

# Educationally Challenged Environment; A Hindrance to Mastery Learning

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## Abstract

*A challenged environment is one which does not easily promote effective teaching and learning. If teaching which is fundamental to learning is to be effective in a challenged environment therefore, teachers and learners have to be adequately prepared to cope with the challenges. The problem of achievement gaps among students has been evident in education for many years. This study looks at the works of researchers on reducing gaps in the achievement of students. Bloom observed that teaching all students in the same way and giving all the same time to learn provides little variation in achievement. Students for whom the instructional methods and amount of time are appropriate learn well, and those for whom the methods and time are less appropriate learn less well. Bloom argued that educators and teachers must increase variation in instructional approaches and learning time. In an educationally-challenged atmosphere like ours, this research is very apt. The findings will be useful for improving teachers' effectiveness in bringing about higher achievement in low-achieving learners, thereby closing their achievement gaps irrespective of the challenges of the learning environment.*

**Key words:** Achievement, Achievement gap, Mastery Learning, Challenged environment, Perseverance

## Introduction

To teach all students according to recommended standards, teachers need to understand the subject matter deeply and flexibly so they can help pupils create useful cognitive maps, relate one idea to another, and address misconceptions. Teachers need to see how ideas connect across fields and to everyday life. This kind of understanding provides a foundation for pedagogical content knowledge that enables teachers to make ideas accessible to their pupils.

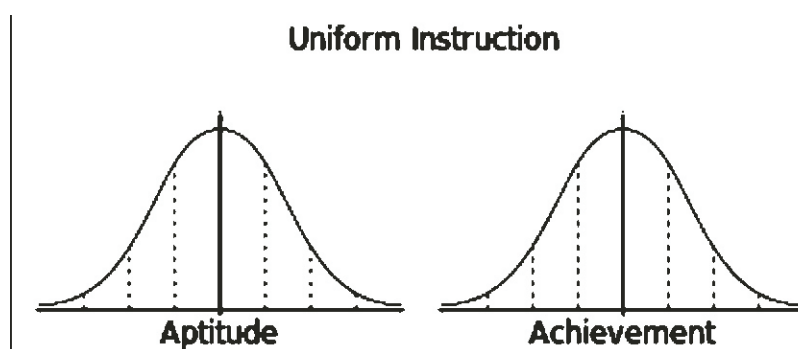
Pedagogical skills or classroom practices is a measure of what teachers do in their classroom. Eby in Okpala and Ellis (2005) stated that quality teachers use a wide variety of instructional methods, experiences, assignments and materials to ensure that pupils are achieving all sorts of cognitive objectives. Brophy in Okpala

and Ellis (2005) concluded that pedagogical skills appear to be a powerful force in changing teachers' instructional practice and by inference learners' achievement. Many school teachers have not participated in any in-service training or workshops since completing their initial training. Quality teachers must have mastered the basic skills of teaching and possess the ability to continuously adjust their teaching strategies to meet the diverse needs of the learners. Successful teacher must have a vast repertoire of instructional strategies and techniques that reflect their knowledge of the subject. Teachers' mode of presentation of various concepts affects achievement (NTI, 2009). The question is how best can you put across these concepts to pupils?

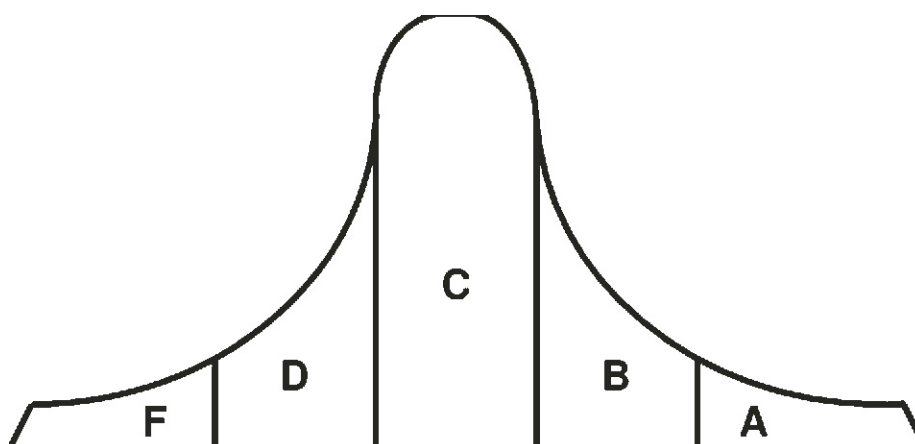
There are various teaching methods and techniques in teaching, but whereas the methods and techniques are means or ways of impacting knowledge to learners, the strategies are the skills required for using these methods effectively. Effective teaching does not depend on teachers' knowledge of the methods, but his skill to use the appropriate method or combination of methods. No particular method can be labeled good or bad, it all depends on how the teacher uses them. Seweje and Jegede (2005) noted that the ability of a teacher to teach is not derived only from the teacher's academic background but it is based upon outstanding pedagogical strategy acquired.

Content pedagogy refers to the pedagogical strategies teachers use to impart the specialized knowledge/content of their subject area(s). Pedagogy is when the teacher selects strategies to match learners' needs. Effective teachers display a wide range of skills and abilities that lead to creating a learning environment where all learners feel comfortable and are sure that they can succeed both academically and personally.

There are many challenges bedeviling the educational system in Nigeria. Researches have found out that the problems of education in Nigeria are multifaceted, arising from the stakeholders of education, government, teachers, parents, learners. The problems in the Nigerian educational system are: Poor funding poor governance, poor infrastructure, and Government's lackadaisical attitude towards problems in education, corruption, indiscipline, poor parenting, and lack of teaching aids, unstable curriculum and subjects, teachers' unwillingness to study education while in school, among others. The effective teacher works at improving their pedagogical strategies, raising the performance and closing the achievement of their learners, thereby overcoming these challenges in the education system.



The use of traditional teaching creates the expectation by the teachers that some learners will naturally be successful while others will not. This model of teaching focus more on differences in learners' ability and where all learners are given approximately the same amount of time to learn and the same set of instructions.



*Distribution of achievement in traditional classrooms*

In mastery learning, there is a shift in responsibilities, so that learner's failure is more due to the instruction and not necessarily lack of ability on his or her part. Therefore, in a mastery learning environment, the challenge becomes providing enough time and employing instructional strategies so that all learners can achieve the same level of learning, Bloom (1981), Levine (1985). Mastery learning is a set of group-based, individualized, teaching and learning strategies based on the premise that learners will achieve a high level of understanding in a given domain if they are given enough time Anderson (1975).

Mastery learning or "learning for mastery" is an instructional strategy and educational philosophy, first formally proposed by Benjamin Bloom in 1968. Mastery learning maintains that learners must achieve a level of mastery (e.g., 90% on a knowledge test) in prerequisite knowledge before moving forward to learn subsequent information. If a learner does not achieve mastery on the test, they are given additional support in learning and reviewing the information and then tested again. This cycle continues until the learner accomplishes mastery, and they may then move on to the next stage.

Mastery learning methods suggest that the focus of instruction should be the time required for different learners to learn the same material and achieve the same level of mastery. This is very much in contrast with classic models of teaching, which focus more on differences in learners' ability and where all learners are given approximately the same amount of time to learn and the same set of instructions. The motivation for mastery learning comes from trying to reduce achievement gaps for students in average school classrooms.

According to Bloom, if educators are effective, the distribution of achievement could and should be very different from the normal curve. Bloom proposed Mastery Learning as a way to address this. He believed that by using his approach, the majority of learners (more than 90 percent) would achieve successful and rewarding learning, ( As an added advantage, Mastery Learning was also thought to create more positive interest and attitude towards the subject learned if compared with usual classroom methods, (Block, 1971)

Bloom was convinced that most students can attain a high level of learning capability if the following conditions are available:

1. Instruction is approached sensitively and systematically
2. Learners are helped when and where they have learning difficulties
3. Learners are given sufficient time to achieve mastery
4. There is some clear criterion of what constitutes mastery (Anderson, 1994).

According to Bloom, a learner who demonstrates a low level of perseverance in one learning task might have a very high level of perseverance in a different learning task. He suggests that learners' perseverance be enhanced by increasing the frequency of reward and providing evidence of success in learning. Perseverance in this context is defined as the time the learner is willing to spend in learning.

Bloom postulates that the time required for a learner to achieve mastery in a specific subject is affected by various factors such as:

1. The learner's aptitude for that subject,
2. The learner's verbal ability,
3. The quality of instruction, and
4. The quality of the help provided (Anderson, 1994).

Carroll (1963) on the other hand, found that a student's aptitude predicted not only the level to which he learned in a given time, but also the amount of time he required to learn to a given level. Carroll suggests that aptitudes are actually a way to measure the amount of time required to learn a task up to a certain level (under ideal instructional conditions). So Carroll's model is actually suggesting that, if each learner was allowed the time they needed to learn to some level, and then he could be expected to attain that level (Block, 1971)

Bloom later used Carroll's conceptual model to create his own working model of Mastery Learning. Bloom realized that, if aptitudes were predictive of the rate at which a learner can learn (and not necessarily the level to which), it should be possible to fix the degree of learning expected to some mastery level and then systematically manipulate the variables in Carroll's model such that all or almost all learners attained that level.

### **Statement of the problem**

Most studies on mastery learning showed that mastery learning has a positive effect on achievement, for all subjects and at all levels. Also, mastery learning brings positive affective outcomes for both learners and teachers. These studies also showed that there are many variables that are either affected by mastery learning or that influence it somehow: learner entry variables, curriculum, type of test, pacing, level of mastery, and time, (Anderson, 1994). Despite those mostly positive research results, interest in mastery learning strategies decreased throughout the 1980s and till date, as reflected in publication activity in professional journals and presentations at conferences. Many explanations were put forward to justify this decline, like alleged recalcitrance of the educational establishment to change, (Buskist, Cush and DeGrandpre, 1991) or the ineffective implementations of mastery learning methods, (Sherman, 1992) or the extra time demanded in setting up and maintaining a mastery learning course (Buskist et al, 1991). This study seeks to find out the reason behind the decline in the perceived popularity of mastery learning strategy in the classroom and field of research.

### **Implementing the Mastery Learning Model in the Classroom**

The mastery learning model allows learners to learn at their own pace. Mastery Learning is a model where learners are expected to master a learning objective or goal, before they can move on to the next goal.

### **Process**

In a mastery learning classroom, teachers break up their curriculum into a series of skills or instructional units. The teacher will usually teach a topic, and then conduct an evaluation to record each learner's understanding of that unit. Next, learners who have mastered the unit go on to do enrichment activities while those who did not achieve their goals are given additional opportunity to practice their skills.

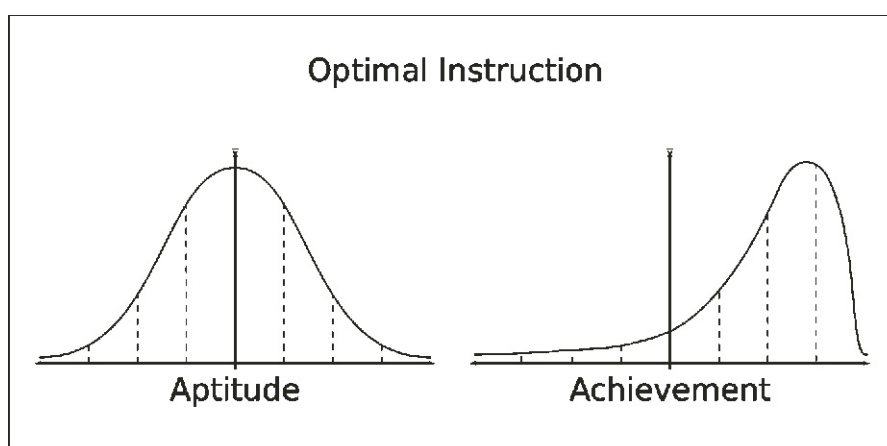
### **Benefits**

The mastery learning model has been found to be beneficial in many settings. It allows struggling learners an opportunity to master critical concepts before new content is introduced. At the same time, it provides a challenge for high achieving learners. This style of education allows gifted learners to accelerate through the program and move on to either the next level (year) or to engage in extension studies which will broaden their understanding of the subject. The model also allows for an individual learning pace. In addition, feedback that is given during this process is helpful for the learner. This model stands for the fact that every learner can learn if given the time and the right learning environment.

### **Strategies**

Even though, the teacher may not be an expert in mastery learning, he/she can implement this concept in the classroom with these simple ideas and strategies:

- \* Take time to plan your curriculum and break it down into units. Write down learning goals or objectives for each unit. Ensure that the units are planned in a sequential manner, and adequate time is given to develop critical skills.
- \* The next step is to plan how you will evaluate these skills. Formative assessment strategies can be used to develop an effective assessment.
- \* For those learners who are able to show mastery of the learning goals, you can use enrichment activities to take their learning further. Some ideas are games that require the learners to practice their skills, working in pairs on problems or research, group projects etc.
- \* For those learners who are unable to achieve their goals, plan activities that will help them further practice their skills. Keep in mind that this set of activities are different from the initial instruction method. This helps accommodate a greater range of learning styles. Provide additional learning materials and activities that allow for visual, auditory or kinesthetic learners. After providing sufficient time and opportunity, retest for mastery of skills.



*Distribution of achievement in mastery learning classrooms*

### **Outcomes of Mastery Learning**

The outcomes could be Cognitive and Affective Outcomes.

#### **Cognitive Outcomes**

The cognitive outcomes of mastery learning are mainly related to increase in learner excellence in a subject. Applying the strategies of mastery learning in a class would result in the increase of learners with the grade of A from 20 percent to 80 percent (about two standard deviation). Using the formative evaluation records as a base for quality control helped the teacher to improve the strategies and increase the percentage of students with a grade of A to 90% in the following year, (Bloom and Carroll, 1971).

### **Affective Outcomes**

Affective outcomes of mastery are mainly related to the sense of self-efficacy and confidence in the learners. Bloom argues that when the society (through education system) recognizes a learner's mastery, profound changes happen in his or her view of self and the outer world. The learner would start believing that he or she is able to adequately cope with problems, would have higher motivation for learning the subject in a higher level of expertise, and would have a better mental state due to less feeling of frustration. Finally, it is argued that in a modern society that lifelong learning is a necessity, mastery learning can develop a lifelong interest and motivation in learning,

In a mastery learning environment, the teacher directs a variety of group-based instructional techniques, with frequent and specific feedback by using diagnostic, formative tests, as well as regularly correcting mistakes learners make along their learning path. Assessment in the mastery learning classroom is not used as a measure of accountability but rather as a source of evidence to guide future instruction. A teacher using the mastery approach will use the evidence generated from his or her assessment to modify activities to best serve each learner. Teachers evaluate learners with criterion-referenced tests rather than norm-referenced tests. In this sense, learners are not competing against each other, but rather competing against themselves in order to achieve a personal best.

### **The Challenge Mastery Learning Poses to the Environment**

Bloom's original theory assumes that with practice, the slower learners will become faster learners and the gap of individual differences will disappear. Bloom believes these differences in learning pace occur because of lack of prerequisite knowledge and if all learners have the same prerequisite knowledge, then learning will progress at the same rate. Bloom places the blame on teaching settings where learners are not given enough time to reach mastery levels in prerequisite knowledge before moving on to the new lesson.

Many teachers fear that taking time for corrective and enrichment activities in each instructional unit will lessen the amount of material that they will be able to cover. In other words, they believe that they will have to sacrifice coverage to allow a higher level of learning and, as a result, 'some learners may learn better, but all will learn less,' in terms of coverage of curriculum.

Corrective and enrichment activities initially do add time to instructional units. Teachers who provide class time for learners to complete corrective activities often find themselves behind other teachers who teach in more traditional ways after the first two or three units. Especially in early units, these activities must be done in class, under the teacher's direction, and typically require a class period or two. Teachers who ask learners to complete correctives outside of class as a homework assignment or during special study sessions held before or after school rarely experience success. Instead, they quickly discover that those learners who could benefit most from the corrective process are the least likely to take part. Teachers who engage learners in corrective activities in class, under their direction,

however, help them gain direct evidence of the personal benefits the process offers. As a result, learners develop increased confidence in learning situations and are more likely to undertake corrective activities on their own.

In an educationally environment like ours, where our class timetables, curricula etc. have been rigidly planned, how applicable and effective is Mastery strategy in learning? Teachers have their processes and outputs supervised within and without the school by different levels of supervisors. Also, typical mastery programs involve providing class instruction then testing using reliable, validated tools. Usually, what obtains in our schools is the use of teacher-made tests.

The games that are required for the early learners to practice their skills while awaiting the coming up of the 'slower' learners are not available in our schools. Also, if theoretically all learners are with grades above 90%, higher institutions and the world of work would have to make selections from a pool of applicants with similar grades, how would admission/employment requirements account for uniform ratings of intelligence? Would the time it took to reach mastery become a new measure of success to be considered?

Flipped classrooms are a new strategy that is used with mastery learning. Here learners listen to lectures at home, and come to the classroom to interact with the teacher on those subjects. Online tests can be done to test mastery even before the learner enters the classroom. Computers, the internet and the use of technology in the classroom has made mastery learning easier and more practical today, compared to a couple of decades ago. However, the challenge of poverty (affordability of computers) and poor infrastructure (in this case, electricity, internet access) faced in our society (home and school) is reflected in our educational system.

Despite the empirical evidences for higher degree of success of mastery programs in schools, they have been replaced by more traditional forms of instruction due to the level of commitment required by the teacher and the difficulty in managing the classroom when each learner is following an individual course of learning. Therefore, the challenge of closing achievement gap using mastery learning strategy seems to still be a mirage.

## **Conclusion**

After learners become accustomed to the corrective process and realize its advantages, most teachers begin reducing the class time they allocate to correctives. They use more learner-initiated activities and ask learners to complete more of their corrective work outside of class, often as homework. As learners remedy their learning problems in early units, they perform better on formative assessments in subsequent units. This leads to more learners becoming involved in enrichment activities and fewer engaged in correctives. The amount of corrective work learners need in order to reach the proficiency standard also diminishes (Whiting, Van Burgh, & Render, 1995).

With the results from the formative assessment, teachers become more efficient in their reviews. Rather than reviewing everything, they can concentrate

on only those concepts and skills that pose problems for learners. In addition, by allowing fast learners to demonstrate their proficiency and move to enrichment activities, teachers can spend their time working with a smaller group of learners who need their assistance. With more students reaching the proficiency standard in each succeeding unit, most teachers also find that their instructional pace in later units can be more rapid.

In general, teachers do not need to sacrifice content coverage to implement corrective and enrichment activities, but they must be flexible in pacing their instruction. The time used for correctives and enrichments in early units yields powerful benefits that later will make things easier. This extra time can then be recouped in later units by spending less time on reviews and increasing the instructional pace. Teachers at all levels must keep in mind what needs to be accomplished by the end of any learning sequence, but they also must see learners' pathways to that end in more flexible and accommodating terms.

### **Recommendations**

The following recommendations stemmed out of this study:

- \* Teachers should be trained and re-trained in the art of mastery learning strategies, since many studies showed that the implementation of mastery learning led to significantly positive increases in learners' academic achievement and their self-confidence.
- \* Allowance should be given for corrective and enrichment activities in each instructional unit for coverage of curriculum.
- \* Curriculum needs to be revised, improved upon and made relevant to the outside world.
- \* Teachers should make use of reliable and validated testing tools.
- \* Teachers should be provided with quality and up to date teaching aids to improve the education sector.
- \* Computers, the internet and the use of technology should be provided in the classroom to make mastery learning easier and more practicable.

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