

# Assisting Pupils in Mathematics Achievement (The Common Core Standards)

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Mathematics teachers must expect reasonably high standards of achievement from pupils. Too frequently, pupils attain at a substandard level and more optimal achievement is necessary. Thus, pupils should have self esteem needs met in the school and classroom setting. Thus, learners feel that mathematics is worthwhile and effort must be put forth to accomplish and grow to achieve objectives. With the common core objectives and tests, teachers need to align the subject matter taught with the proposed ends of instruction. Each pupil needs to have help, as necessary, from the teacher as well as from peers to achieve objectives, in the common core. A collaborative environment must be in the offing so that pupils feel confident of trust and empathy being in the offing (Ediger and Rao, 2011).

## The Common Core

The teacher should have high expectations for learner progress in mathematics. These expectations must be reasonable. Pupils can be aided to attain at a higher level with scaffolding. Here, the math teacher notices the present achievement level of each pupil and when difficulties arise, assists the learners with intermediate explanations to move from the present to a bar set upward. Knowledgeable and skillful teachers are able to do this to realize more optimal pupil achievement. With getting to know each pupil's level of attainment, the teacher might well be able to secure an upward level of progress with quality instruction, and this includes scaffolding. The focal point is upon the child and his/her present status in mathematics and through scaffolding realize an optimal level (National Council Teachers of Mathematics, 2000).

Effort, not native ability and aptitude, is salient to consider in teaching. The writer has heard children state that "Mathematics is just not my cup of tea, and my parents were the same way." Here, the problem is justification

for lower achievement and a lack of effort put forth to reach out and attain vital objectives. Jerome Bruner wrote, "Any subject matter can be learned in some intellectually honest form by an child at any stage of development." The concern here is "in some intellectually honest form," indicating that it must harmonize with the learner's present level of attainment before moving on to more complex key facts, concepts, and generalizations. The structure of mathematics is then a focal point of teaching, not trivia nor the irrelevant. Mathematics can also be highly practical as well as utilitarian for pupils (See NCTM 2003).

Positive attitudes must be infused in pupil thinking in that he/she can do mathematics well. Learners then need to experience success in learning. They need to be able to explain a new process acquired in their very own words; the teacher might then diagnose misunderstandings and that which needs further elaboration. Formative assessments given during the time a unit is taught also provides feedback in terms of what is lacking in mastery learning. A good teacher is a reputable diagnostician (Ediger, 1989).

Providing for diverse styles of learning is salient. By doing this, pupils have better opportunities to achieve objectives in mathematics and in the common core. The following are some of the considerations in

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emphasizing learning styles:

- working by the self or doing assignments collectively in committees
- inductive versus deductive activities
- heavy use of teacher explanations versus constructivism
- cognitive objectives stressed solely, as compared to affective/attitudinal goals in the mathematics curriculum
- teachers sequencing pupil progress in mathematics versus rather heavy learner involvement in ascertaining order of experiences
- carefully selected textbook use in determining the math curriculum as compared to heavy infusion of problem solving experiences (Ediger, 2006).

The common core test results then may be upped by teachers paying careful attention to individual leaning styles. In all situations involving math instruction, the teacher must have a positive attitude toward that curriculum area. This conveys to learners the saliency of mathematics in school and in society.

At the end of daily instruction in mathematics, pupils should periodically be asked, "What did you learn today in mathematics?" These comments may be recorded on the white board and a copy sent home with each pupil for parental observation and comment. Too frequently, parents/guardians do not hear about daily pupil progress in mathematics. Communication, here, needs to go beyond parent/teacher conferences, as well as report cards. Parents/guardians should be invited to comment on the daily notices sent home. The question arises, "What can the home setting do to assist the learner in math achievement involving the common core?" Quality communication between home and school is a necessity for pupil performance in mathematics and be ongoing. Both home and school must be strong advocates of and believe that children can do well in mathematics. Praise and support of math achievement must be in the offing. Realizing common core objectives

should aid pupils to do well in school and in society (NCTM, 1989).

Learning experiences in mathematics need to incorporate content from the best research studies stressing more optimal learner progress. The research must have emphasized random sampling of groups involved in these studies with valid and reliable measurement instruments used. The question arises in what makes for quality in a well designed study. Math teachers must have access to these research results, as well as to educational journals and university textbooks pertaining to improving the school curriculum. In service education for mathematics, teachers need to incorporate:

- school and system wide meetings in discussing problems in teaching
- attending professional conferences, state and national, devoted to improving mathematics teaching
- discussions based on reading content from professional materials in mathematics instruction
- taking advanced courses in mathematics education from colleges and universities
- speaking at mathematics conferences on a selected facet of teaching
- interacting with a colleague in talking about ways he/she has experienced in helping students succeed in mathematics (See, NCTM, 2001).

Daily time devoted to teaching mathematics should be adequate in duration which includes conferences with learners. Thus, pupils may reflect upon what has been learned as well as achieve ensuing vital ideas emphasizing the common core. Putting new learnings to use helps to reinforce what has been acquired as well as aid in retention of subject matter. Improved attitudes might well result if pupils truly understand structural mathematical content as well as perceive its utilization in school and in society. Pupils sometimes ask how will these learnings be of personal benefit to them. The math teacher

needs to justify the importance of each lesson plan and its implementation. Difficulties faced by pupils need identification and meaningful instruction follow. The proficient teacher has a repertoire of procedures available to assist learner progress.

Mentoring might also be practiced in that an experienced teacher may assist a beginning teacher in teaching mathematics. Quality human relations need to be in the offing whereby the inexperienced teacher increasingly develops feelings of self efficacy whereby in the succeeding years of teaching mathematics, he/she becomes more knowledgeable of subject matter/skills, thus revealing confidence as well as competence. The experienced math teacher, too, benefits from mentoring in that he/she

- \* benefits in learning more about content and skills, necessary to truly being a professional

- \* profits from discussing problems pertaining to the classroom setting, involving math instruction

- \* has social needs met in working with others in teaching mathematics (See Wiske, 2004).

#### In Conclusion

The mathematics teacher provides a vital role in guiding pupil progress in meeting common core standards. The mathematics curriculum needs to reflect more optimal achievement in the common core. In the meantime, each day of instruction is salient and provides background knowledge and skills for successive levels of progress. Research findings and the psychology of learning have much to offer in teaching and learning situations. A quality background of mathematical knowledge and procedures in teaching are necessary to develop feelings of self efficacy and competency in instruction. Pupils need to make sense and attach meaning in ingoing mathematical experiences. They must learn to reason abstractly and quantitatively, as well as to be able to justify

their thinking to others. Models need to be used in mathematical thinking. There are a variety of learning opportunities as well as tools available in emphasizing precision in securing information and answers. Thus, the common core provides an effective curriculum in mathematics to help ensure that major ideas are secured.

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