with showing teachers how to use new technology and software to help with the implementation of these new math programs.[21]

> The Department of Education is becoming more proactive this year with the math curriculum. In my opinion, this is largely due to the grade five test score results. Prior to that it seemed that the Department was not too concerned about implementation of the "new" math curriculum.[22]

There were some positive comments.

> I have been working with the new Math Grade 1 Draft (A Teaching Resource). This is a valuable companion to the Curriculum Guide because of its very, very clear direct language and its approach to teaching the materials for grade level or split grade levels. Much more of these sorts of guides are needed to go along with those very large curriculum guides.[23]

Item 10:

Recently the Department of Education has promoted the "Lead Teacher in each school" model for in-servicing math teachers in the new curriculum. Rate the effectiveness of this model.

Very Poor	Poor	Fair	Good	Very Good
14%	29%	32%	19%	5%

The "Lead Teacher" model has not been well received. 43% of respondents believe that this approach has not been an effective means of in-service for the curriculum. Teachers describe a

[21] A senior high school teacher from the Tri-County District School Board.

[22] A P – 6 teacher from the Halifax Regional School Board.

[23] A P – 6 teacher from the Halifax Regional School Board. (Not the same teacher referenced by footnote 22.)

range of problems. The comments come from those designated as lead teachers and those who expected to receive in-service assistance.

Typical of lead teacher comments are:

> I was chosen as a lead teacher last year and went to one in-service. I have not heard another word about this program.[24]
>
> As one of the lead teachers I must say that there is little support from staff to learn more from me. They want a day of learning, not a lunch break or after school session from me to pass on material. There is no support from the administration of the school for this effort. They say we'll meet and when we ask for time we are told we need to do other things. Other teachers say they don't want to learn in the school from the lead teachers in math, but want to go outside the building for in-servicing. Most of my added learning has come from in-servicing, the mathematics conference and personal reading.[25]
>
> As a lead teacher, I feel that the in-servicing has been very limited. The role and purpose of the lead teacher has not been well defined. It does not feel that the vision of lead teacher in each school has been thought through. It appears to have been introduced as an idea and not moved much beyond this.[26]

Comments from teacher who are not lead teachers reflect a significant failure of communication:

> I have no idea who our "lead teacher" is! I did not even know each school is supposed to have such a person![27]
>
> I have no idea what this lead teacher model entails. I have never heard of it.[28]
>
> My vote is for all teachers to be in-serviced. There is no time for those lead teachers to tell their co-workers anything. They take in only a percentage of what is taught and they impart even less. So what is the benefit to the student? Very little, if any.[29]
>
> The lead teacher model is not effective. It is yet another example of downloading of responsibilities onto classroom teachers who are already too busy to in-service their colleagues. In-servicing of teachers should not be the sole responsibility of the classroom teacher.[30]

Some of the other comments submitted highlighted issues not covered by the survey items. There is no measure of how widespread these items may be because quantitative data were not

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[24] A senior high school teacher from the Halifax Regional School Board.

[25] A P – 6 teacher from the Halifax Regional School Board.

[26] A P – 6 teacher from the Chignecto Central Regional School Board.

[27] A P – 6 teacher from the South Shore District School Board.

[28] A senior high school teacher from Chignecto Central Regional School Board.

[29] A middle level teacher from the Halifax Regional School Board.

[30] A P – 6 teacher from the Halifax Regional School Board.

collected regarding them. They do point to areas of concern that should be examined to determine their significance.

Teachers often move or are moved from school to school or from one grade level to another. Unfortunately, teachers may not have had the necessary assistance, either in the form of professional development or been provided with classroom resources that are appropriate to such a change.

> Teachers are constantly being moved and there is little or no consistency in programming year to year.[31]

> Each year new teachers are assigned math and their needs have to be addressed. In Junior High, teachers are frequently assigned math, but have no background so they are in need of more extensive in-servicing.[32]

There is also a perception by some teachers that the curriculum is developed with little input from classroom teachers.

> The Department of Education expects us to "blindly" follow the curriculum guides without our input being considered.[33]

Analysis by Grade Level

The composite results presented above were then analysed by subject level to determine whether there were differences among the three major groups; grades primary to six, grades seven to nine, and grades ten to twelve.[34] A full set of tables showing the breakdown by teaching level is included in *Appendix C.*

Item 1: Changing to an outcomes-based mathematics curriculum has improved students' performance in mathematics.

Although a majority (54.7%) of elementary teachers believe that curriculum has improved student performance, the larger proportion (37.3 % compared to 25.5%) of middle level teachers believe that an improvement has not been achieved and a majority of senior high school teachers (54.5%) similarly believe that student performance has not been achieved.

The different perceptions among the grade levels taught is illustrated by this comment from a middle level teacher from the Strait Regional School Board:

> I don't believe we have enough time in our schedules to meet all the outcomes effectively. The answer isn't necessarily to increase class time, but rather, to really ascertain if we are trying to do too much curriculum in the time frames provided. The "gurus" keep telling us to "keep going" to get the outcomes done but that is really disheartening for both students and teachers alike when you know a third or more of the class aren't ready to proceed.

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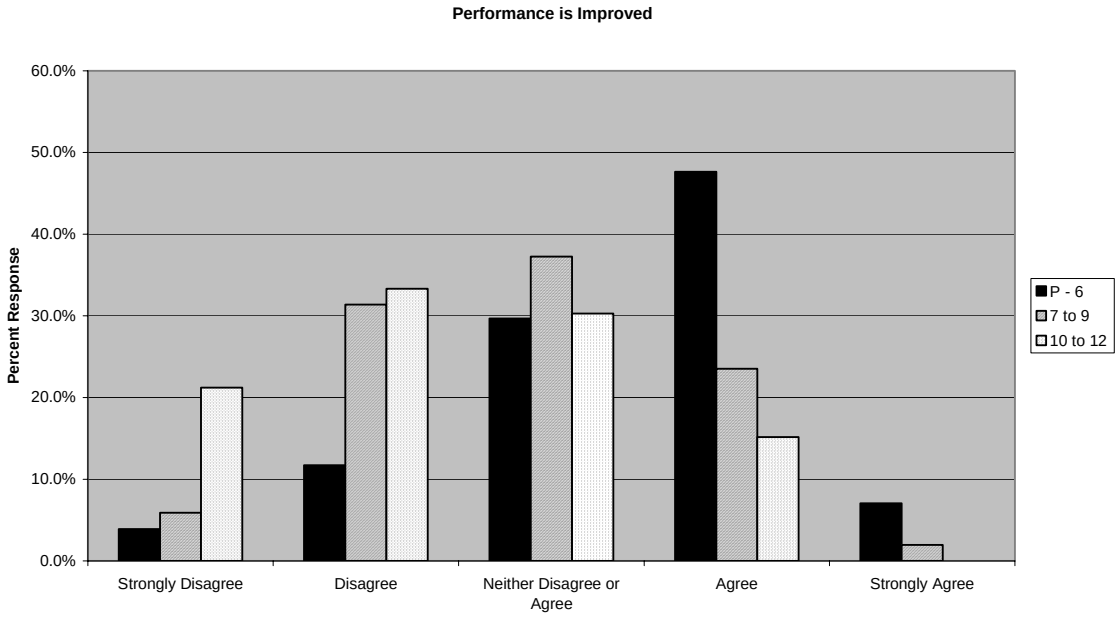
[31] A middle level teacher from the Strait Regional School Board.

[32] A middle level teacher from the Halifax Regional School Board.

[33] A senior high teacher from Cape Breton Victoria Regional School Board.

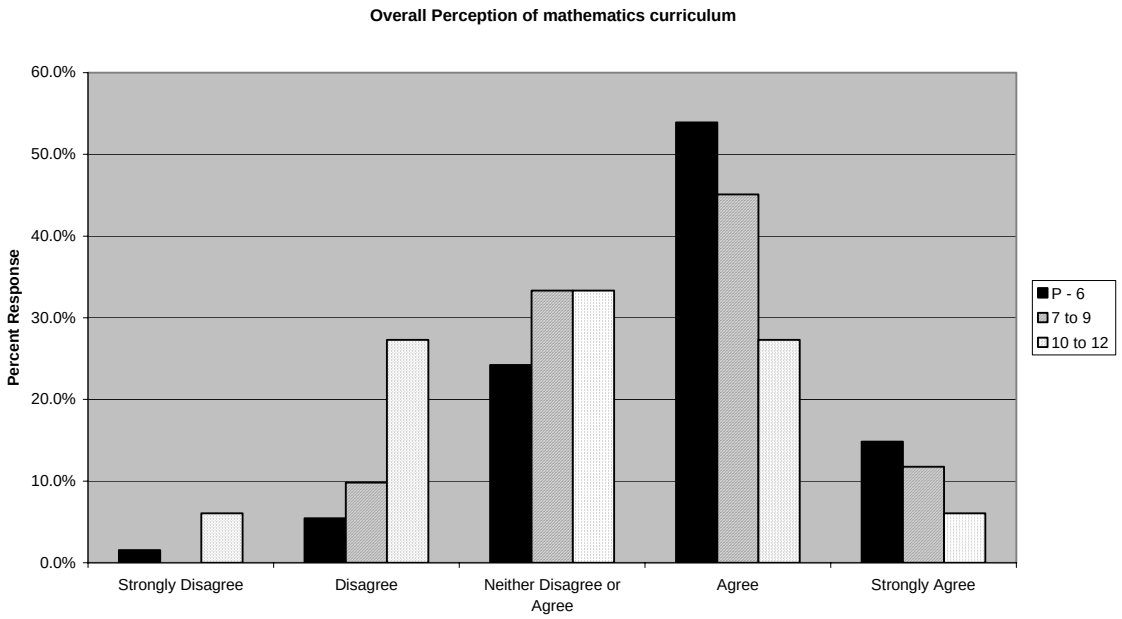
[34] There was only one submission from a Community College teacher. As a result, this level was not included in any of the analyses.



Item 2: If any perceived difficulties with the implementation of the math curriculum could be addressed to your satisfaction, rate your overall perception of the quality of the math curriculum at your grade level.

An analysis of teachers' overall perception of the quality of the mathematics curriculum also illustrates some differences among the three levels, although not as extreme as the perception of the impact on student performance.

Senior high teachers are equally split (33% in both cases) between believing the overall quality is poor or very poor and believing it is good to very good. Middle level teachers exhibit a strong belief that the quality is good or very good (56.9%) and elementary teachers believe so even more strongly (68.8%).



Comments from two elementary teachers offer the following observations.

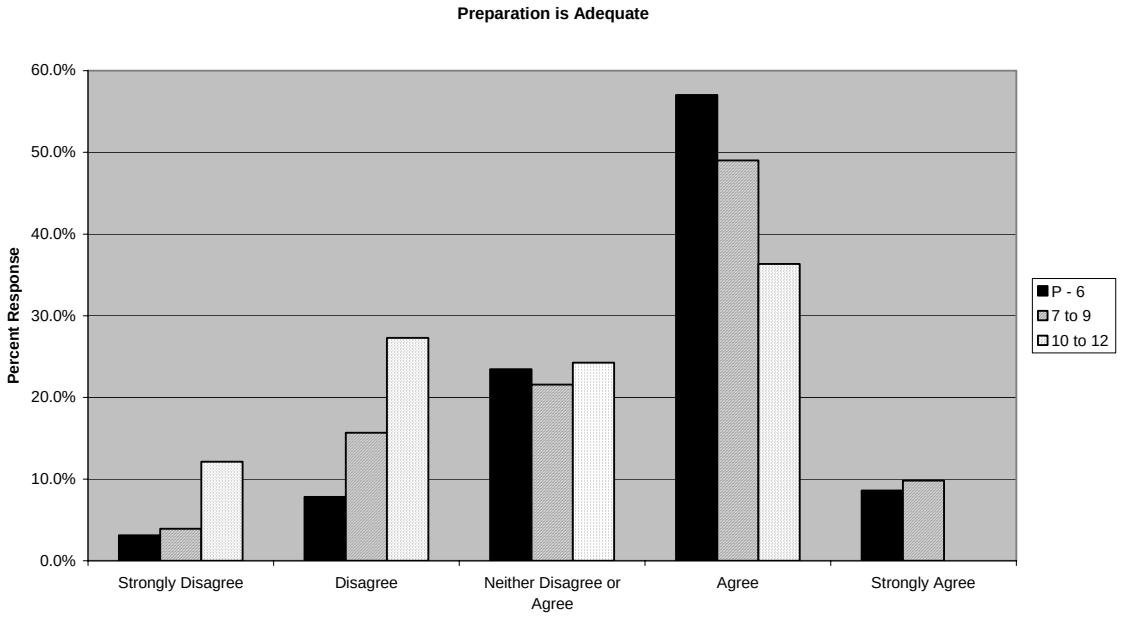
> If the present curriculum can be learned by students, they will be the strongest math students we have ever had in elementary schools. The big problem is that there has not been adequate professional development to make this happen. Generally, out teachers are not strong in math. Therefore, I see the need of PD at least as much as the Active Reading Initiative. Our teachers are weak in theoretical background and need to obtain this knowledge so that worthwhile lessons can be put together. With the lessons come materials, lots of them, so that teachers don't have to go searching.[35]
>
> The philosophy that not all students will understand all topics, therefore move on, is not appropriate. If the students do not understand, then there is something wrong with the curriculum.[36]

Item 3: I feel that the math curriculum at my grade level adequately prepares students to proceed to the next level.

There is also a significant split among grade levels concerning how adequately the curriculum prepares students to proceed to the next level in mathematics. 39.4% of senior high teachers believe their students are not adequately prepared. This contrasts with a belief of 58.8% of middle level teachers that their students can proceed to the next level confident of the background received and the 65.6% of elementary teachers who feel this way.

[35] A P – 6 teacher from the South Shore District School Board.

[36] A P – 6 teacher from Chignecto Central Regional School Board.



The concern of senior high school teachers is reflected in the following comments that were included with the survey response.

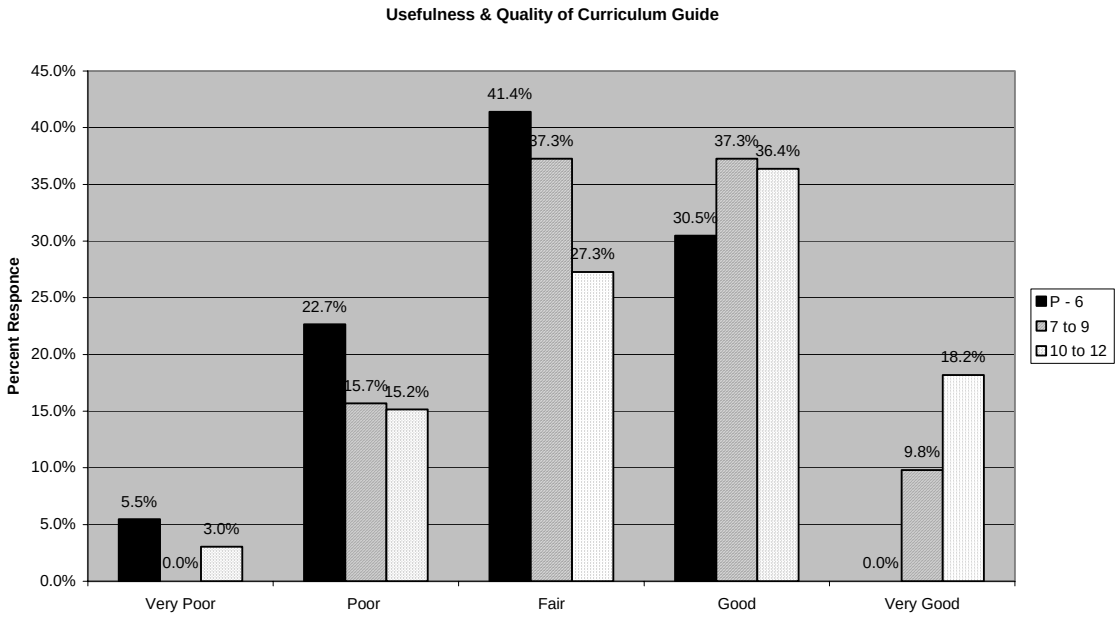
> I feel that currently our math program is so poor that our students will be outperformed by other provinces in Canada for a long time to come. The curriculum is confused, we have done away with a spiralling curriculum and expect students to remember concepts from three years prior. Our textbooks are poor and teachers are left scrambling and photocopying trying to supplement the book. There are very few practice problems as well as **no** direction on how some of these questions are done. Somehow the idea that we expose the student to a problem, such as ferries wheels and develop concepts and draw conclusions from the "investigations" has put the cart before the horse. Why is it now taboo to explain to a student how operations are performed and then allow them to use these fundamentals to solve more complicated problems? I have read through the NCTM standards and it appears to me that we (Department of Education) have misinterpreted what it is they are emphasizing. Rather than help students understand mathematics, we have made it much more complicated and far less desirable as a field of study for our students. I love doing mathematics and enjoy the feeling I get from solving a challenging math problem, however nowhere is it stated that these problems must be three pages long and have several parts. Our mathematics courses no longer challenge students, they baffle them.[37]
>
> There are major issues that still need to be addressed, such as students reaching grade 10 without having successfully completed any junior high program. The

[37] A senior high school teacher from the Strait Regional School Board.

expectation is that students can all of a sudden reach grade 10 and attain the credit without having the proper foundation for the curriculum.[38]

There is not enough time to cover the grade 12 course, but a Nova Scotia Examination is scheduled for January of next year. I feel that this is putting teachers and students in a stressful situation. I feel … that the Nova Scotia Examination should not be given until some modification can be made to the outline. I am in a semesterd system.[39]

Item 4: Rate the usefulness and quality of the curriculum guide.



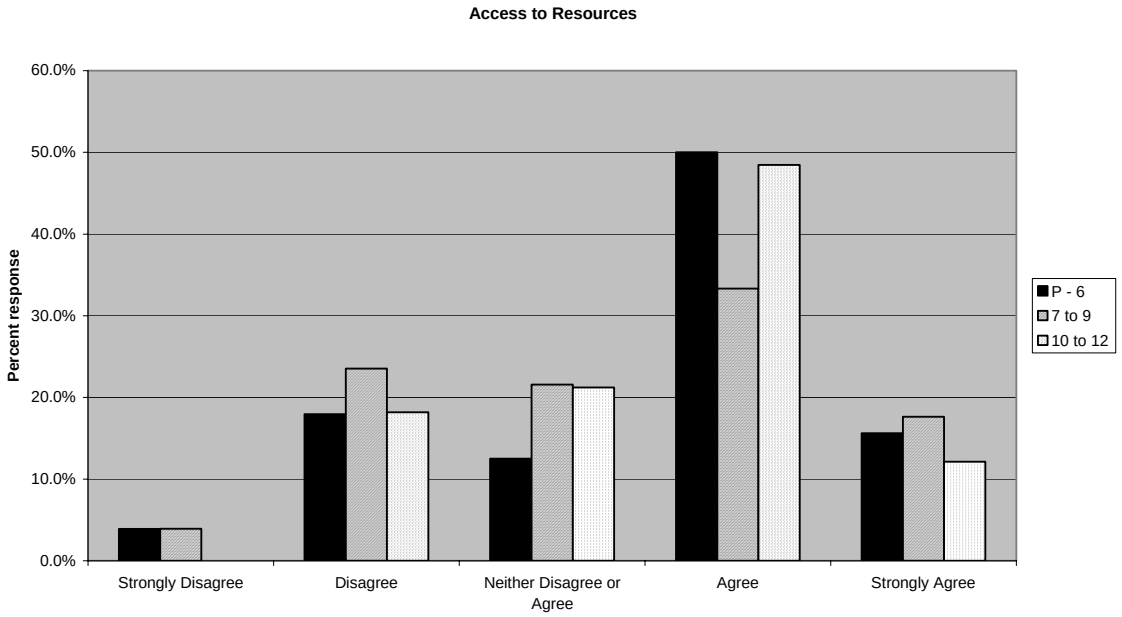
As can be seen from the graph above, there is a different assessment of the Curriculum Guide by the different levels. Junior and senior high school teachers had more favourable perceptions of the guide than did elementary teachers. No elementary teachers thought the guide was *very good* while 9.8% and 18.2% of junior and senior high teachers respectively indicated that rating. A majority of elementary teachers rated the guide *fair* or below and the reverse is true for junior and senior high teachers.

Item 5: I have access to the resources necessary to meet the outcomes at my grade level.

In general, teachers feel they have access to the resources needed to implement the curriculum.

[38] A senior high school teacher from the Tri-County District School Board.

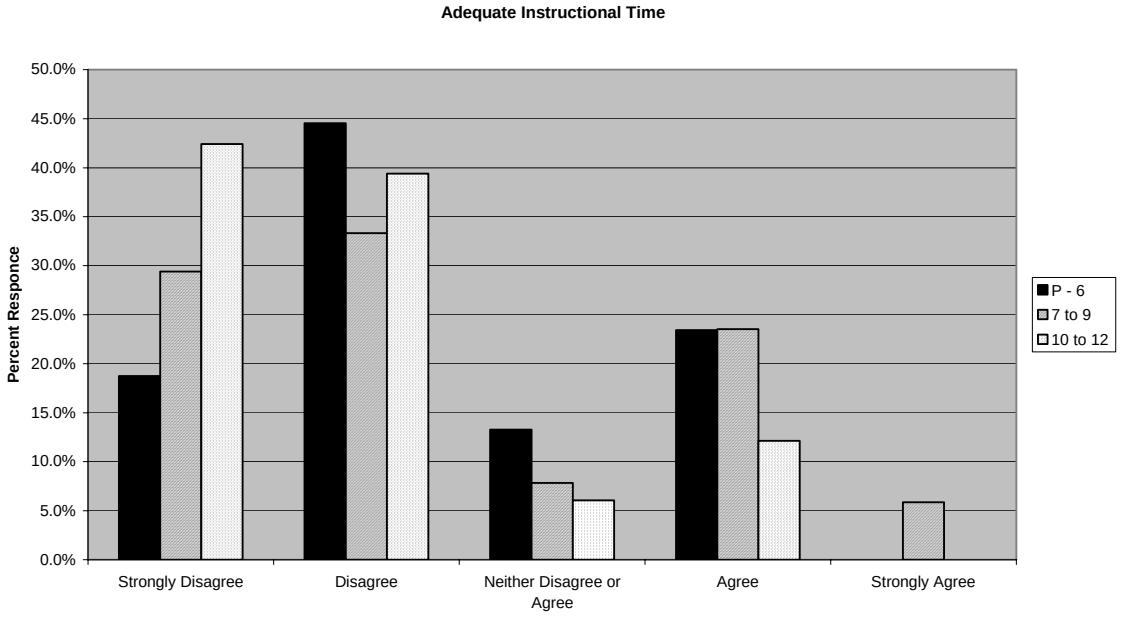
[39] A senior high school teacher from the Halifax Regional School Board.



There is very little difference among the three levels in teachers' assessment of their access to resources.

Item 6: I have enough instructional time to cover the outcomes listed in my guide.

There is more variation among the three levels on the issue of adequate instructional time.



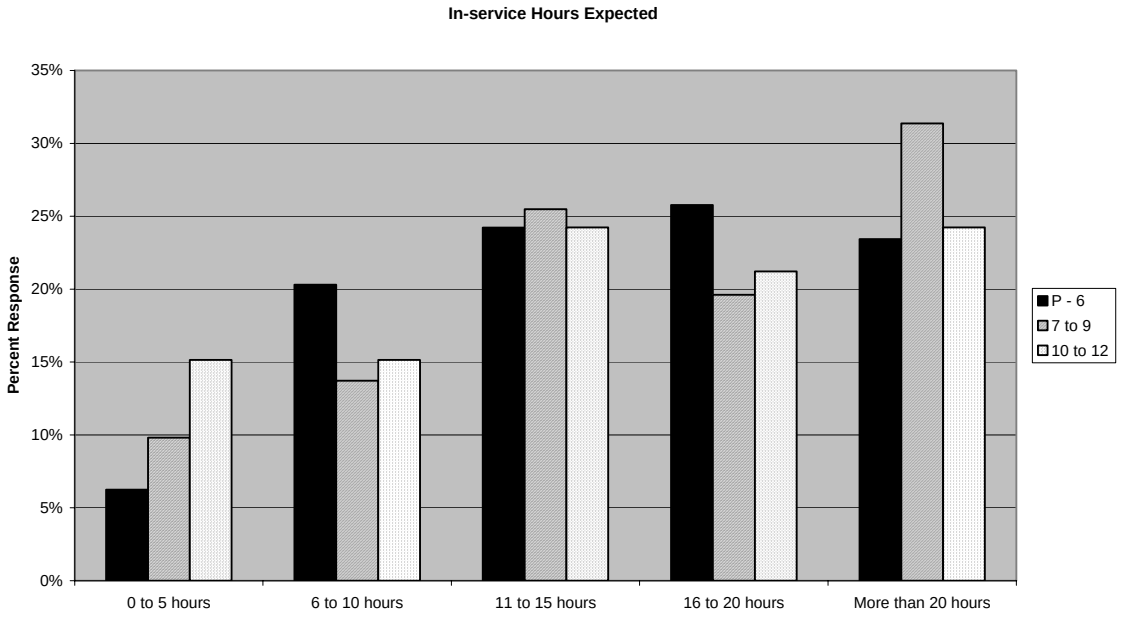
It is clear that all three groups' assessment is that there is not enough time to properly implement the mathematics curriculum. Teachers of grades 10 to 12 are more emphatic in this regard, however. It is also worth noting that very few teachers are neutral on this issue.

Item 7

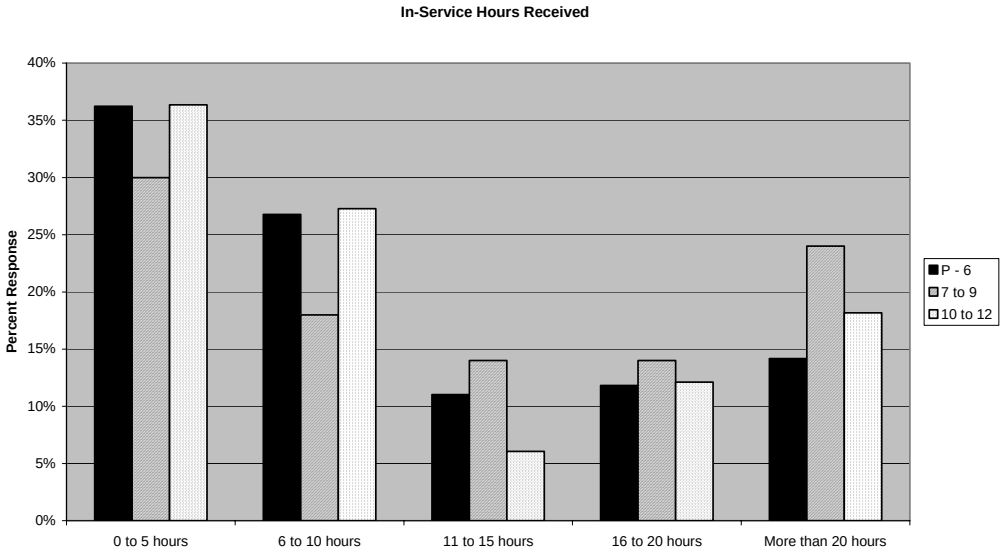
a) *How many hours of in-servicing would you expect to receive in the first year of implementing a new curriculum?*

b) How many hours of in-servicing have you received in implementing the math curriculum?

Most teachers had high expectations regarding the in-service resources that they hoped would be allocated to the new mathematics curriculum.

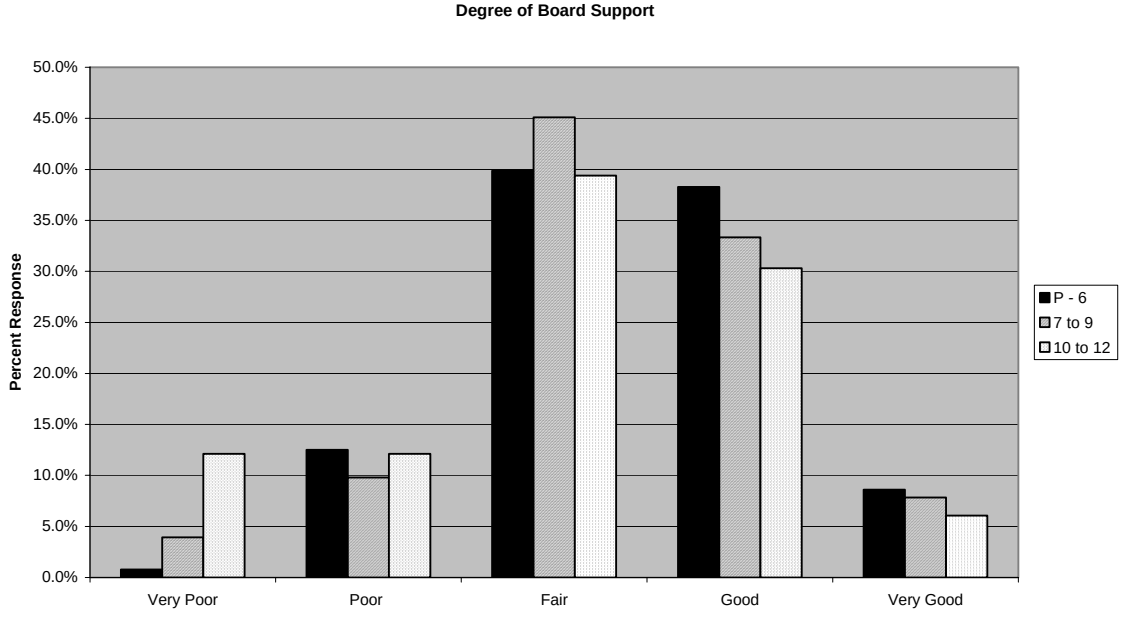


The perception is that in-service resources have been more extensively applied at the elementary level. Part of the rationale for this emphasis is that a higher proportion of the teachers who are teaching mathematics at the high school level have a background in mathematics or science than those teaching mathematics at the elementary level. While this approach identifies a segment of the teaching population that may require an emphasis on content, it misses the need by all teachers for assistance with changes in the delivery model of that content. Unfortunately, the survey data do not confirm this understanding. From the graph below it is clear that the largest group at each grade level only received 0 to 5 hours of in-service preparation.



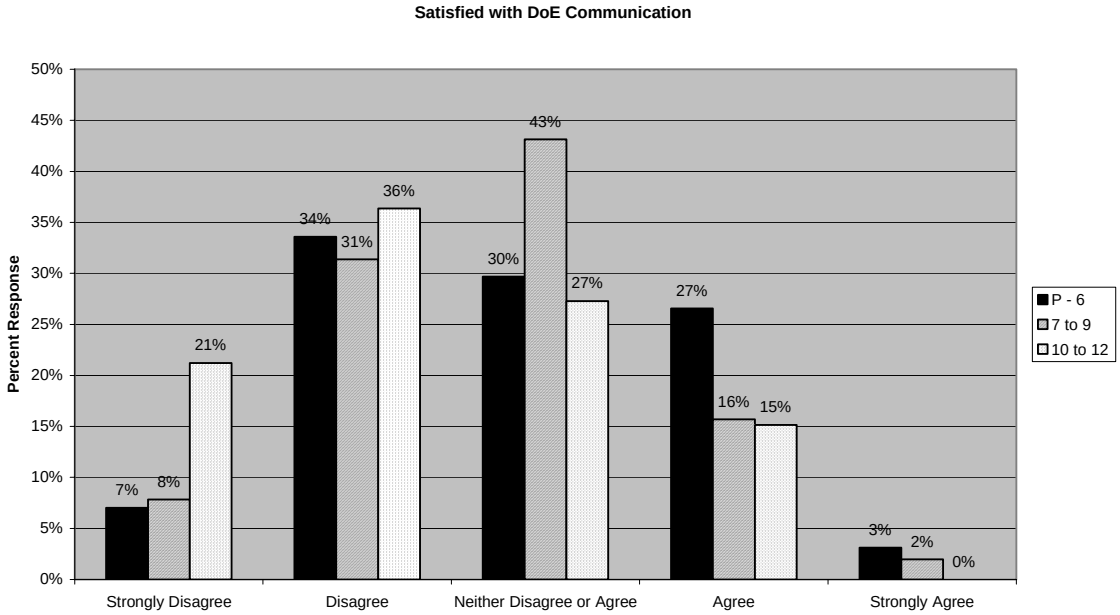
The experience of elementary teachers and senior high school teachers is similar. The bulk of both groups (63% in both cases) received ten hours of in-service time or less.

Item 8: Rate the degree of board support in the implementation of the math curriculum since the introduction of the guide at your level.



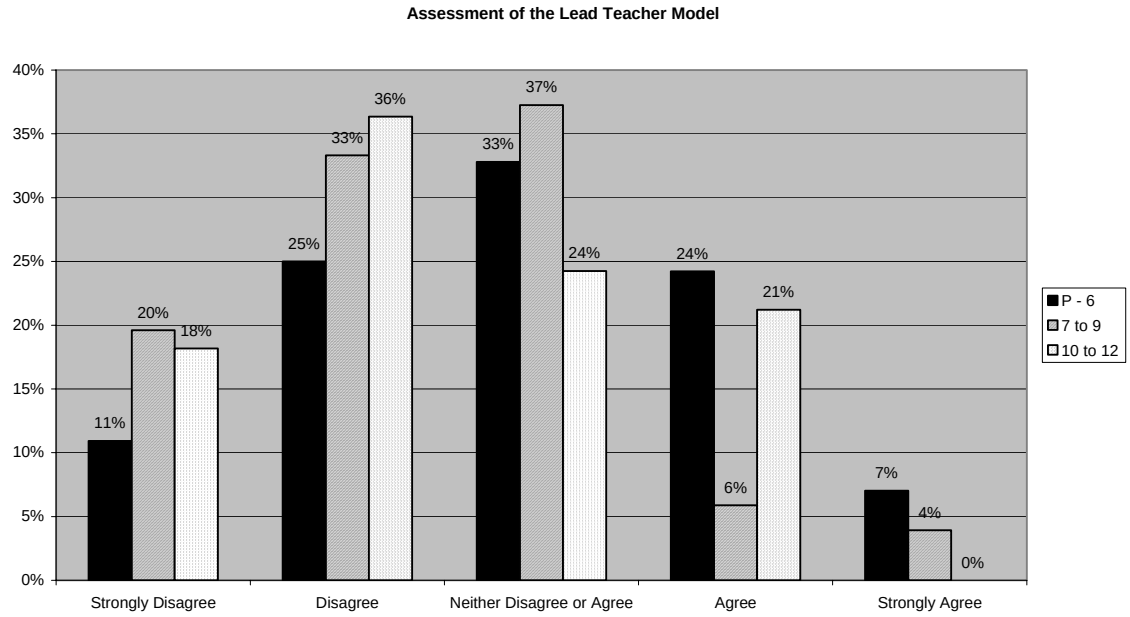
Board support is generally considered fair to good. Although the largest category, *fair*, is ambiguous, the second largest response was that board support for the mathematics curriculum is good.

Item 9: I am satisfied with the approach taken by the Department of Education in communicating implementation of the math curriculum.



As we can see, there is no clear difference among the assessments taken by teachers at different levels. The largest block of expressed opinion, similar at all three levels, is disagreement with the statement that the communication efforts of the Department have been satisfactory. After that, more elementary teachers feel that the communications efforts are satisfactory in comparison to middle level or senior high teachers. Very few teachers at any level feel the communications efforts have been excellent and a significant number of senior high school teachers feel that those communication efforts have been significantly below standard.

Item 10: Recently the Department of Education has promoted the "Lead Teacher in each school" model for in-servicing math teachers in the new curriculum. Rate the effectiveness of this model.

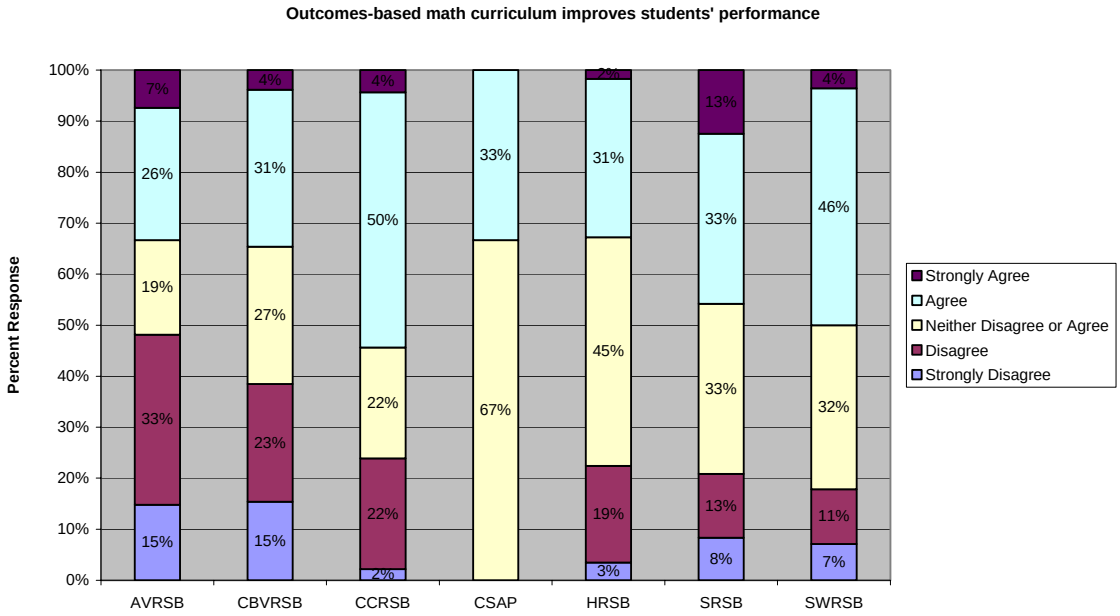


While there is some support for the lead teacher model by approximately a quarter and a fifth, respectively, of elementary and high school teachers, over 50% of both middle level and senior high school teachers and more than a third of elementary teachers believe that this is not an effective method of delivering the needed professional development to classroom teachers. Virtually no teachers expressed strong support for this approach while a much more significant proportion expressed strong dissatisfaction.

Analysis by School Board

Again some interesting patterns emerge. It is important to place the results from the Conseil Scholaire Acadienne Provincial in perspective because there were only three responses from this board and consequently the results cannot be seen as representative.

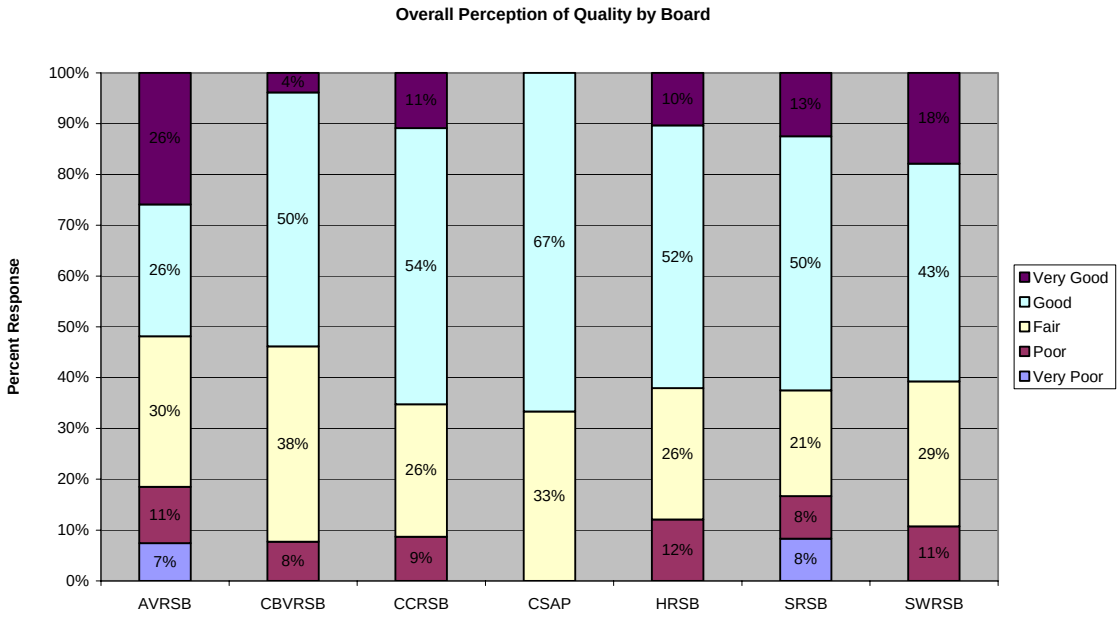
Item 1: Changing to an outcomes-based mathematics curriculum has improved students' performance in mathematics.



In both the Annapolis Valley Regional School Board and the Cape Breton Victoria Regional School Board, the two negative assessment categories exceed the two positive assessment categories. In all the other boards, the opposite is true in the evaluation of improvement to student performance.

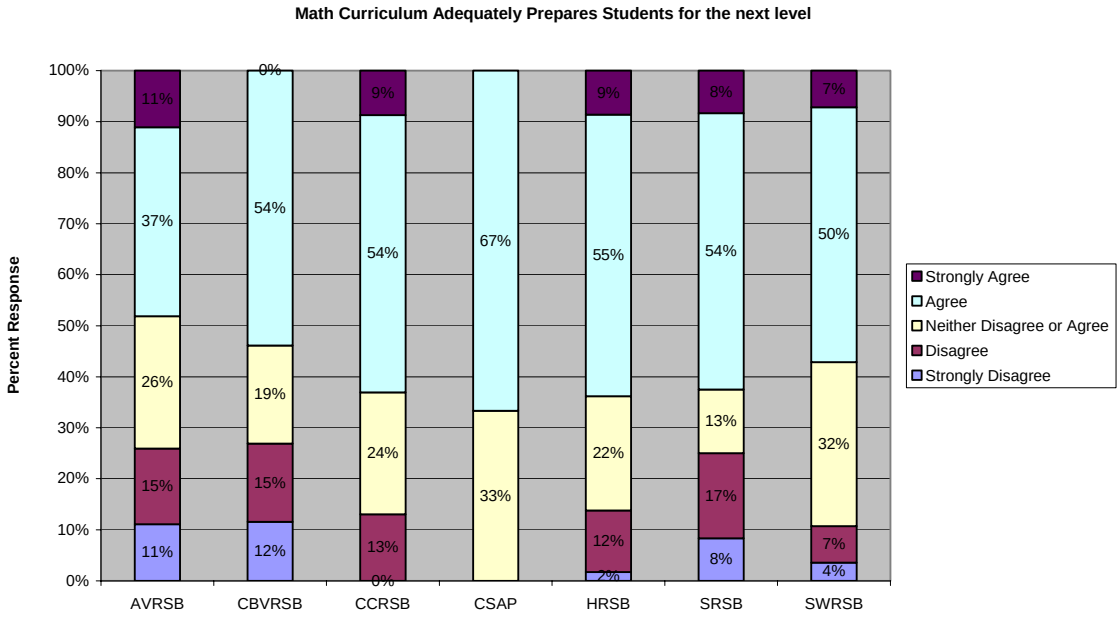
Item 2: If any perceived difficulties with the implementation of the math curriculum could be addressed to your satisfaction, rate your overall perception of the quality of the math curriculum at your grade level.

More than 50% the teachers from all boards perceive the overall quality of the mathematics curriculum as good or better.



Item 3: I feel that the math curriculum at my grade level adequately prepares students to proceed to the next level.

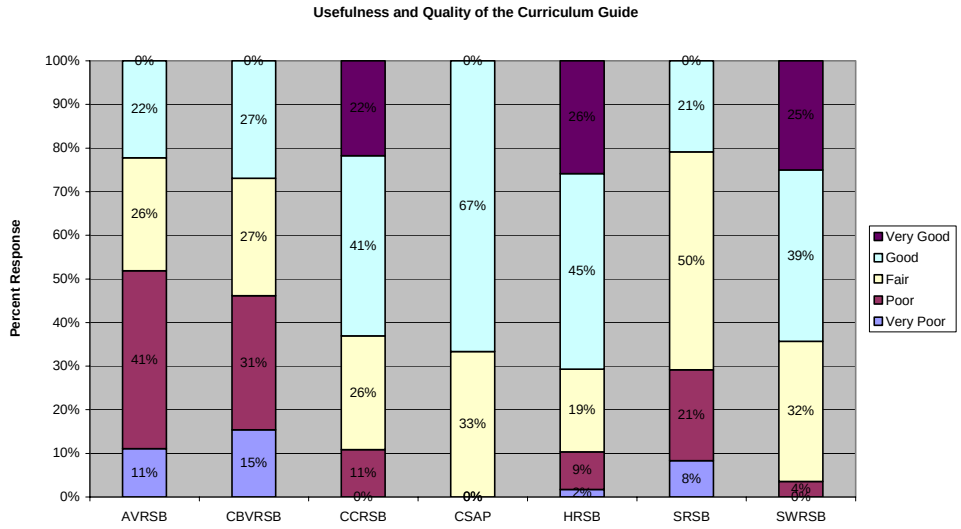
A majority of teachers from all boards also believe that the current mathematics curriculum adequately prepares students to proceed to the next level.



Item 4: Rate the usefulness and quality of the curriculum guide.

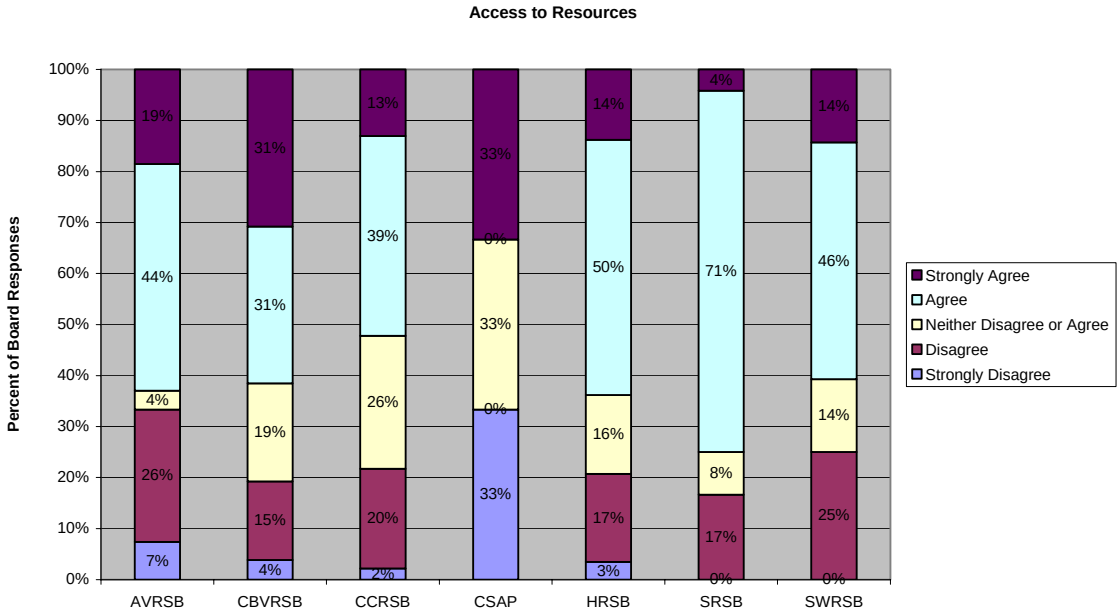
There are regional differences in the perception of the usefulness and quality of the mathematics curriculum guide. In all but three boards, the guide was rated positively by a majority of teachers. This was not the case in the Valley Board, Cape Breton or the Strait Regional School

Board. In the Annapolis Valley Regional School Board, 52% of the respondents rated the guide poor or very poor and only 22% rated it good or very good. In Cape Breton Victoria Regional School Board, 46% rated the guide poor or very poor and only 27% rated it good or very good. In the Strait Regional School Board, only 21% rated the guide good or very good and 29% rated it poor or very poor. The Strait Regional School Board had the largest percentage of teachers rating the guide "Fair." This may be due to the ambiguity of the term "Fair" which may be interpreted as either "adequate" or "mediocre."



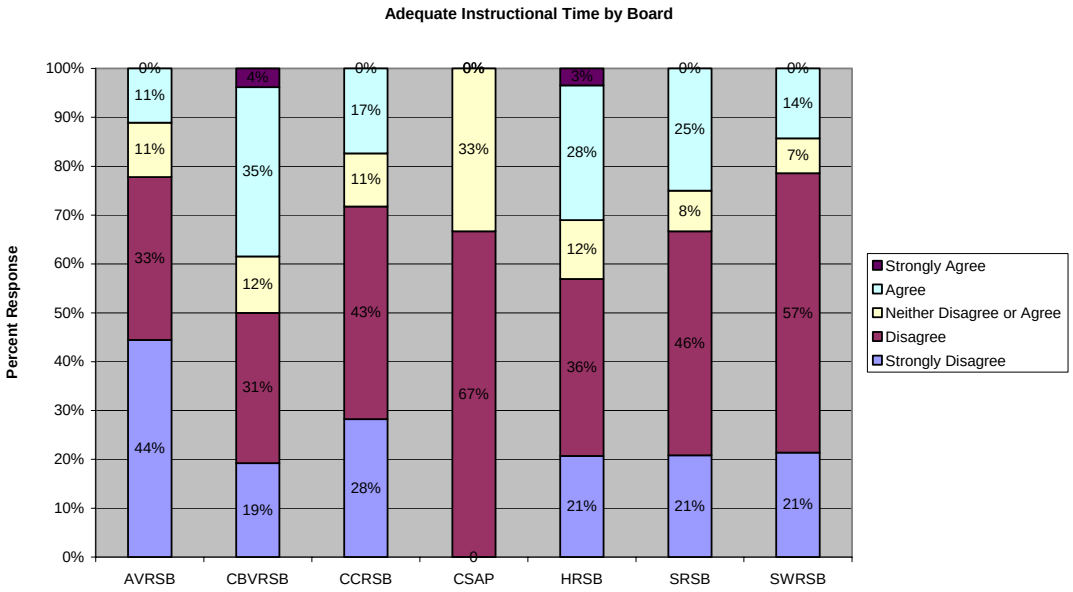
Item 5: I have access to the resources necessary to meet the outcomes at my grade level.

Teachers in all boards expressed the view that they had access to appropriate resources. This statement elicited the fewest neutral responses of any of the survey questions or statements.



Item 6: I have enough instructional time to cover the outcomes listed in my guide.

As reflected in the aggregate picture and the view by grade level, teachers in all boards believe there is inadequate time to deliver the curriculum. In every case except Cape Breton, significantly over half the teachers surveyed disagreed or strongly disagreed with the assertion that there was adequate instructional time. In Cape Breton Victoria Regional School Board, 50% of teachers expressed the view that the allocated time was insufficient.

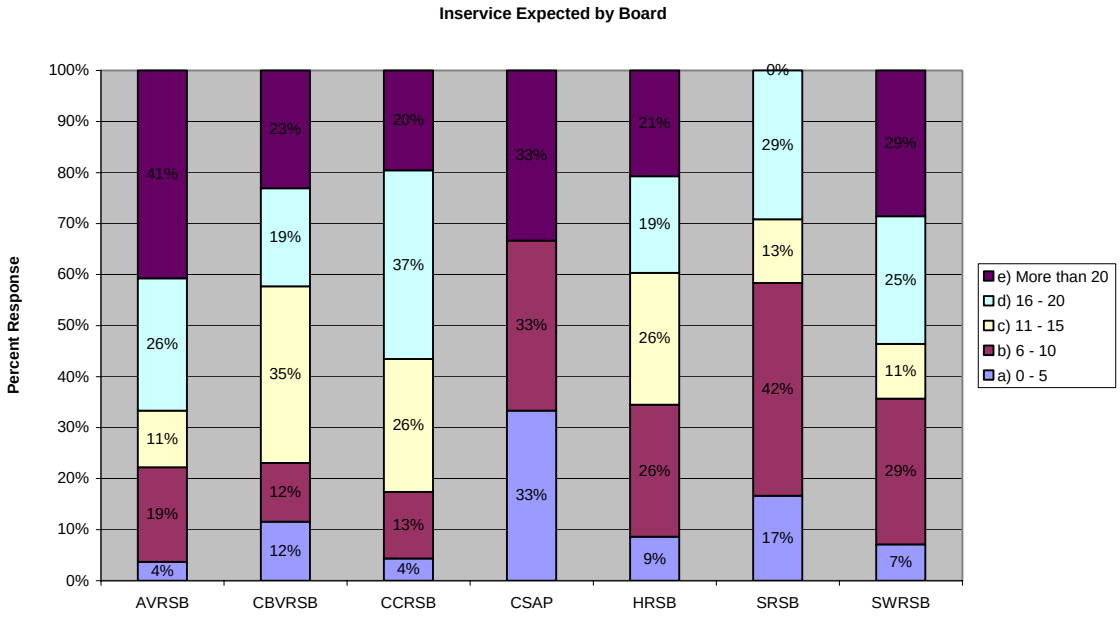


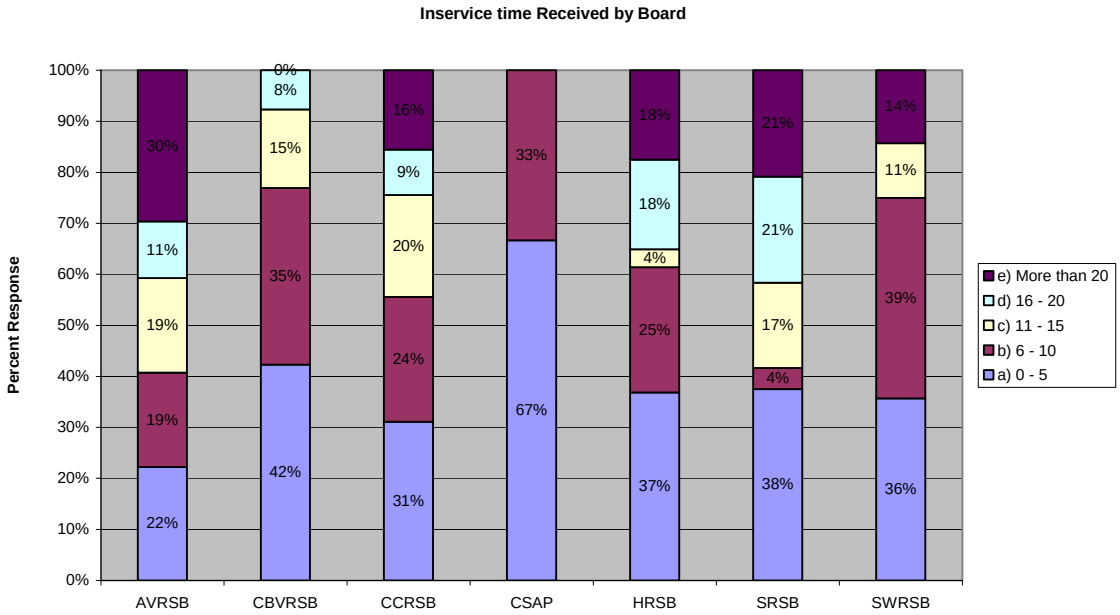
Item 7

c) *How many hours of in-servicing would you expect to receive in the first year of implementing a new curriculum?*

d) How many hours of in-servicing have you received in implementing the math curriculum?

It is useful to examine the results of the amount of in-service time expected and the amount received together.





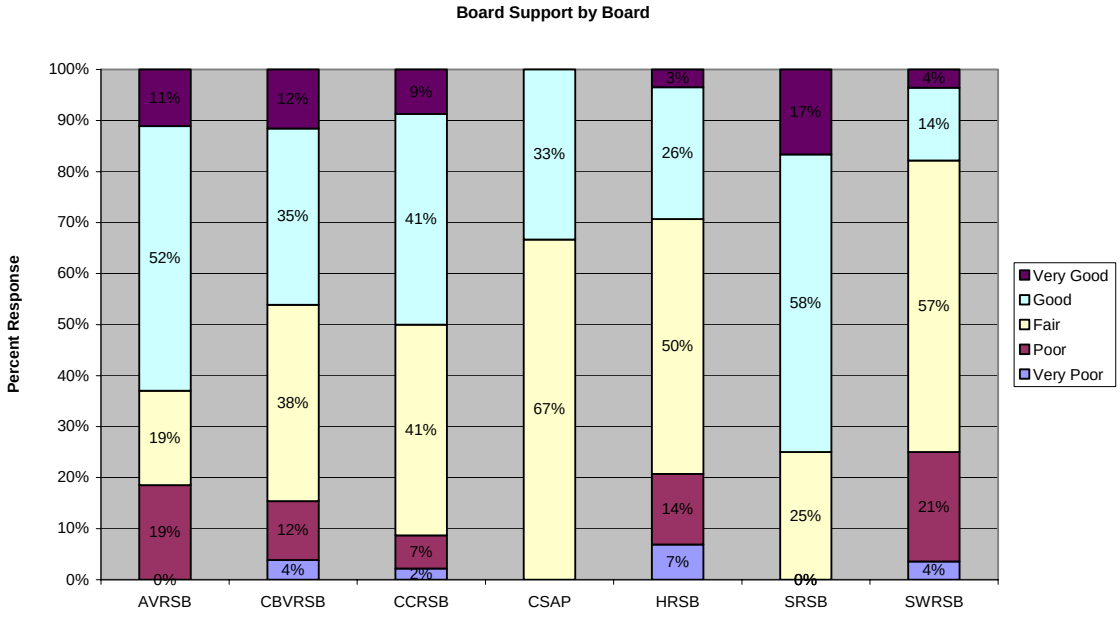
The Annapolis Valley is unique in that teachers came close to receiving the amount of in-service time they expected. 76% of the teachers in the Annapolis expected to receive eleven or more

hours of in-service support for the new curriculum and 70% reported that they received eleven or more hours. 77% of Cape Breton teachers expected eleven or more hours, but 77% reported that they received ten or fewer hours of in-service support. Teachers in Chignecto Central School board indicate that 83% expected to receive eleven or more hours of in-service time yet only 45% received that much and 55% received ten hours or less. In Halifax, 66% expected eleven or more hours, but 62% received less than ten hours. Teachers in the Strait Regional School Board are the only teachers whose expectations were exceeded by what was delivered. Only 42% of them expected eleven or more hours and 59% received this amount. The Southwest Regional School Board mirrors the majority experience. 65% of SWRSB teachers expected eleven or more hours of in-service time, but 75% actually received ten hours or less.

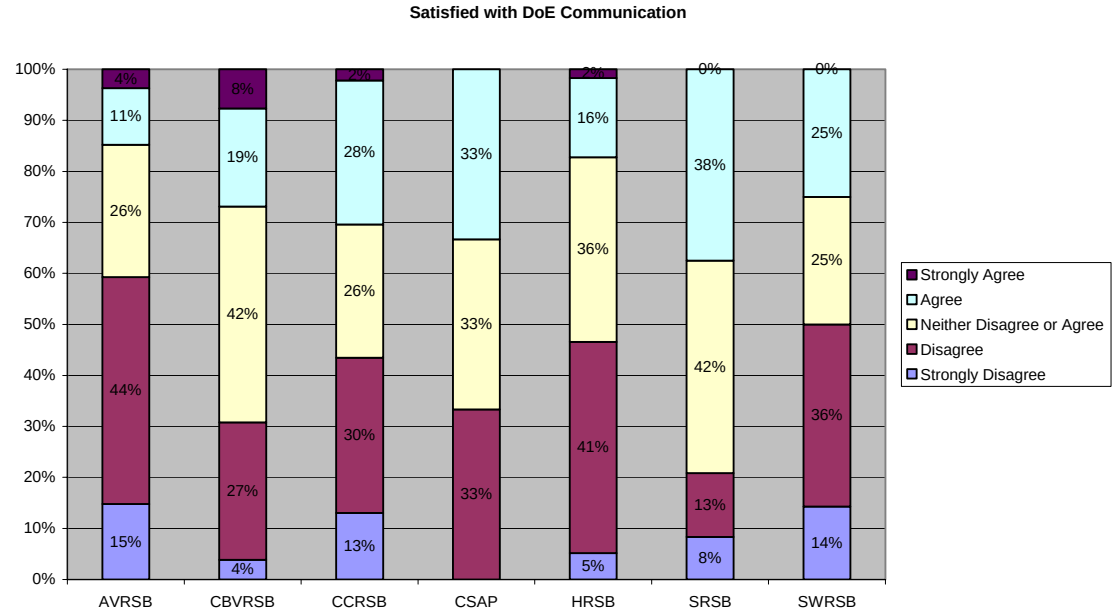
In-service resources remain a key priority and need for teachers. Both the Department of Education and the regional school boards must make a greater effort to ensure that new curricula are not introduced without adequate in-service time and resources. Adequate is defined by the perceived need by the teaching professionals in the classroom. Curriculum implementation rests on the ability of classroom teachers to deliver that curriculum and their comfort level with doing so.

Item 8: Rate the degree of board support in the implementation of the math curriculum since the introduction of the guide at your level.

While support by the regional school board is generally regarded as helpful, both the Halifax Regional School Board and the South West Regional School Board are noteworthy in that they have the lowest perceived support for teachers' efforts to implement the mathematics curriculum.

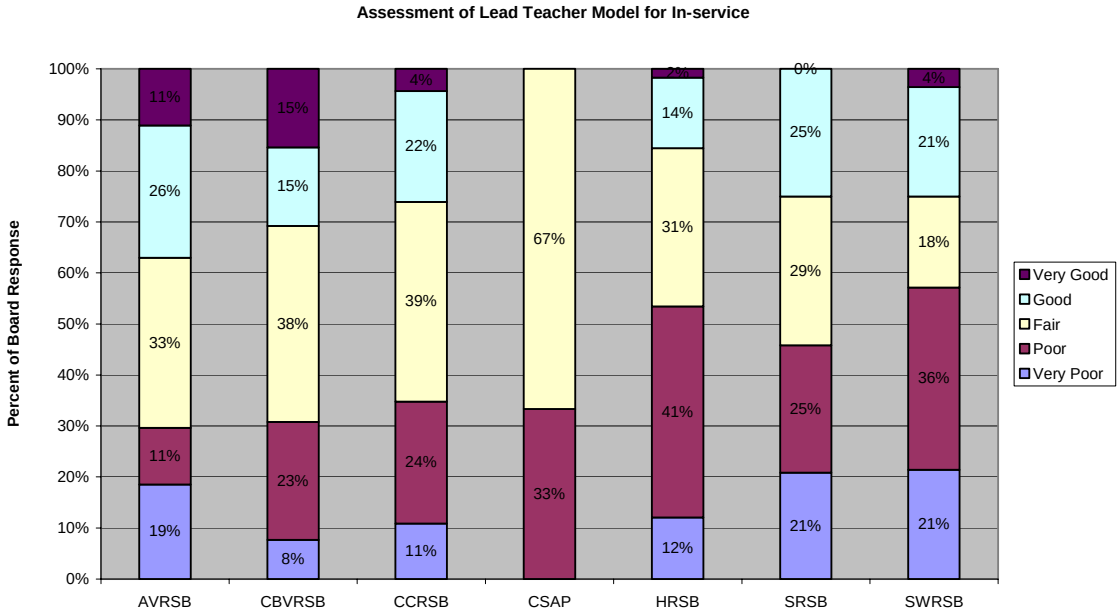


Item 9: I am satisfied with the approach taken by the Department of Education in communicating implementation of the math curriculum.



It is puzzling that teachers with the Annapolis Valley Regional School Board should perceive Department of Education communications efforts significantly more negatively than teachers in other boards. This indicates a clear area for investigation.

Item 10: Recently the Department of Education has promoted the "Lead Teacher in each school" model for in-servicing math teachers in the new curriculum. Rate the effectiveness of this model.



While overall the lead-teacher model for in-service delivery was not well received, more teachers from the Annapolis Valley board supported the model than were opposed to it. In all the other board, more teachers saw this model as poor or very poor than saw it as good or very good.

Focus Groups, Interviews and Survey Comments

The survey instrument provided teachers with an opportunity to submit comments. The committee reviewed all submitted comments and has incorporated those comments into the text of this report to illustrate either the majority view, the minority view or to provide insight into some aspect of mathematics pedagogy not covered by the survey questions.

Committee members conducted interviews with selected individuals who were instrumental in the development and implementation of the new mathematics curriculum. The views expressed in these interviews have also been incorporated into the report in the appropriate places.

With the response rate to the survey, the survey comments and the interviews, the Committee came to the conclusion that carrying out a focus group input session would not likely contribute significantly to the report, but would incur considerable delay. As a result, the Committee decided to forgo the use of focus groups to obtain input.

Conclusions

Although those teaching the mathematics curriculum generally support the changes that have been developed there remain some serious concerns. There is a significant discrepancy between how the program is viewed by senior high school teachers in contrast with those teaching at the elementary or middle levels.

Teachers across grade levels generally agree that there is insufficient time to deliver the mathematics curriculum. This must be addressed, either through a modification of the curriculum or the time allocation accorded mathematics instruction.

The amount of in-service time provided does not match teachers' expectations. Those expectations are based on the day-to-day experiences with delivering curriculum to students and should be accorded significant weight. It is not teachers' expectations that need to change.

The Department of Education model for the provision of in-service resources through a lead teacher has not been successful. This model needs to be reviewed and alternate strategies developed. Such alternate strategies include direct in-service time for all teachers without being mediated through a lead teacher and a re-working of the lead teacher model so that it becomes more successful.

A significant proportion of teachers in the majority of boards expressed dissatisfaction with the communication efforts by the Department of Education. Even minor communication problems should always be considered worthy of attention. Communication problems in the order of those expressed must be addressed.

There appear to be regional differences that need to be examined by regional school boards and by the Department of Education. If teachers in some jurisdictions are receiving less preparation or assistance than in others, this inequity must be addressed.

Appendix A

Math Subcommittee Survey

Preamble:
As a result of Resolution 2002-37, a NSTU math sub-committee has been struck "to determine the effect that new math programs have had on the acquisition of math skills and concepts for students in the province".

Please complete the following survey to assist the math sub-committee in their mandate. Prizes will be awarded at random for those completing the survey. Prizes will include one night's accommodation at White Point Beach Resort; 5 conference registration fees for October 2003 conference, valued at $65.00 each; and NSTU sweatshirts, etc.

Email Address:

Professional Number:

Current Teaching Level:
P-6

School Board

Ranking: 1 to 5, where 5 represents the highest level of agreement:

1. Changing to an outcomes-based mathematics curriculum has improved students' performance in mathematics.
   Neither Disagree nor Agree
2. If any perceived difficulties with the implementation of the math curriculum could be addressed to your satisfaction, rate your overall perception of the quality of the math curriculum at your grade level.
   Fair
3. I feel that the math curriculum at my grade level adequately prepares students to proceed to the next level.
   Neither Disagree nor Agree

4. Rate the usefulness and quality of the curriculum guide.
   Fair

5. I have access to the resources necessary to meet the outcomes at my grade level.
   Neither Disagree nor Agree

6. I have enough instructional time to cover the outcomes listed in my guide.
   Neither Disagree nor Agree

7. a) How many hours of inservicing would you expect to receive in the first year of implementing a new curriculum?
   0 to 5

   b) How many hours of inservicing have you received in implementing the math curriculum?
   0 to 5

8. Rate the degree of board support in the implementation of the math curriculum since the introduction of the guide at your level.
   Fair

9. I am satisfied with the approach taken by the Department of Education in communicating implementation of the math curriculum.
   Neither Disagree nor Agree

10. Recently the Department of Education has promoted the “Lead Teacher in each school” model for inservicing math teachers in the new curriculum. Rate the effectiveness of this model.
    Fair

11. Please add any additional comments/concerns.

Send Reset Form

Appendix B

MEMORANDUM

TO: NSTU School Representatives

FROM: NSTU Math Sub Committee

DATE: January 29, 2002

RE: On-Line Math Survey

Please forward the following information to your math teachers.

Completing the following on-line Math survey will give you the opportunity to respond to the effect that Math implementation has had on you and your students.

We need your input to assist the Math sub committee in preparing a final report to respond to resolution 2002-37 "to determine the effect that new math programs have had on the acquisition of math skills and concepts for students in the province."

Go to the NSTU web site at www.nstu.ca and look for the "Math Survey" link.

By completing the survey, you have a chance to win one of the following prizes which will be awarded at random: one night's accommodation at White Point Beach Resort; five free conference registration fees for 2003 plus membership in MTA – a value of $65. each and NSTU sweatshirts.

The following survey will appear on the web from **February 10 to 24**. Thank you for your help with this important endeavour.

/lk

Appendix C

1. Changing to an outcomes-based mathematics curriculum has improved students' performance in mathematics							
Count of Improve_Student_Performance						% Disagree	% Agree
Teaching_Level	Improve_Student_Performance	Total					
10 - 12	1	7	21.2%	Strongly Disagree		**54.5%**	15.2%
	2	11	33.3%	Disagree			
	3	10	30.3%	Neither Disagree or Agree			
	4	5	15.2%	Agree			
10 - 12 Total		33					
7 - 9	1	3	5.9%	Strongly Disagree		**37.3%**	25.5%
	2	16	31.4%	Disagree			
	3	19	37.3%	Neither Disagree or Agree			
	4	12	23.5%	Agree			
	5	1	2.0%	Strongly Agree			
7 - 9 Total		51					
CC	3	1					
CC Total		1					
P-6	1	5	3.9%	Strongly Disagree		15.6%	**54.7%**
	2	15	11.7%	Disagree			
	3	38	29.7%	Neither Disagree or Agree			
	4	61	47.7%	Agree			
	5	9	7.0%	Strongly Agree			
P-6 Total		128					
Grand Total		213					
	Rating	P - 6	7 to 9	10 to 12			
	Strongly Disagree	3.9%	5.9%	21.2%			
	Disagree	11.7%	31.4%	33.3%			
	Neither Disagree or Agree	29.7%	37.3%	30.3%			
	Agree	47.7%	23.5%	15.2%			
	Strongly Agree	7.0%	2.0%	0.0%			

2. If any perceived difficulties with the implementation of the math curriculum could be addressed to your satisfaction, rate your overall perception of the quality of the math curriculum at your grade level.							
Count of Overall_Perception						**% Poor**	**% Good**
Teaching_ Level	Overall_Perception	Total					
10 - 12	1	2	6.1%	Very Poor		**33.3%**	**33.3%**
	2	9	27.3%	Poor			
	3	11	33.3%	Fair			
	4	9	27.3%	Good			
	5	2	6.1%	Very Good			
10 - 12 Total		33					
7 - 9	2	5	9.8%	Poor		9.8%	**56.9%**
	3	17	33.3%	Fair			
	4	23	45.1%	Good			
	5	6	11.8%	Very Good			
7 - 9 Total		51					
CC	3	1					
CC Total		1					
P-6	1	2	1.6%	Very Poor		7.0%	**68.8%**
	2	7	5.5%	Poor			
	3	31	24.2%	Fair			
	4	69	53.9%	Good			
	5	19	14.8%	Very Good			
P-6 Total		128					
Grand Total		213					
	Rating	P - 6	7 to 9	10 to 12			
	Strongly Disagree	1.6%	0.0%	6.1%			
	Disagree	5.5%	9.8%	27.3%			
	Neither Disagree or Agree	24.2%	33.3%	33.3%			
	Agree	53.9%	45.1%	27.3%			
	Strongly Agree	14.8%	11.8%	6.1%			

3. I feel that the math curriculum at my grade level adequately prepares students to proceed to the next level.								
Count of Adequately_Prepares_Students							**% Disagree**	**% Agree**
Teaching_Level	Adequately_Prepares_Students	Total						
10 - 12	1	4	12.1%	Strongly Disagree			**39.4%**	36.4%
	2	9	27.3%	Disagree				
	3	8	24.2%	Neither Disagree or Agree				
	4	12	36.4%	Agree				
10 - 12 Total		33						
7 - 9	1	2	3.9%	Strongly Disagree			19.6%	**58.8%**
	2	8	15.7%	Disagree				
	3	11	21.6%	Neither Disagree or Agree				
	4	25	49.0%	Agree				
	5	5	9.8%	Strongly Agree				
7 - 9 Total		51						
CC	3	1						
CC Total		1						
P-6	1	4	3.1%	Strongly Disagree			10.9%	**65.6%**
	2	10	7.8%	Disagree				
	3	30	23.4%	Neither Disagree or Agree				
	4	73	57.0%	Agree				
	5	11	8.6%	Strongly Agree				
P-6 Total		128						
Grand Total		213						
	Rating	P - 6	7 to 9	10 to 12				
	Strongly Disagree	3.1%	3.9%	12.1%				
	Disagree	7.8%	15.7%	27.3%				
	Neither Disagree or Agree	23.4%	21.6%	24.2%				
	Agree	57.0%	49.0%	36.4%				
	Strongly Agree	8.6%	9.8%	0.0%				

4. Rate the usefulness and quality of the curriculum guide.							
Count of Usefuleness_Quality						**% Poor**	**% Good**
Teaching_ Level	Usefuleness_Quality	Total					
10 - 12	1	1	3.0%	Very Poor		18.2%	**54.5%**
	2	5	15.2%	Poor			
	3	9	27.3%	Fair			
	4	12	36.4%	Good			
	5	6	18.2%	Very Good			
10 - 12 Total		33					
7 - 9	2	8	15.7%	Poor		15.7%	**47.1%**
	3	19	37.3%	Fair			
	4	19	37.3%	Good			
	5	5	9.8%	Very Good			
7 - 9 Total		51					
CC	4	1					
CC Total		1					
P-6	2	7	5.5%	Poor		5.5%	**71.9%**
	3	29	22.7%	Fair			
	4	53	41.4%	Good			
	5	39	30.5%	Very Good			
P-6 Total		128					
Grand Total		213					
	Rating	P - 6	7 to 9	10 to 12			
	Very Poor	5.5%	0.0%	3.0%			
	Poor	22.7%	15.7%	15.2%			
	Fair	41.4%	37.3%	27.3%			
	Good	30.5%	37.3%	36.4%			
	Very Good	0.0%	9.8%	18.2%			

5. I have access to the resources necessary to meet the outcomes at my grade level.							
Count of Access_to_Resources						**% Disagree**	**% Agree**
Teaching_ Level	Access_to_Resources	Total					
10 - 12	2	6	18.2%	Disagree		18.2%	**60.6%**
	3	7	21.2%	Neither Disagree or Agree			
	4	16	48.5%	Agree			
	5	4	12.1%	Strongly Agree			
10 - 12 Total		33					
7 - 9	1	2	3.9%	Strongly Disagree		27.5%	**51.0%**
	2	12	23.5%	Disagree			
	3	11	21.6%	Neither Disagree or Agree			
	4	17	33.3%	Agree			
	5	9	17.6%	Strongly Agree			
7 - 9 Total		51					
CC	4	1					
CC Total		1					
P-6	1	5	3.9%	Strongly Disagree		21.9%	**65.6%**
	2	23	18.0%	Disagree			
	3	16	12.5%	Neither Disagree or Agree			
	4	64	50.0%	Agree			
	5	20	15.6%	Strongly Agree			
P-6 Total		128					
Grand Total		213					
	Rating	P - 6	7 to 9	10 to 12			
	Strongly Disagree	3.9%	3.9%	0%			
	Disagree	18.0%	23.5%	18%			
	Neither Disagree or Agree	12.5%	21.6%	21%			
	Agree	50.0%	33.3%	48%			
	Strongly Agree	15.6%	17.6%	12%			

6. I have enough instructional time to cover the outcomes listed in my guide							
Count of Instructional_Time						**% Disagree**	**% Agree**
Teaching_ Level	Instructional_Time	Total					
10 - 12	1	14	42.4%	Strongly Disagree		**81.8%**	12.1%
	2	13	39.4%	Disagree			
	3	2	6.1%	Neither Disagree or Agree			
	4	4	12.1%	Agree			
10 - 12 Total		33					
7 - 9	1	15	29.4%	Strongly Disagree		**62.7%**	29.4%
	2	17	33.3%	Disagree			
	3	4	7.8%	Neither Disagree or Agree			
	4	12	23.5%	Agree			
	5	3	5.9%	Strongly Agree			
7 - 9 Total		51					
CC	4	1					
CC Total		1					
P-6	1	24	18.8%	Strongly Disagree		**63.3%**	23.4%
	2	57	44.5%	Disagree			
	3	17	13.3%	Neither Disagree or Agree			
	4	30	23.4%	Agree			
P-6 Total		128					
Grand Total		213					
	Rating	P - 6	7 to 9	10 to 12			
	Strongly Disagree	18.8%	29.4%	42.4%			
	Disagree	44.5%	33.3%	39.4%			
	Neither Disagree or Agree	13.3%	7.8%	6.1%			
	Agree	23.4%	23.5%	12.1%			
	Strongly Agree	0.0%	5.9%	0.0%			

7. a) How many hours of inservicing would you expect to receive in the first year of implementing a new curriculum?					
Count of Inservice_Expected					
Teaching_ Level	Inservice_Expected	Total			
10 - 12	a) 0 - 5	5	15%	0 to 5 hours	
	b) 6 - 10	5	15%	6 to 10 hours	
	c) 11 - 15	8	24%	11 to 15 hours	
	d) 16 - 20	7	21%	16 to 20 hours	
	e) More than 20	8	24%	More than 20 hours	
10 - 12 Total		33			
7 - 9	a) 0 - 5	5	10%	0 to 5 hours	
	b) 6 - 10	7	14%	6 to 10 hours	
	c) 11 - 15	13	25%	11 to 15 hours	
	d) 16 - 20	10	20%	16 to 20 hours	
	e) More than 20	16	31%	More than 20 hours	
7 - 9 Total		51			
CC	b) 6 - 10	1			
CC Total		1			
P-6	a) 0 - 5	8	6%	0 to 5 hours	
	b) 6 - 10	26	20%	6 to 10 hours	
	c) 11 - 15	31	24%	11 to 15 hours	
	d) 16 - 20	33	26%	16 to 20 hours	
	e) More than 20	30	23%	More than 20 hours	
P-6 Total		128			
Grand Total		213			
	Amount	P - 6	7 to 9	10 to 12	
	0 to 5 hours	6%	10%	15%	
	6 to 10 hours	20%	14%	15%	
	11 to 15 hours	24%	25%	24%	
	16 to 20 hours	26%	20%	21%	
	More than 20 hours	23%	31%	24%	

7. b) How many hours of inservicing have you received in implementing the math curriculum?					
Count of Inservice_Received					
Teaching_ Level	Inservice_Received	Total			
10 - 12	a) 0 - 5	12	36%	0 to 5 hours	
	b) 6 - 10	9	27%	6 to 10 hours	
	c) 11 - 15	2	6%	11 to 15 hours	
	d) 16 - 20	4	12%	16 to 20 hours	
	e) More than 20	6	18%	More than 20 hours	
10 - 12 Total		33			
7 - 9	a) 0 - 5	15	30%	0 to 5 hours	
	b) 6 - 10	9	18%	6 to 10 hours	
	c) 11 - 15	7	14%	11 to 15 hours	
	d) 16 - 20	7	14%	16 to 20 hours	
	e) More than 20	12	24%	More than 20 hours	
	(blank)				
7 - 9 Total		50			
CC	a) 0 - 5	1			
CC Total		1			
P-6	a) 0 - 5	46	36%	0 to 5 hours	
	b) 6 - 10	34	27%	6 to 10 hours	
	c) 11 - 15	14	11%	11 to 15 hours	
	d) 16 - 20	15	12%	16 to 20 hours	
	e) More than 20	18	14%	More than 20 hours	
	(blank)				
P-6 Total		127			
Grand Total		211			
	Amount	P - 6	7 to 9	10 to 12	
	0 to 5 hours	36%	30%	36%	
	6 to 10 hours	27%	18%	27%	
	11 to 15 hours	11%	14%	6%	
	16 to 20 hours	12%	14%	12%	
	More than 20 hours	14%	24%	18%	

8. Rate the degree of board support in the implementation of the math curriculum since the introduction of the guide at your level.							
Count of Board_Support						**% Poor**	**% Good**
Teaching_ Level	Board_Support	Total					
10 - 12	1	4	12.1%	Very Poor		24.2%	**36.4%**
	2	4	12.1%	Poor			
	3	13	39.4%	Fair			
	4	10	30.3%	Good			
	5	2	6.1%	Very Good			
10 - 12 Total		33					
7 - 9	1	2	3.9%	Very Poor		13.7%	**41.2%**
	2	5	9.8%	Poor			
	3	23	45.1%	Fair			
	4	17	33.3%	Good			
	5	4	7.8%	Very Good			
7 - 9 Total		51					
CC	3	1					
CC Total		1					
P-6	1	1	0.8%	Very Poor		13.3%	**46.9%**
	2	16	12.5%	Poor			
	3	51	39.8%	Fair			
	4	49	38.3%	Good			
	5	11	8.6%	Very Good			
P-6 Total		128					
Grand Total		213					
	Rating	P - 6	7 to 9	10 to 12			
	Very Poor	0.8%	3.9%	12.1%			
	Poor	12.5%	9.8%	12.1%			
	Fair	39.8%	45.1%	39.4%			
	Good	38.3%	33.3%	30.3%			
	Very Good	8.6%	7.8%	6.1%			

9. I am satisfied with the approach taken by the Department of Education in communicating implementation of the math curriculum.								
Count of DOE_Communication							Disagree	Agree
Teaching_Level	DOE_Communication	Total						
10 - 12	1	7	21%	Strongly Disagree			**58%**	15%
	2	12	36%	Disagree				
	3	9	27%	Neither Disagree or Agree				
	4	5	15%	Agree				
10 - 12 Total		33						
7 - 9	1	4	8%	Strongly Disagree			**39%**	18%
	2	16	31%	Disagree				
	3	22	43%	Neither Disagree or Agree				
	4	8	16%	Agree				
	5	1	2%	Strongly Agree				
7 - 9 Total		51						
CC	1	1						
CC Total		1						
P-6	1	9	7%	Strongly Disagree			**41%**	30%
	2	43	34%	Disagree				
	3	38	30%	Neither Disagree or Agree				
	4	34	27%	Agree				
	5	4	3%	Strongly Agree				
P-6 Total		128						
Grand Total		213						
	Rating	P - 6	7 to 9	10 to 12				
	Strongly Disagree	7%	8%	21%				
	Disagree	34%	31%	36%				
	Neither Disagree or Agree	30%	43%	27%				
	Agree	27%	16%	15%				
	Strongly Agree	3%	2%	0%				

10. Recently the Department of Education has promoted the "Lead Teacher in each school" model for in-servicing math teachers in the new curriculum. Rate the effectiveness of this model.								
Count of Lead_Teacher_Model							Disagree	Agree
Teaching _Level	Lead_Teacher_Model	Total						
10 - 12	1	6	18%	Strongly Disagree			**55%**	21%
	2	12	36%	Disagree				
	3	8	24%	Neither Disagree or Agree				
	4	7	21%	Agree				
10 - 12 Total		33						
7 - 9	1	10	20%	Strongly Disagree			**53%**	10%
	2	17	33%	Disagree				
	3	19	37%	Neither Disagree or Agree				
	4	3	6%	Agree				
	5	2	4%	Strongly Agree				
7 - 9 Total		51						
CC	0	1						
CC Total		1						
P-6	1	14	11%	Strongly Disagree			**36%**	31%
	2	32	25%	Disagree				
	3	42	33%	Neither Disagree or Agree				
	4	31	24%	Agree				
	5	9	7%	Strongly Agree				
P-6 Total		128						
Grand Total		213						
	Rating	P - 6	7 to 9	10 to 12				
	Strongly Disagree	11%	20%	18%				
	Disagree	25%	33%	36%				
	Neither Disagree or Agree	33%	37%	24%				
	Agree	24%	6%	21%				
	Strongly Agree	7%	4%	0%				

1. Changing to an outcomes-based mathematics curriculum has improved students' performance in mathematics.							
Count of Improve_Student_Performance							
School_Board	Improve_Student_Performance	Total					
3	3	1					
3 Total		1					
AVRSB	1	4	15%	Strongly Disagree			
	2	9	33%	Disagree			
	3	5	19%	Neither Disagree or Agree			
	4	7	26%	Agree			
	5	2	7%	Strongly Agree			
AVRSB Total		27					
CBVRSB	1	4	15%	Strongly Disagree			
	2	6	23%	Disagree			
	3	7	27%	Neither Disagree or Agree			
	4	8	31%	Agree			
	5	1	4%	Strongly Agree			
CBVRSB Total		26					
CCRSB	1	1	2%	Strongly Disagree			
	2	10	22%	Disagree			
	3	10	22%	Neither Disagree or Agree			
	4	23	50%	Agree			
	5	2	4%	Strongly Agree			
CCRSB Total		46					
CSAP	3	2	67%	Neither Disagree or Agree			
	4	1	33%	Agree			
CSAP Total		3					
HRSB	1	2	3%	Strongly Disagree			
	2	11	19%	Disagree			
	3	26	45%	Neither Disagree or Agree			
	4	18	31%	Agree			
	5	1	2%	Strongly Agree			
HRSB Total		58					
SRSB	1	2	8%	Strongly Disagree			
	2	3	13%	Disagree			
	3	8	33%	Neither Disagree or Agree			
	4	8	33%	Agree			
	5	3	13%	Strongly Agree			
SRSB Total		24					

SWRSB	1	2	7%	Strongly Disagree			
	2	3	11%	Disagree			
	3	9	32%	Neither Disagree or Agree			
	4	13	46%	Agree			
	5	1	4%	Strongly Agree			
SWRSB Total		28					
Grand Total		213					

Summary							
	AVRSB	CBVRSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
Strongly Disagree	15%	15%	2%		3%	8%	7%
Disagree	33%	23%	22%		19%	13%	11%
Neither Disagree or Agree	19%	27%	22%	67%	45%	33%	32%
Agree	26%	31%	50%	33%	31%	33%	46%
Strongly Agree	7%	4%	4%		2%	13%	4%

2. If any perceived difficulties with the implementation of the math curriculum could be addressed to your satisfaction, rate your overall perception of the quality of the math curriculum at your level.

Count of Overall_Perception							
School_Board	Overall_Perception	Total					
3	3	1					
3 Total		1					
AVRSB	1	2	7%	Very Poor			
	2	3	11%	Poor			
	3	8	30%	Fair			
	4	7	26%	Good			
	5	7	26%	Very Good			
AVRSB Total		27					
CBVRSB	2	2	8%	Poor			
	3	10	38%	Fair			
	4	13	50%	Good			
	5	1	4%	Very Good			
CBVRSB Total		26					
CCRSB	2	4	9%	Poor			
	3	12	26%	Fair			
	4	25	54%	Good			
	5	5	11%	Very Good			
CCRSB Total		46					
CSAP	3	1	33%	Fair			
	4	2	67%	Good			
CSAP Total		3					
HRSB	2	7	12%	Poor			
	3	15	26%	Fair			
	4	30	52%	Good			
	5	6	10%	Very Good			
HRSB Total		58					
SRSB	1	2	8%	Very Poor			
	2	2	8%	Poor			
	3	5	21%	Fair			
	4	12	50%	Good			
	5	3	13%	Very Good			

SRSB Total		24					
SWRSB	2	3	11%	Poor			
	3	8	29%	Fair			
	4	12	43%	Good			
	5	5	18%	Very Good			
SWRSB Total		28					
Grand Total		213					
Summary							
	AVRSB	CBV RSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
Very Poor	7%					8%	
Poor	11%	8%	9%		12%	8%	11%
Fair	30%	38%	26%	33%	26%	21%	29%
Good	26%	50%	54%	67%	52%	50%	43%
Very Good	26%	4%	11%		10%	13%	18%

3. I feel that the math curriculim at my grade level adequately prepares students to proceed to the next level.								
Count of Adequately_Prepares_Students								
School_Board	Adequately_Prepares_Students	Total						
3	3	1						
3 Total		1						
AVRSB	1	3	11%	Strongly Disagree				
	2	4	15%	Disagree				
	3	7	26%	Neither Disagree or Agree				
	4	10	37%	Agree				
	5	3	11%	Strongly Agree				
AVRSB Total		27						
CBVRSB	1	3	12%	Strongly Disagree				
	2	4	15%	Disagree				
	3	5	19%	Neither Disagree or Agree				
	4	14	54%	Agree				
CBVRSB Total		26						
CCRSB	2	6	13%	Disagree				
	3	11	24%	Neither Disagree or Agree				
	4	25	54%	Agree				
	5	4	9%	Strongly Agree				
CCRSB Total		46						
CSAP	3	1	33%	Neither Disagree or Agree				
	4	2	67%	Agree				
CSAP Total		3						
HRSB	1	1	2%	Strongly Disagree				
	2	7	12%	Disagree				
	3	13	22%	Neither Disagree or Agree				
	4	32	55%	Agree				
	5	5	9%	Strongly Agree				
HRSB Total		58						
SRSB	1	2	8%	Strongly Disagree				
	2	4	17%	Disagree				
	3	3	13%	Neither Disagree or Agree				
	4	13	54%	Agree				
	5	2	8%	Strongly Agree				
SRSB Total		24						
SWRSB	1	1	4%	Strongly Disagree				
	2	2	7%	Disagree				
	3	9	32%	Neither Disagree or Agree				
	4	14	50%	Agree				

	5	2	7%	Strongly Agree				
SWRSB Total		28						
Grand Total		213						
Summary								
		AVR SB	CBVRSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
	Strongly Disagree	11%	12%	0%		2%	8%	4%
	Disagree	15%	15%	13%		12%	17%	7%
	Neither Disagree or Agree	26%	19%	24%	33%	22%	13%	32%
	Agree	37%	54%	54%	67%	55%	54%	50%
	Strongly Agree	11%	0%	9%		9%	8%	7%

4. Rate the usefulness and quality of the curriculum guide.							
Count of Usefuleness_Quality							
School_Board	Usefuleness_Quality	Total					
3	4	1					
3 Total		1					
AVRSB	2	3	11%	Poor			
	3	11	41%	Fair			
	4	7	26%	Good			
	5	6	22%	Very Good			
AVRSB Total		27					
CBVRSB	2	4	15%	Poor			
	3	8	31%	Fair			
	4	7	27%	Good			
	5	7	27%	Very Good			
CBVRSB Total		26					
CCRSB	2	5	11%	Poor			
	3	12	26%	Fair			
	4	19	41%	Good			
	5	10	22%	Very Good			
CCRSB Total		46					
CSAP	3	1	33%	Fair			
	4	2	67%	Good			
CSAP Total		3					
HRSB	1	1	2%	Very Poor			
	2	5	9%	Poor			
	3	11	19%	Fair			
	4	26	45%	Good			
	5	15	26%	Very Good			
HRSB Total		58					
SRSB	2	2	8%	Poor			
	3	5	21%	Fair			
	4	12	50%	Good			
	5	5	21%	Very Good			
SRSB Total		24					
SWRSB	2	1	4%	Poor			
	3	9	32%	Fair			
	4	11	39%	Good			

	5	7	25%	Very Good			
SWRSB Total		28					
Grand Total		213					
Summary							
	AVRSB	CBV RSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
Very Poor	11%	15%	0%	0%	2%	8%	0%
Poor	41%	31%	11%	0%	9%	21%	4%
Fair	26%	27%	26%	33%	19%	50%	32%
Good	22%	27%	41%	67%	45%	21%	39%
Very Good	0%	0%	22%	0%	26%	0%	25%

5. I have access to the resources necessary to meet the outcomes at my grade level.							
Count of Access_to_Resources							
School_Board	Access_to_Resources	Total					
3	4	1					
3 Total		1					
AVRSB	1	2	7%	Strongly Disagree			
	2	7	26%	Disagree			
	3	1	4%	Neither Disagree or Agree			
	4	12	44%	Agree			
	5	5	19%	Strongly Agree			
AVRSB Total		27					
CBVRSB	1	1	4%	Strongly Disagree			
	2	4	15%	Disagree			
	3	5	19%	Neither Disagree or Agree			
	4	8	31%	Agree			
	5	8	31%	Strongly Agree			
CBVRSB Total		26					
CCRSB	1	1	2%	Strongly Disagree			
	2	9	20%	Disagree			
	3	12	26%	Neither Disagree or Agree			
	4	18	39%	Agree			
	5	6	13%	Strongly Agree			
CCRSB Total		46					
CSAP	1	1	33%	Strongly Disagree			
	3	1	33%	Neither Disagree or Agree			
	5	1	33%	Strongly Agree			
CSAP Total		3					
HRSB	1	2	3%	Strongly Disagree			
	2	10	17%	Disagree			
	3	9	16%	Neither Disagree or Agree			
	4	29	50%	Agree			
	5	8	14%	Strongly Agree			
HRSB Total		58					
SRSB	2	4	17%	Disagree			
	3	2	8%	Neither Disagree or Agree			
	4	17	71%	Agree			
	5	1	4%	Strongly Agree			

SRSB Total		24					
SWRSB	2	7	25%	Disagree			
	3	4	14%	Neither Disagree or Agree			
	4	13	46%	Agree			
	5	4	14%	Strongly Agree			
SWRSB Total		28					
Grand Total		213					

Summary							
	AVRSB	CBV RSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
Strongly Disagree	7%	4%	2%	33%	3%	0%	0%
Disagree	26%	15%	20%	0%	17%	17%	25%
Neither Disagree or Agree	4%	19%	26%	33%	16%	8%	14%
Agree	44%	31%	39%	0%	50%	71%	46%
Strongly Agree	19%	31%	13%	33%	14%	4%	14%

6. I have enough instructional time to cover the outcomes listed in my guide.							
Count of Instructional_Time							
School_Board	Instructional_Time	Total					
3	4	1					
3 Total		1					
AVRSB	1	12	44%	Strongly Disagree			
	2	9	33%	Disagree			
	3	3	11%	Neither Disagree or Agree			
	4	3	11%	Agree			
AVRSB Total		27					
CBVRSB	1	5	19%	Strongly Disagree			
	2	8	31%	Disagree			
	3	3	12%	Neither Disagree or Agree			
	4	9	35%	Agree			
	5	1	4%	Strongly Agree			
CBVRSB Total		26					
CCRSB	1	13	28%	Strongly Disagree			
	2	20	43%	Disagree			
	3	5	11%	Neither Disagree or Agree			
	4	8	17%	Agree			
CCRSB Total		46					
CSAP	2	2	67%	Disagree			
	3	1	33%	Neither Disagree or Agree			
CSAP Total		3					
HRSB	1	12	21%	Strongly Disagree			
	2	21	36%	Disagree			
	3	7	12%	Neither Disagree or Agree			
	4	16	28%	Agree			
	5	2	3%	Strongly Agree			
HRSB Total		58					
SRSB	1	5	21%	Strongly Disagree			
	2	11	46%	Disagree			
	3	2	8%	Neither Disagree or Agree			
	4	6	25%	Agree			
SRSB Total		24					
SWRSB	1	6	21%	Strongly Disagree			

	2	16	57%	Disagree			
	3	2	7%	Neither Disagree or Agree			
	4	4	14%	Agree			
SWRSB Total		28					
Grand Total		213					
Summary							
	AVRSB	CBV RSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
Strongly Disagree	44%	19%	28%	0	21%	21%	21%
Disagree	33%	31%	43%	67%	36%	46%	57%
Neither Disagree or Agree	11%	12%	11%	33%	12%	8%	7%
Agree	11%	35%	17%	0%	28%	25%	14%
Strongly Agree	0%	4%	0%	0%	3%	0%	0%

7.a) How many hours of in-servicing would you expect to reveive in the first year of implementing a new curriculum?							
Count of Inservice_Expected							
School_Board	Inservice_Expected	Total					
3	b) 6 - 10	1					
3 Total		1					
AVRSB	a) 0 - 5	1	4%				
	b) 6 - 10	5	19%				
	c) 11 - 15	3	11%				
	d) 16 - 20	7	26%				
	e) More than 20	11	41%				
AVRSB Total		27					
CBVRSB	a) 0 - 5	3	12%				
	b) 6 - 10	3	12%				
	c) 11 - 15	9	35%				
	d) 16 - 20	5	19%				
	e) More than 20	6	23%				
CBVRSB Total		26					
CCRSB	a) 0 - 5	2	4%				
	b) 6 - 10	6	13%				
	c) 11 - 15	12	26%				
	d) 16 - 20	17	37%				
	e) More than 20	9	20%				
CCRSB Total		46					
CSAP	a) 0 - 5	1	33%				
	b) 6 - 10	1	33%				
	e) More than 20	1	33%				
CSAP Total		3					
HRSB	a) 0 - 5	5	9%				
	b) 6 - 10	15	26%				
	c) 11 - 15	15	26%				
	d) 16 - 20	11	19%				
	e) More than 20	12	21%				
HRSB Total		58					
SRSB	a) 0 - 5	4	17%				
	c) 11 - 15	10	42%				
	d) 16 - 20	3	13%				
	e) More than 20	7	29%				
SRSB Total		24					

SWRSB	a) 0 - 5	2	7%				
	b) 6 - 10	8	29%				
	c) 11 - 15	3	11%				
	d) 16 - 20	7	25%				
	e) More than 20	8	29%				
SWRSB Total		28					
Grand Total		213					
Summary							
	AVRSB	CBVRSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
a) 0 – 5	4%	12%	4%	33%	9%	17%	7%
b) 6 – 10	19%	12%	13%	33%	26%	42%	29%
c) 11 – 15	11%	35%	26%		26%	13%	11%
d) 16 – 20	26%	19%	37%		19%	29%	25%
e) More than 20	41%	23%	20%	33%	21%	0%	29%

7. b) How many hours of in-servicing have you received in implementing the math curriculum?							
Count of Inservice_Received							
School_Board	Inservice_Received	Total					
3	a) 0 - 5	1					
3 Total		1					
AVRSB	a) 0 - 5	6	22%				
	b) 6 - 10	5	19%				
	c) 11 - 15	5	19%				
	d) 16 - 20	3	11%				
	e) More than 20	8	30%				
AVRSB Total		27					
CBVRSB	a) 0 - 5	11	42%				
	b) 6 - 10	9	35%				
	d) 16 - 20	4	15%				
	e) More than 20	2	8%				
CBVRSB Total		26					
CCRSB	a) 0 - 5	14	31%				
	b) 6 - 10	11	24%				
	c) 11 - 15	9	20%				
	d) 16 - 20	4	9%				
	e) More than 20	7	16%				
	(blank)						
CCRSB Total		45					
CSAP	a) 0 - 5	2	67%				
	b) 6 - 10	1	33%				
CSAP Total		3					
HRSB	a) 0 - 5	21	37%				
	b) 6 - 10	14	25%				
	c) 11 - 15	2	4%				
	d) 16 - 20	10	18%				
	e) More than 20	10	18%				
	(blank)		0%				
HRSB Total		57					
SRSB	a) 0 - 5	9	38%				
	b) 6 - 10	1	4%				
	c) 11 - 15	4	17%				
	d) 16 - 20	5	21%				
	e) More than 20	5	21%				

SRSB Total		24					
SWRSB	a) 0 - 5	10	36%				
	b) 6 - 10	11	39%				
	c) 11 - 15	3	11%				
	e) More than 20	4	14%				
SWRSB Total		28					
Grand Total		211					

Summary							
	AVRSB	CBV RSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
a) 0 – 5	22%	42%	31%	67%	37%	38%	36%
b) 6 – 10	19%	35%	24%	33%	25%	4%	39%
c) 11 - 15	19%	15%	20%		4%	17%	11%
d) 16 - 20	11%	8%	9%		18%	21%	
e) More than 20	30%	0%	16%		18%	21%	14%

8. Rate the degree of board support in the implementation of the math curriculum since the introduction of the guide at your level.

Count of Board_Support							
School_Board	Board_Support	Total					
3	3	1					
3 Total		1					
AVRSB	2	5	19%	Poor			
	3	5	19%	Fair			
	4	14	52%	Good			
	5	3	11%	Very Good			
AVRSB Total		27					
CBVRSB	1	1	4%	Very Poor			
	2	3	12%	Poor			
	3	10	38%	Fair			
	4	9	35%	Good			
	5	3	12%	Very Good			
CBVRSB Total		26					
CCRSB	1	1	2%	Very Poor			
	2	3	7%	Poor			
	3	19	41%	Fair			
	4	19	41%	Good			
	5	4	9%	Very Good			
CCRSB Total		46					
CSAP	3	2	67%	Fair			
	4	1	33%	Good			
CSAP Total		3					
HRSB	1	4	7%	Very Poor			
	2	8	14%	Poor			
	3	29	50%	Fair			
	4	15	26%	Good			
	5	2	3%	Very Good			
HRSB Total		58					
SRSB	3	6	25%	Fair			
	4	14	58%	Good			
	5	4	17%	Very Good			
SRSB Total		24					
SWRSB	1	1	4%	Very Poor			

	2	6	21%	Poor			
	3	16	57%	Fair			
	4	4	14%	Good			
	5	1	4%	Very Good			
SWRSB Total		28					
Grand Total		213					
Summary							
	AVRSB	CBV RSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
Very Poor	0%	4%	2%		7%	0%	4%
Poor	19%	12%	7%		14%	0%	21%
Fair	19%	38%	41%	67%	50%	25%	57%
Good	52%	35%	41%	33%	26%	58%	14%
Very Good	11%	12%	9%		3%	17%	4%

9. I am satisfied with the approach taken by the Department of Education in communicating implementation of the math curriculum.							
Count of DOE_Communication							
School_Board	DOE_Communication	Total					
3	1	1					
3 Total		1					
AVRSB	1	4	15%	Strongly Disagree			
	2	12	44%	Disagree			
	3	7	26%	Neither Disagree or Agree			
	4	3	11%	Agree			
	5	1	4%	Strongly Agree			
AVRSB Total		27					
CBVRSB	1	1	4%	Strongly Disagree			
	2	7	27%	Disagree			
	3	11	42%	Neither Disagree or Agree			
	4	5	19%	Agree			
	5	2	8%	Strongly Agree			
CBVRSB Total		26					
CCRSB	1	6	13%	Strongly Disagree			
	2	14	30%	Disagree			
	3	12	26%	Neither Disagree or Agree			
	4	13	28%	Agree			
	5	1	2%	Strongly Agree			
CCRSB Total		46					
CSAP	2	1	33%	Disagree			
	3	1	33%	Neither Disagree or Agree			
	4	1	33%	Agree			
CSAP Total		3					
HRSB	1	3	5%	Strongly Disagree			
	2	24	41%	Disagree			
	3	21	36%	Neither Disagree or Agree			
	4	9	16%	Agree			
	5	1	2%	Strongly Agree			
HRSB Total		58					
SRSB	1	2	8%	Strongly Disagree			
	2	3	13%	Disagree			
	3	10	42%	Neither Disagree or Agree			
	4	9	38%	Agree			
SRSB Total		24					

SWRSB	1	4	14%	Strongly Disagree			
	2	10	36%	Disagree			
	3	7	25%	Neither Disagree or Agree			
	4	7	25%	Agree			
SWRSB Total		28					
Grand Total		213					
Summary							
	AVRSB	CBV RSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
Strongly Disagree	15%	4%	13%		5%	8%	14%
Disagree	44%	27%	30%	33%	41%	13%	36%
Neither Disagree or Agree	26%	42%	26%	33%	36%	42%	25%
Agree	11%	19%	28%	33%	16%	38%	25%
Strongly Agree	4%	8%	2%		2%	0%	0%

10. Recently the Department of Education has promoted the "Lead Teacher in each school" model for in-servicing math teachers in the new curriculum. Rate the effectiveness of this model.							
Count of Lead_Teacher_Model							
School_Board	Lead_Teacher_Model	Total					
3	0	1					
3 Total		1					
AVRSB	1	5	19%	Very Poor			
	2	3	11%	Poor			
	3	9	33%	Fair			
	4	7	26%	Good			
	5	3	11%	Very Good			
AVRSB Total		27					
CBVRSB	1	2	8%	Very Poor			
	2	6	23%	Poor			
	3	10	38%	Fair			
	4	4	15%	Good			
	5	4	15%	Very Good			
CBVRSB Total		26					
CCRSB	1	5	11%	Very Poor			
	2	11	24%	Poor			
	3	18	39%	Fair			
	4	10	22%	Good			
	5	2	4%	Very Good			
CCRSB Total		46					
CSAP	2	1	33%	Poor			
	3	2	67%	Fair			
CSAP Total		3					
HRSB	1	7	12%	Very Poor			
	2	24	41%	Poor			
	3	18	31%	Fair			
	4	8	14%	Good			
	5	1	2%	Very Good			
HRSB Total		58					
SRSB	1	5	21%	Very Poor			
	2	6	25%	Poor			
	3	7	29%	Fair			
	4	6	25%	Good			
SRSB Total		24					

SWRSB	1	6	21%	Very Poor			
	2	10	36%	Poor			
	3	5	18%	Fair			
	4	6	21%	Good			
	5	1	4%	Very Good			
SWRSB Total		28					
Grand Total		213					
Summary							
	AVRSB	CBV RSB	CCRSB	CSAP	HRSB	SRSB	SWRSB
Very Poor	19%	8%	11%		12%	21%	21%
Poor	11%	23%	24%	33%	41%	25%	36%
Fair	33%	38%	39%	67%	31%	29%	18%
Good	26%	15%	22%		14%	25%	21%
Very Good	11%	15%	4%		2%	0%	4%