

EDUCATION 489-4 ADVANCED DESIGNS FOR LEARNING, MATHEMATICS

SUMMER SESSION

INSTRUCTOR: John V. Trivett

TIME: Tuesday & Friday, 8:30 - 12:30

Education 475-4, Designs for Learning, Mathematics is a pre-requisite for the taking of this new course, Education 489. The earlier course introduces an approach to the learning and teaching of mathematics at any grade based upon the best known principles of children's learning, communication of the subject and management within classrooms, a close correspondence to the provincial curriculum guide and a practical integration of mathematics with what is done in other subjects.

Because the majority of participants begin with the need to change their poor attitude to mathematics, Education 475 necessarily for one course, has an objective of first changing those attitudes and second of studying, designing and implementing a very few units of classroom practice.

THIS NEW COURSE, Education 489, is offered for those who have been practising what they learned in Education 475. It aims at advancing their work with the advantage that the substance and practice of mathematics teaching can now become the emphasis since the old attitudes have been transformed.

Objectives of Education 489 include:

- a) the understandings, design and implementation of a curriculum of mathematics teaching and learning, for at least one complete school year, not only for one grade but which has continuity across several.
- b) doing so synergetically, because of the substitution of "algebraic" and powerful dynamic methods in place of the traditional drills, reviews and reliance on memorization.
- c) integration of the mathematical basics with other disciplines, especially in relation to language
- d) a better understanding of how to change mathematics at all grades in line with the well-documented recommendations of Canadian and other reports.

Topics will not be different from those required by curriculum guides, but the interpretations and practices will continue to be different from the traditional:

- 1) Arithmetic, approached practically from an "algebraic" standpoint;
- 2) Whole numbers and their operations, with computation seen as a language art;
- 3) Fractions, decimals, percentages, seen as forms of rational numbers, quite viable for elementary grade students;
- 4) Geometry, experienced dynamically;
- 5) Equation solving, but viewed as special cases of sentence transformations;
- 6) "Problems", treated as imaginative applications of most of the mathematics to commerce, money, measurement, etc.
- 7) The teacher's role, as one who has expertise in inviting students into activities which because of their very structure are most likely to cause awareness needed for the conquest of the mathematics;
- 8) Texts and materials, but books used as only one type of materials and augmented by concrete aids advocated in the B.C. math guide;
- 9) Mathematics as a subject, but treated as not separable from the integrated studies and behaviours of all students;

- 10) "Bright and slow students", but such simplistic divisions abolished, being replaced by concentration on the abilities all students have, provided by the evidence they show of their learning during the first 5 or 6 years of life.

Elementary and secondary teachers of arithmetic and/or mathematics are welcome. Requirements for successful passing of the course will include, for each participant:

- a) the selection of a specific spectrum of the mathematics curriculum for concentrated study;
- b) active participation in and between classes;
- c) preparation of a project detailing the design and implementation for their teaching of mathematics in their classroom for the school year, 1980-1981.

For further details, clarification or help please feel free to contact the instructor Professor John V. Trivett (4151 or 922-6683).

TEXTS:

REQUIRED:

TRIVETT, J.V., ... And So On (in mimeograph form available from the instructor), new designs for the learning and teaching of mathematics; currently in process of publication.

RECOMMENDED:

GATTEGNO, C., The Common Sense of Teaching Mathematics, Educational Solutions, New York, 1973 (QA 135.5G34)

KRULIK, S. A Mathematics Laboratory Handbook for Secondary Schools, Saunders Co., Toronto, 1972

NIMAN, J. & POSTMAN, R. Mathematics on the Geoboard, Cuisenaire Co., New Rochelle, New York, 1974

PETERSON, J. & HASHISAKI, J., Theory of Arithmetic, Wiley & Sons, Toronto, 1963

TRIVETT, J.V.; Games Children Play for Learning Mathematics, Cuisenaire Co. New Rochelle, New York, 1973 (50 QA 95 T75)

WEISSGLASS,; Exploring Elementary Mathematics, Freeman & Co., San Francisco, 1979