

# **Philosophy of Education and The Mathematics Curriculum**

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Teachers and supervisors need to study, appraise, and ultimately implement what is deemed worthwhile of ideas from diverse educational philosophies. These strands of thought provide for individual differences, but in diverse ways. How do each of these philosophies provide for pupils of diverse achievement levels as well as of different styles of learning?

## **Experimentalism in the Mathematics Curriculum**

Experimentalists emphasize the importance of learners perceiving a need for learning selected content. In addition, the following generalizations also apply to experimentalism:

1. pupils identifying and solving real problems;
2. interest in learning provides for effort on the part of pupils in ongoing learning activities;
3. experiences are the heart or core of the mathematics curriculum;
4. pupils are actively involved in learning and not passive individuals;
5. the whole pupil is involved in learning. Thus, the social, intellectual, and emotional facets of a learner's development are important!

Experimentalism would not emphasize -

1. pupils, for example, working page 55 in sequence from a basal mathematics textbook because the previous pages have been completed in logical order.
  2. the teacher largely selecting objectives, learning experiences, and appraisal techniques in the mathematics curriculum.
  3. learners engaging in rote learning and drill to achieve new objectives in the area of mathematics.
  4. the teacher emphasizing explanations and lectures as methods of teaching to passive pupils in the class setting.
  5. pupils attaining measurable objectives sequentially in the mathematics curriculum.
- A felt need for pupils to solve realistic, lifelike problems is important to experimentalists!

## **The Basics in the Curriculum**

Educators in the school setting emphasizing the basics in the curriculum place high values on reading, writing, and arithmetic (the three

r's). Teachers and supervisors stressing the basics would generally -

1. advocate exact standards of achievement for pupils in each lesson pertaining to mathematics,
2. stress a no nonsense learning environment (a quiet learning environment, no doubt, would then be in evidence),
3. de-emphasize social promotion of pupils (pupils would need to master definite content in mathematics before moving on to the next grade level),
4. follow a basal textbook series sequentially in terms of learning activities for pupils,
5. emphasize passive learners in gaining ideas from explanations, lectures, and textbooks.

Reasons for advocating the basics in the curriculum would include -

1. the lay public feeling that pupils are not achieving well in arithmetic as well as other curriculum areas,
2. a lack of firmness being in evidence in disciplining pupils in the class setting,
3. a lack of achievement in pupils' test scores on standardized achievement tests.

### **Existentialism and the Curriculum**

Existentialists emphasize the importance of individuals choosing what to learn and the means of learning. Thus, learning centers in the school-class setting would harmonize well with the thinking of existentialists. There would need to be more tasks or learning activities than pupils can possibly complete so that decision-making is truly involved in terms of experiences selected. The

following centers, as an example, could be inherent in the school-class setting:

1. Line, bar, circle, and picture graphs.
2. The metric system of measurement.
3. Using a pocket calculator.
4. Working from a textbook.
5. Working with fractions.
6. Utilizing decimals.
7. The mathematics laboratory.
8. Geometry for everyday use.
9. Addition, subtraction, multiplication, and division.

The teachers may write tasks (learning activities) on cards for each of these centers. Pupils may then choose sequentially which tasks to complete. Creative endeavors are highly recommended by existentialists as learning experiences for pupils.

The following are also emphasized thoroughly by existentialists:

1. Pupils have ample opportunities to engage in sessions devoted to values clarification.
2. Clearcut answers to questions and problems are not of major importance. Relevant questions and problems require creative solutions.

### **Behaviorism and the Curriculum**

Behaviorists have made strong inroads in the curriculum during the past decade in particular. Behaviorism in the mathematics curriculum would stress the following:

1. It is definitely possible to determine what pupils are to learn (objectives) as well as measure the amount of learning after instruction.

2. Learning activities for pupils are to guide in achieving these measurable objectives. If objectives are attained by learners without harmful side effects, the learning activities are then considered suitable.

3. The objectives, learning activities and their sequence, as well as measurement procedures are basically teacher determined.

4. It is good teaching procedure to pretest pupils before initiating a new unit in the mathematics curriculum.

Thus, each pupil may be placed in instruction within the new unit in terms of his or her present achievement level.

The following objectives may well represent teacher determined ends which are measurable:

1. The pupil will multiply correctly in nine out of ten problems.

2. The learner will solve 95 percent of the division problems on page fifty involving a five place dividend and a two place divisor.

Related to the use of behaviorally stated objectives in the mathematics curriculum, numerous states in the United States have implemented accountability plans. Accountability laws, among other generalizations, stress the following:

1. specific objectives for pupils to achieve,

2. teachers showing evidence to interested persons what children have learned,

3. responsibility for what pupils have learned being rather completely in the teacher's domain.

### **In Closing**

Teachers and supervisors need to study and analyze diverse philosophies of education pertaining to

the teaching of mathematics. Ultimately, a recommended philosophy needs to be implemented. It may well be an eclectic philosophy in which selected strands are chosen from diverse schools of thought. Whichever philosophy or philosophies are chosen, the following principles of learning need emphasizing:

1. Objectives should be adjusted to the present achievement levels of each learner.

2. Learning activities to achieve desired ends should be meaningful.

3. Pupil interests must be obtained in ongoing units of study.

4. Learnings obtained need to be sequential from the point of view of each pupil's own unique perception.

5. Pupils need to experience ample success in each unit of study in the mathematics curriculum.

6. Teacher-pupil planning should receive adequate emphasis.

7. Positive attitudes should be acquired by each pupil.

8. Balance in objectives (understandings, skills, and attitudes) need to be stressed in the area of mathematics.

9. Problem-solving needs to be stressed adequately in each unit of study.

### **Selected References**

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