



The University of Southern Queensland

Course Specification

Description: The Emergent Numeracy of Young Children

Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
ECE	2016	18177	3, 2002	EXT	1.00	TWMBBA

Academic Group:	FOEDU
Academic Org:	FOE004
HECS Band:	1
ASCED Code:	070101

STAFFING

Examiner: Noel Geoghegan

Moderator: Deborah Geoghegan

RATIONALE

From infancy, children are actively engaged in developing concepts which allow the organisation and categorisation of information. Through interaction with the environment during everyday experiences, children construct and test their concepts which include mathematical thinking. It is important that adults (including parents and caregivers) who are influential in the early years of a child's life have an understanding of how young children develop mathematical knowledge so that appropriate experiences may be provided. Additionally, an awareness of the development of mathematical language, fundamental mathematical concepts and skills, and the sequence of the discipline knowledge of mathematics is necessary for teachers to plan effective learning opportunities for children.

SYNOPSIS

This course examines the development of mathematical concepts and skills in children from birth to eight years. Emphasis is given to the types of learning experiences which encourage the young child's exploration and development of the fundamental concepts, attitudes, and skills involved in emerging numeracy.

OBJECTIVES

On successful completion of this course students will be able to:

- Demonstrate an understanding of the teaching and learning theories associated with mathematical development in young children
- Apply such theories to the development of appropriate learning and assessment activities
- Explain the role of language in the teaching and learning mathematics
- Utilise appropriate mathematical language for teaching and learning mathematics

- Describe a range of learning environments and materials for young children which enhance mathematical learning
- Explain the importance of play in mathematical learning
- Describe mathematical learning opportunities which may be provided through structured and unstructured activities
- Critically evaluate various materials to assess their usefulness and relevance in mathematical experiences
- Identify the fundamental mathematical concepts, skills and attitudes which young children usually develop from birth to eight years
- Explain higher-level mathematical concepts which children may develop in early childhood
- Describe problem solving applications for young children which foster their mathematical learning
- Identify number skills developed by young children
- Employ ways to encourage parents in developing mathematical thinking in young children.

TOPICS

Description	Weighting (%)
1. The development of math concepts	15.00
2. The role of language in teaching and learning	15.00
3. The role of materials in developing mathematics thinking	10.00
4. Fundamental mathematical concepts, attitudes, and skills	10.00
5. Applications of fundamental concepts and skills	10.00
6. Mathematical learning through play	10.00
7. Sets and number symbol skills	5.00
8. Higher-level activities and concepts	10.00
9. Young children and problem solving	10.00
10. Parents and maths in the home	5.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at <http://bookshop.usq.edu.au> by entering the author or title of the text.

Charlesworth, R 2000, *Experiences in Math for Young Children*, 4th edition, Delmar/Thomson Learning, New York.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Australian Early Childhood Association. (1990). *Australian Journal of Early Childhood*, vol. 15, no. 1.

Baratta-Lorton, M. (1979). *Workjobs II: Number activities for early childhood*, Menlo Park, CA: Addison-Wesley Publishing Co.

Baratta-Lorton, M. (1995). *Mathematics their way*, Menlo Park, CA: Addison Wesley.

Bickmore-Brand, J. (Ed). (1990). *Language in mathematics*, Carlton South, VIC: Australian Reading Association.

Bredekamp, S. & Rosegrant, T. (Eds.). (1995). *Reaching potentials: Transforming early childhood curriculum and assessment.*, Vol. 2: Washington, DC: National Association for the Education of Youn.

Charlesworth, R. & Radeloff, D.J. (1991). *Experiences in math for young children*, (2nd ed.). Albany, NY: Delmar Publishers Inc.

Elliott, A. (1990). Computer-based mathematical experiences in an early intervention program. *Australian Journal of Early Childhood*, 15, (3), 37-45.

Fatouros, C., Downes, T. & Blackwell, S. (1994). *In control: Young children learning with computers*, Wentworth Falls, NSW: Social Science Press.

Fleer, M. (1989). *Jig saw puzzles*, Australian Early Childhood Association. Watson ACT.

Fleer, M. (ed) 1996, *Play Through the Profiles: Profiles Through Play*, Australian Early Childhood Association, Watson, ACT.

Fry, I 1992, *Rediscovering Unit Blocks*, Australian Early Childhood Association Inc, Watson, ACT.

Hawthorne, W 1992, *Young Children and Mathematics*, Australian Early Childhood Association Inc,

Labinowicz. (ed) 1985, *Learning from Children: New Beginnings for Teaching Numerical Thinking*, Addison-Wesley Publishing Company Inc, Menlo Park, CA.

Mannigel, D 1998, *Young Children as Mathematicians. Theory and Practice for Teaching Mathematics*, 2nd edition, Social Science Press, Katoomba, NSW.

Martin, R. & Wilkinson, L 1990, *The Language of Mathematics: A Teacher Resource Book*, 2nd edition, Martin International,

Morrow, J 1989, *Maths is Childsplay*, Longman Group UK Ltd, Essex.

Payne, J.N 1990, *Mathematics for the Young Child*, The National Council of Teachers of Math's Inc,

Perry, B. & Conroy, J 1994, *Early Childhood and Primary Mathematics: A Participative Text for Teachers*, Harcourt Brace, Sydney, NSW.

Phillips, J. L 1981, *Piaget's Theory: A Primer*, W.H. Freeman and Company, San Francisco.

Richardson, K 1997, *Math Time: The Learning Environment*, Educational Enrichment, Norman, OK.

Skinner, P 1990, *What's Your Problem?: Posing and Solving Mathematical Problems in Junior Classes*, Thomas Nelson Australia, South Melbourne, Vic.

Tertini, J 1995, *Mathematics for the Very Young: A Resource Book*, Martin Education, St Leonards, NSW.

Tertini, J 1989, *Maths Games To Make and Play*, Horwitz Grahame Pty Ltd, Sydney.

Thyer, D. & Maggs, J 1991, *Teaching Mathematics to Young Children*, 3rd edition, Cassell Educational Limited, London.

Welchman-Tischler, R 1992, *How to use Children's Literature to Teach Mathematics*, The National Council of Teacher of Mathematics, Reston, VA.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	45
Directed Study	80
Private Study	40

ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
EVALUATE MATHEQUIPMENT	40.00	40.00	Y	10 Jan 2003
DESIGN NUMERACY PROGRAM	60.00	60.00	Y	21 Feb 2003

OTHER REQUIREMENTS

- 1 When there is more than one marker for a single item of assessment, the distribution patterns and means for the different markers will be compared and marks adjusted if necessary.
 - 2 Marking criteria are provided in course material as mark sheets/guides or as part of assignment specifications.
 - 3 Summative assessment items will be given a numerical score.
 - 4 Course Grades will be calculated by aggregating the weighted result or numerical score for each summative assessment item.
 - 5 All assessment items must be submitted. Assessment items must be passed overall.
 - 6 If assignments are submitted after the due date without an approved extension of time, University penalties will apply.
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