

EDMONTON PUBLIC SCHOOLS

June 17, 2003

TO: Board of Trustees

FROM: A. McBeath, Superintendent of Schools

SUBJECT: Numeracy Pilot Proposal

ORIGINATOR: Bob Holt, Executive Director, Instructional and Curricular Support Services

RESOURCE

STAFF: Sandy Forster, Glen Haug, Carla Kozak, Bryan Quinn, Edgar Schmidt,  
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RECOMMENDATION

1. That the draft numeracy materials created by the district be piloted in at least ten district schools over the 2003-2004 school year.
2. That the district adopt the definition of numeracy approved in May 2003 by the Mathematics Council of the Alberta Teachers' Association, with the additional expectation that students become proficient in pencil and paper and mental calculation.

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**Background**

With the approval of the most recent mathematics curriculum came an increased emphasis on problem solving and oral and written articulation of problem solving strategies. While these practices develop excellent skills, there has been, in some cases, a decreased emphasis on developing proficiency in paper and pencil calculation.

The numeracy initiative is designed to ensure the expectation of paper and pencil calculation, and mental calculation with different number sets is retained in all math classrooms. The calculator, while a potentially valuable tool, is not to replace the need for students to develop facility in hand calculation, which is essential in building an appreciation for number relationships and number sense.

The district definition of numeracy thus defines numeracy as involving:

- proficiency in paper and pencil and mental math calculations and procedure strategies without depending on mechanical or electronic calculation aids
- communicating using the language of mathematics in a variety of forms
- using mathematics appropriately in a variety of contexts
- connecting mathematics to the real world
- appreciating mathematics
- analyzing and evaluating mathematical thinking
- being conscious of what has been learned

The last five bullets of the above definition of numeracy have been adopted by the Mathematics Council of the Alberta Teachers' Association (MCATA). It is also noteworthy that the National Council of Teachers of Mathematics document entitled **Principles and Standards for School Mathematics** states: "Computational fluency should develop in tandem with understanding of the role and meaning of arithmetic operations in number systems." (p. 32)

Facility with mental mathematics is an important outcome for students. A focus on mental mathematics forces students to think and improve their efficiency and accuracy in calculating, including pencil and paper calculations. "Mental mathematics is the cornerstone for estimation and leads to a better understanding of number concepts and number operations" (p. 6, **Mathematics K-6 Program of Studies, Alberta Learning, 1997**). While remaining within these contexts, the definition of numeracy in Edmonton Public Schools specifically includes functional arithmetic skills and related mathematical reasoning. The district aims to insure that students become proficient in pencil and paper and mental math calculations and procedural strategies, without depending on calculator use.

In June of 2001 the Curriculum Unit was asked to begin work on a numeracy initiative for Edmonton Public Schools. There were three expectations:

1. Establish a set of expectations for Edmonton Public Schools' students (kindergarten through grade 9) in terms of arithmetic procedural proficiency, within the context of the Alberta Mathematics curriculum.
2. Facilitate the development of arithmetic resources and assessment tools for teachers and students in kindergarten through grade 9, that may complement the district resource **Math to the Max**.
3. Develop an implementation strategy to enable students and teachers in classrooms to expedite the thorough learning of arithmetic skills and procedures.

Expectations 1 and 2 were completed in the 2001-2002 school year. A core committee of educators created the following draft resources for numeracy:

- A Scope and Sequence of numeracy skills for K-9
- Illustrative Examples for each numeracy skill identified in the Scope and Sequence document, for K-9, titled **Math to the Max INC** (Incorporating Numeracy Concepts)
- A Glossary of Terms related to numeracy
- An index of numeracy activities in the resource **Math to the Max** (grades 1-6)

In partial completion of expectation 3, during the 2002-2003 school year these materials were used by Winterburn School, whose instructional focus was "numeracy". As the grade level materials became available from Resource Development Services, each of the grades received and used some of the material. In May of this year, staff met with the project team from Central Services to report their thoughts on the numeracy resources.

The result of the May 2003 discussion with Winterburn school staff and with district mathematics consultants determined support for a one-year pilot of the materials, with district support for print materials and consultant support, for about ten schools. The pilot should provide sufficient information for district wide implementation in the 2004-2005 school year. Beginning in September 2003, participating schools would each be asked to pilot a portion or portions of the materials, while insuring that all portions of the numeracy materials are

piloted in the district. A consultative process would be implemented throughout the school year, to receive feedback from schools related to the effectiveness of the resources and strategies in increasing the teaching of numeracy skills and improving student achievement in numeracy.

Feedback from piloting teachers will be collected, analyzed and used to amend the draft documents, to enable inservicing of district staff to occur in the 2004-2005 school year, with full implementation in September 2005.

Complete copies of the draft support resources for numeracy are available in the Trustees' Reading Room.

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