

## Mathematics in the School Curriculum

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Which objectives should learners achieve in the curriculum area of mathematics? Which criteria need to be utilized to assist teachers in selecting activities for pupils to achieve desired ends? How might learner progress be appraised to determine if selected objectives have been attained? These are perennial questions for teachers and supervisors to answer in teaching-learning situations in the mathematics curriculum.

### Principles of Learning

There are chosen principles of learning that may well be utilized in selecting objectives, learning activities, and appraisal techniques.

Experiences in the mathematics curriculum need to be of interest to pupils. With interesting experiences, the attention span of pupils may be lengthened. Only then, might pupils achieve optimally in ongoing units of study in mathematics. To develop interest, pupils need to experience concrete situations. Learnings then become increasingly life-like and real. For example to teach regrouping/renaming in subtraction, it might be opportune to read actual changes in temperature readings...yesterday compared to today. Thus, if yesterday's temperature reading was 62 degrees and today's reading 37 degrees, how much lower in degrees was the resultant temperature? Markers, such as beads or checkers might be utilized to count from 37 to 62. A place value chart may also be utilized containing six tens (6 sets of the congruent slips of paper) in the tens column, and two congruent slips of paper in the ones column. In 62-37, pupils may realize that seven ones cannot be taken from two ones. Thus, a set of ten slips of paper need to be taken from the six tens column and added to the two ones, resulting in 5 tens and 12 ones. Pupils may then take seven ones from twelve ones and three tens from five tens. The answer is 25. It is important then to provide for the interests of pupils by utilization of a variety of learning experiences.

Pupils need to perceive purpose in learning. If purpose is perceived learners accept reasons for participating in ongoing lessons and units of study. Four cookies need to be divided equally among eight pupils in a committee, what fractional part of a cookie does each receive? Before the cookies can be eaten, equal parts need to be determined. A life-like problem then needs to be solved by pupils. Concrete materials are used in the learning activity to guide pupils to perceive purpose in learning. Reasons for achieving desired understandings, skills, and attitudinal goals need to be acceptable to involved learners.

Pupils must attach meaning to ongoing experiences and activities. If pupils, for example, are to understand that  $1/2 = 2/4$ , a variety of materials may be utilized in teaching and learning. Flannel

circles may be used. In sequence, pupils may understand the value of  $1/2$ , such as  $1/2$  of a flannel circle. Next a flannel circle divided into fourths may be used in instruction. At this stage of learning, pupils should realize the meaning of  $2/4$ . The  $2/4$  flannel circle can be placed directly over the  $1/2$  flannel circle. Pupils may then understand that  $2/4=1/2$ . Teachers should select a variety of teaching aids to guide pupils to attach meaning to ongoing presentations.

Pupils need to experience understandings, skills, and attitudinal objectives. Understanding goals involve pupils achieving factual content, such as basic addition, subtraction, multiplication, and division facts. Attaching meaning to vital concepts also involves achieving desired understanding objectives. Vital concepts might include the commutative property of addition and multiplication, the associative property of addition and multiplication, the distributive property of multiplication over addition, identity elements of addition and multiplication, and the property of closure. Skills goals involving the doing dimension, such as developing increased proficiency in problem solving, critical thinking and creative thinking in the mathematics curriculum. Attaining attitudinal goals is highly significant. Desirable attitudes toward mathematics assists in achieving understandings and skills goals.

Learners need to transfer learnings acquired in the mathematics curriculum to the level of application in school and in society. Thus what has been learned can be used in the school/societal arenas.

### **In Summary**

Teachers and supervisors need to utilize desired principles of learning in developing a mathematics curriculum. Optimal progress in mathematics is a relevant general objective to achieve in the school and class setting.