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Mathematics Council NEWSLETTER

The Alberta Teachers' Association

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June 1992

From the Editor

I attended the NCTM Regional held in Eugene, Oregon, March 19-21, 1992. While there, I clipped this March 20, 1992, article by NCTM president Iris Carl from the Eugene Register Guard. It provides excellent food for thought and numerous ideas for improving student achievement in mathematics.

Changing Math from Rote to Reasoning

Iris Carl

Mathematics is important in every aspect of our lives today, but few Americans understand mathematics or feel confident using math.

When I tell people I am a mathematics teacher, I am treated as if I am an auditor for the IRS. People think I might ask them for the quadratic formula, and they are sure they have forgotten it.

Standards set by the National Council of Teachers of Mathematics, now being implemented in classrooms throughout Oregon and the nation, are designed to make mathematics more user-friendly. Only when young people gain confidence in their ability to use and understand mathematics will they value what they learn and achieve at world-class levels.

Already 34 states have changed or are in the process of revising their curricular frameworks to meet the NCTM standards. This week, more than 3,000 mathematics educators are in Eugene to discuss these guidelines, designed to bring about changes in what mathematics is taught in each grade and how a bold new vision for mathematics teaching and learning can be implemented in every grade and in every classroom.

The NCTM standards seek to shift mathematics study away from memorization and rote computation and toward rigorous problem solving. This shift is needed for several reasons:

* The United States is the only industrialized nation in the world that teaches arithmetic for eight years. The overemphasis on computation takes precious classroom time away from learning more complex subject matter and from actu-

ally applying mathematics. In a sense, we are forcing students to learn to add and subtract progressively larger numbers, rather than exposing them to mathematical thinking and problem solving.

- * Research and the practical experience of the nation's mathematics teachers indicate that students who are exposed to complex mathematical problems at earlier ages are more interested in mathematics and achieve at higher levels than young people who learn mathematics through more traditional rote methods.
- * The real world outside the classroom requires that students know significantly more mathematics than ever before. Today, three quarters of new jobs require proficiency in geometry and algebra, and most jobs require a familiarity with using advanced technology.

In the words of Governor Barbara Roberts, one of the first governors to endorse the NCTM standards, "Students must see math not as an academic exercise but as a skill that they can use and that they will need . . . as parents, as citizens and as productive workers. The council's professional standards should be a tool for the U.S. as it prepares to meet the challenges of the 21st century."

The changes being made in the classroom will not be effective without changes in public attitudes. Parents need to understand that when we ask students to estimate the costs of transporting a football team and various numbers of boosters to a championship game or use calculators to solve real-world problems, we are not shortchanging students on basic skills. The thinking process required in estimation is a key part of developing higher levels of mathematics thinking that are not only part of algebra and trigonometry but also of architecture, art and science. The use of calculators allows students to become more adventurous in the problems they solve. For example, students can use calculators to crunch the numbers necessary to determine how much material will be required to build a bridge or a housing development or determine the pounds of beef needed to make the hamburgers served in the school cafeteria. In many circumstances, pencil and paper computation is too cumbersome and time-consuming.

You can help support mathematics education and improve children's achievement in mathematics by

- * promoting home activities that support mathematics learning, such as exposing young people to mathematical games or puzzles and the uses of mathematics in the home;
- * setting aside study time for your child to do homework and checking the homework;
- * challenging myths about mathematics, such as the all-too-familiar parents' saying, "I never could do math, so I know you won't be able to either!";
- * encouraging young people to value mathematics by offering them real-world examples of how mathematics is used in their lives every day;

- * inviting mathematics teachers and students into your workplace to discuss with them important applications of mathematics on the job and new uses of technology; and
- * recognizing that there are new ways of teaching and learning mathematics being developed by mathematics teachers that can yield the results we all want for our children.

With your help, we can move our entire education system closer to developing the mathematical reasoning, problem solving and thinking skills young people will need to survive—and thrive—in an increasingly complex and technology-oriented world.

Thought for the Day

Most widely used in school is the thinking required to solve problems for which there are definite answers. Although thinking of this kind is fairly well taught in the schools in mathematics, science and grammar, the answer itself or its form is too often more important than the logical steps to obtain it, thus downgrading the thought processes. Much less a part of most school programs is thinking that leads to ideas about problems for which there are not definite or right answers. We need thinking leading into inquiry about political, social, economic and even academic problems for which there are at best a series of alternatives, none perfect but some, we hope, better than others.

--William Glasser
Schools Without Failure, 1969

Constitution Revisions

The MCATA constitution is being revised. Please study the proposed draft and be prepared to vote on it at the AGM, which will be held in conjunction with the annual conference in Medicine Hat, November 5-7, 1992.

Constitution of the Mathematics Council The Alberta Teachers' Association

1. Name: The name of this organization shall be Mathematics Council of The Alberta Teachers' Association (MCATA).
2. Object: The object of MCATA shall be to promote and enhance the teaching of mathematics in the province of Alberta.
3. Membership:
 - a. Regular - Members of The Alberta Teachers' Association (ATA), as specified in ATA bylaws, are eligible for regular membership in this council. All such members shall be entitled to full privileges of council membership including the rights to vote and to hold office.

- b. Affiliate - Persons who are not ATA members as specified in ATA bylaws may join MCATA as affiliate members. Such members may receive all the benefits and services of MCATA membership except the rights to vote and to hold office.
 - c. Student - Student members of the ATA may join MCATA and shall be entitled to all benefits and services of council membership except the right to hold office.
 - d. Life - A life membership may be awarded to a person who has made an exceptional contribution in the field of mathematics. If awarded, a life membership shall be presented at an annual conference of MCATA.
 - e. Honorary - An honorary membership may be awarded to an individual in recognition of outstanding contributions to education, mathematics, citizenship or humanity. If awarded, an honorary membership shall be presented at an annual conference of MCATA.
4. Subscription Service: MCATA publications shall be available to interested organizations at an annual rate larger than the fee for regular membership.
 5. Fees: Membership fees shall be established by resolution at the annual general meeting (AGM) of MCATA.
 6. Finances: The executive committee of MCATA shall have power to collect fees and to make expenditures. A financial statement shall be submitted to an AGM.
 7. Reporting Activities: MCATA shall submit annually, not later than October 15, an audited financial statement, a statement of assets and liabilities, an annual report of program and activities and a copy of MCATA's current constitution.
 8. Officers: The officers of MCATA shall consist of
 - a. a president, who shall be elected for a two-year term of office, such term to begin on July 1 and terminate on June 30 of the second year following. A president shall not hold office for more than two consecutive terms but may be reelected following intervening term(s);
 - b. two vice presidents, a secretary and treasurer to be elected annually;
 - c. a past president; and
 - d. an ATA executive assistant appointed by Provincial Executive Council (PEC).
 9. Executive Committee: The executive committee shall be the executive and administrative body of MCATA and shall consist of the officers and the following members:
 - a. One member of PEC appointed by PEC
 - b. No more than six directors
 - c. A representative of each of the following:
 - i) The Department of Education
 - ii) An Alberta university Faculty of Education
 - iii) An Alberta university Department of Mathematics
 - iv) An Alberta college or technical institution

10. Committees: The executive committee may appoint from time to time such committees as are necessary to carry out the work of MCATA.
11. Liaison: Any representation that MCATA wishes to make with any organization, government department or other agency shall be conducted through PEC.
12. Regional Councils: The executive committee shall encourage the formation of regional councils and shall have authority to grant recognition to, establish boundaries of and develop regulations which are not inconsistent with this constitution or the policies of the ATA for governing the organization and operation of such regional councils.
13. Meetings:
 - a. Officers shall meet as required at the call of the president.
 - b. Executive: The executive committee shall meet at least twice each year and shall conduct the affairs of MCATA between AGMs.
 - c. General: MCATA shall hold an AGM, chaired by the president of the previous year, the agenda of which shall provide the following:
 - i) Adoption of minutes from the previous AGM and any special general meetings held in the interim
 - ii) The annual report of the president
 - iii) The annual report of the treasurer
 - iv) Receiving of committee reports
 - v) An audited financial statement for the preceding fiscal year
 - vi) An annual budget
 - vii) Revisions to the fees for membership in MCATA for which the required notice of motion has been given
 - viii) Amendments to the constitution for which the required notice of motion has been given
 - ix) Other business
14. National/International Organization: After three (3) months' notice of motion, MCATA may, by a majority vote of those present at an AGM and subject to approval by PEC
 - a. join or affiliate with a national or international organization representing the same special interest; or
 - b. cancel its membership or affiliation with a national or international organization.
15. Amendments: After three (3) months' notice of motion to the membership of MCATA, this constitution may be amended by a two-thirds (2/3) vote of the members present at the AGM of MCATA subject to the ratification of PEC.
16. Dissolution: In the event of dissolution of MCATA, all assets will be turned over to the ATA.



Wanted: Ideas that Work!

We're looking for teachers who have hands-on math ideas to share at the MCATA annual conference in Medicine Hat November 5-7, 1992. Maximum allotted time is 30 minutes. Possible topics include:

- * games (purchased or made) that teach,
- * learning through manipulatives,
- * inexpensive manipulatives,
- * routines for manipulatives management and/or storage and,
- * especially, hands-on ideas for secondary math.

Phone or write Susan Schneider, Margaret Wooding School, Box 190, Redcliff TOJ 2P0; phone 548-7516 (bus.)

Modern Language Council Annual Conference

The Modern Language Council of The Alberta Teachers' Association
will hold its 1992 Conference
at the Chateau Airport Hotel in Calgary October 2-4, 1992.
Theme: Language, Passport to Understanding
Keynote Speaker: Elizabeth Marshall, Office of the Commissioner
of Official Languages

For further information, contact Donna Waraksa, 3304 Oakwood Drive SW, Calgary T2V 0J9; phone 248-1711 (bus.), 281-4733 (res.).

From the President's Pen

Bob Hart

As you read this newsletter, it will be very close to the end of another school year. I wish you a relaxing and enjoyable summer.

The executive has had a very successful year. We have all worked hard to help our members meet the changing needs of the mathematics curriculum. A special thank-you to Louise Frame and John Percevault who are leaving the executive at the end of this year.

Three successful mini-conferences were held in Calgary, with participants driving in from Banff, Airdrie and Drumheller. Teachers are becoming aware of the benefits of such inservice evenings. Plan now to attend the sessions in your area (Lloydminster, Edmonton, Calgary, Red Deer and Drumheller) next year.

Pass this newsletter on to a colleague. We need to continue to inform our fellow teachers of the exciting trends in mathematics education and to encourage them to become involved.

Again, have a great summer, and I shall see you in Medicine Hat in November at the annual conference.

Guidelines for Authors

All educators involved in mathematics education may submit articles for MCATA publication in this newsletter, the delta-K journal and monographs.

Articles relating to teaching; current issues, trends or concerns; curriculum considerations; research and other issues of mathematics education are welcome. Each journal has a theme, although other articles are included. Monographs contain articles related to one topic. Articles are reviewed by the appropriate editor and may also be reviewed by the publications board.

Manuscripts

1. Manuscripts should be typed on 22 cm x 28 cm (8.5" x 11") paper, double-spaced and submitted in duplicate.
2. Articles should be no less than 500 words and preferably 1,500-2,000 words.
3. The style for citations and bibliographies should follow The Chicago Manual of Style.
4. Photographs must be black and white.
5. Include a short byline about the author(s). Pertinent information may include educational institution, position, degree(s) and granting institution(s), contributions to mathematics education, curricular interests, address and phone number.

MCATA Publication Policy

The MCATA Publications Board, consisting of the publications director and editors, reserves the right to

1. accept manuscripts for publication in either delta-K, a monograph or both;
2. revise or ask for a revision. In the event of extensive revisions by an editor, the author will receive a copy of the revisions. The author will be responsible for authorizing the revisions;
3. reject a manuscript. In this event, the manuscript will be returned;
4. pay a \$50 preparation fee for papers presented at MCATA functions.

Notes:

1. The ATA states with respect to the right to use or reproduce a publication: "Permission to use or reproduce any part of this publication for classroom purposes, except for articles published with permission of the author and noted as 'not for reproduction,' is hereby granted."
2. A copy of the publication will be sent to each author whose manuscript is published. If additional copies are required, notify the editor.

Annual Meeting

Nashville NCTM 70th Annual Meeting

Diana Congdon

The conference was exciting and almost overwhelming, with hundreds of session choices. NCTM Standards were the topic of many small- and large-group sessions.

The delegate assembly focused on four resolutions. The following three were carried as amended:

- 3.0. 92 That the Board of Directors of NCTM create a Technology in Mathematics Education Committee.
- 4.0. 92 That NCTM establish a task force to collaborate with universities and colleges regarding experiences teachers-in-training should have in both mathematics concepts and mathematics teaching methods.
- 6.0. 92 That NCTM will create a discussion forum on a national electronic bulletin board available to all teachers at a minimal cost.

The resolution from the Quebec Association of Mathematics Teachers was denied:

- 3.M. 92 That NCTM take the leadership in establishing standards for the minimum math content to be mastered by a student in order to qualify for a high school diploma.

I listened to speakers on topics as practical as developing number sense and as lofty as "Piaget, Behaviorism and Developmentally Appropriate Curriculum" and also heard the outgoing and incoming NCTM presidents speak. Despite the extensive program offerings, sessions were overcrowded. However, I now have new goals and practices for my mathematics classes--what better testimony to a successful conference?! Thank you for your support in allowing me to attend the NCTM 70th annual meeting.

Development of a Parent Information Brochure Project Proposal

Florence Glanfield

Purpose

With the recent changes in curriculum and attitudes that the NCTM has published in Curriculum and Evaluation Standards and Professional Teaching Standards, parents need to be informed of the changes happening in Alberta mathematics classrooms, such as the role of writing; use of calculators, computers and manipulatives; and differences in assessment. Parents will be the biggest supporters for teachers implementing these approaches in their classrooms--as long as they are aware that these approaches are good for their children.

Project Description

The project will result in separate guides for elementary, junior high and senior high parents. The guides will be designed as brochures so that teachers can photocopy the document in years to come. Schools and teachers can make as many copies of the brochure as necessary.

The project will be a joint effort between MCATA and Alberta Education. Alberta Education will collect and organize the data, provide editorial and graphic design support and present camera-ready material for approval by MCATA. MCATA will produce and distribute the material.

Costs to MCATA

The only cost to MCATA will be printing and distributing materials to the mathematics contact person in each school.

Brochure Content

The proposed content is questions and answers to parents' concerns, collected from meetings with parent advisory councils in elementary, junior high and senior high schools. The following are a sample of such concerns:

Evaluation

- * How will children be evaluated using the manipulative method?
- * When will results be realized for success or failure of this process?
- * How is this going to be tested?
- * What about the time it will take when it comes to testing?

Specific Content

- * How can I help my child to understand multiplication?
- * How can I help my child when I don't know metric very well?
- * What skills are learned at each grade level (for example, addition and subtraction)?

Where Does This Lead?

- * How far will this be used? To what grade? Does this concept carry into algebra and geometry?

Other Concerns

- * Can parents be taught to reinforce concepts at home?
- * How will it be related to the real world (age-appropriate) to make it valuable to children?
- * Will continual information be given to parents, for example, regarding concepts?
- * When and where will calculators be used?

If you have ideas that you would like to see included in the brochure, send them to Florence Glanfield, Student Evaluation Branch, Alberta Education, 11160 Jasper Avenue, Edmonton T5K 0L2.

ICME-7 Update

Facts and Figures

Registration for the seventh International Congress on Mathematical Education (ICME-7) in Quebec City from August 17-23, 1992, is proceeding as expected. At the end of March, over 1,500 people were registered from 59 countries. In addition, 400 non-teaching guests will be accompanying these registrants. Our projection for 3,500 registrants from 75 countries is well on the way to being achieved. The top 5 countries for attendance are USA - 377, Canada - 232, Great Britain - 136, Japan - 119 and Australia - 102.

Campus residences have been the most popular form of housing with over 700 rooms already reserved.

ICME-7 registrants are entitled to one of six full-day excursions as part of the registration package. The whale-watching cruise on the St. Lawrence has been most popular.

Reminders and Deadlines

The official air carrier is Air Canada. Call 1-800-361-7585; ask for the ICME-7 conference rate, code CY920017.

Budget is the official car rental agency. Call 1-800-268-8900; ask for the ICME-7 conference rate, code VAR4/ICME.

Preregistration deadline is June 15, 1992.

The deadline to request accommodation is July 1, 1992.



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Teaching the New Senior High School Program

Dates: August 17 to 20, 1992
Workshop Times: 8:30 a.m. to 4:00 p.m.
Place: 934a Education South, University of Alberta
Cost: \$200, includes course fee, GST and materials
Registration Date: Workshop needs 15 registrants by June 15, 1992. Participants will be advised on this date if the workshop is not running.

Workshop Description

The focus of the workshop will be the new senior high school math program centring on several items of interest:

1. Teaching methods—especially teaching with meaning, manipulatives and the role of applications
2. Problem solving as a curriculum goal and teaching method
3. Specific recent provincial curriculum changes
4. Teaching topics such as statistics, trigonometry, conics and combinatorics
5. The graphing calculator and general computer technology
6. Effective teaching techniques, cooperative learning ideas
7. Student assessment

Note: This is a noncredit course. Credit arrangements may be possible.

Workshop Leaders

Sol E. Sigurdson, U of A—Teaching high school mathematics, assessment
Ron Blond, Edmonton Public Schools—Conics
Bruce Kabaroff, Edmonton Public Schools—Effective teaching, content topics
Elizabeth Mowat, Edmonton Public Schools—Statistics, writing in mathematics

Teachers requiring residence should contact Housing and Food Services at Lister Hall, University of Alberta; phone 492-4281, Fax 492-7032.

Registration Form

Name: _____

School: _____

School Address: _____ Phone: _____

Home Address: _____ Phone: _____

Send this form with the \$200 workshop fee to Math Teaching Associates as above.