Improving Student Achievement through Mastery Learning

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Abstract:

“Mastery-Learning proposes that all children can learn when provided with the appropriate learning condition in the class-room.” i.e. everyone can learn in the right circumstances, if the educators have enough knowledge and instructional strategy about mastery learning model. The mastery-learning model is suitable for education program for every student in schools. Mastery learning model can be adapted and applied to the program easily.

In order to realize one of the most important necessities of the life, which is learning, the human being spends most of their time for education-training activities. But every individual being a part of a group is dependent on a single program and an educational management which was chosen for the group by the teacher. However, each student has individual learning abilities, different from other members of the group. At the end of the teaching nearly all of the individuals of that group are expected to be successful. If they are not mastered any given unit, they can repeat it, unless & until they have mastered the material.

Mastery learning is used in order to advance an individual’s potential for learning. Compared to traditional learning models, sufficient time, attention, and help are afforded to each student. This paper shows that by applying mastery learning as a teaching strategy, students achieve higher learning and better academic performance.

Key words: Mastery learning (ML), Individual differences,

Mastery Learning

One of the core principles of Vivekananda’s philosophy of education is the idea that “Education is the manifestation of the perfection already in man.”

The weak students only get remarks in their progress reports like “Do hard work” but no teacher holds the hand of such weak students. They only blame the child and ask parents to put in more hard work with them. So, weak students remain weak throughout the session. The genetic characteristics and the environment make every person different even twins. We cannot expect a group of people having such differences to react in the same way in all aspects. The same is valid for learning. We cannot expect the same level of learning from different students under the same conditions. The Kothari commission (1964-66) rightly stated that “The destiny of India is now being shaped in her classrooms.”

Core idea of Mastery Learning aptitude is the length of time it takes a person to learn not how to ‘bright’ a person is, i.e. everyone can learn given the right circumstances. Simply ML refers to prescribed study that is completed by the student at his or her own pace. Mastery learning uses differentiated and individualized instruction, progress monitoring, formative assessment, feedback, corrective procedures, and instructional alignment to minimize achievement gaps (Bloom, 1971; Zimmerman & Dibenedetto, 2008).

“No student is to proceed to new material until basic prerequisite material is mastered.”

When teaching and learning proceed in the traditional manner only a small number of students usually learn well and receive the highest marks. Bloom found only about 20 percent of the students in a class generally learn excellently what the teacher set out to teach under these conditions, the distribution of achievement among students at the end of the instructional sequences looks much like a normal or bell–shaped curve.

Under mastery learning conditions, 80 percent or more of the students in a class reach the same high level of achievement that only about 20 percent do under more traditional approaches to instruction. Bloom outlined a specific instructional strategy to make use of feedback and corrective procedure, labeling it “learning for mastery” (Bloom, 1968) and later simply shortening it to “Mastery learning” (Bloom, 1974). In the Mastery learning the concept or material students are to learn first are organized into instructional units ranging from simple to complex. The material is presented to the
students, generally working as individuals, through appropriate media. Learners proceed through the learning material step by step.

After initial instruction on the unit, a quiz or assessment is administered to students. This assessment is used as part of learning process and is designed primarily to give students information, or feedback on their learning & called as a *formative* assessment, i.e. “to inform or Provide information”. A formative assessment identifies for students precisely what they already have learned well and what they need to learn better. Formative assessments are mastery learning’s principal vehicle for providing students with feedback on their learning progress. These assessments help students identify what is important to learn and how well they have learned those concepts and skills. Bloom (1971, 1976) believed that by providing students with these more favorable learning conditions, nearly all could learn excellently and truly master the unit concepts and material.

With formative assessment results, teachers know which students are doing well, which are having problems, and exactly what problems those students are having. The formative assessment thus provides the teacher with precise information that can be used to guide corrective activities that focus on students individual learning difficulties. The second type of feedback that teachers receive is information about their original instruction’s effectiveness. The results from formative assessments help teachers pinpoint what was taught well, which learning activities were successful, and which were not. With the feedback from a formative assessment, teachers know where to concentrate their efforts in improving their teaching. They know where new approaches or different examples are needed, and where alternative materials or activities may be required. Study reveals that effective teaching as a complex art and a science that involves the cognitive perception, and decision-making strategies that teachers use as they plan, teach, analyze, evaluate and apply improvements to their own teaching (Costa et al., 1988; Ornstein, 1993).

If they have not mastered any given unit, they can repeat the entire process unless and until they have mastered the material. In mastery learning, time rather than performance, varies. Time is probably the biggest and the most important element of mastery learning.

As a result, many more students learn well, master the important learning goals in each unit, and gain the necessary prerequisites for success in subsequent units.

**Review of the related literature**

A lot of research has been done in the field of Mastery learning help in academic achievement

**Gentile (1970)** attempted to determine a mastery learning approach to the teaching course in introductory educational psychology. The study provided striking cognitive and especially affective results.

**Wentling (1973)** compared mastery learning & non mastery learning as to how feedback relates to achievement. The finding from the study showed low ability students need more time on instruction than the high ability students.

**Okey (1974)** focused the materials required to teach ML, teachers & students attitudes towards ML & student achievement. Finding suggested that significant positive effects were discovered in all areas.

**Burns (1979)** assessed the effective size of mastery learning programmers compared to non-mastery programmers. The result showed that the average in mastery learning classes would achieve better than 80 to 85 percent of the students in non-mastery classes.

**Hooda, R.C. (1982)** studied the effectiveness of the Mastery learning strategy method of teaching in relation to pupil achievement in mathematics. The major findings was the students taught through the mastery learning technique showed higher gains in mathematics than those taught by conventional method.

**Arlin & Webster (1983)** conducted an experiment to test ML techniques reduce the amount of time needed to achieve mastery. The variables were achievement, time, & learning rate. The authors found significant increase in learning rate & achievement in mastery group. The mastery students spent significantly more time on instruction areas than non-mastery students.

**Guskey et.al (1986)** conducted a Meta analysis which contained 27 studies addressing five areas; i.e student achievement, student retention, time variables, student affect & teacher variables. The result showed that students in ML programs at all levels should increase gain in achievement over those in traditional instruction program.

**Larsen and Janine (1987)** presented the paper on “Teaching Basic Jazz Piano Skills: A Mastery Learning Approach.” 15 hour course was designed and taught in two groups. The results indicated that all students reached the mastery level of achievement on the posttest and more positive attitudes towards their own improvisational ability. While 80 percent of the students achieved mastery in improvisation.

**Mathur, R.G. (1988)** studied on effectiveness of the mastery learning programme were conducted to investigate its effect on the achievement, self concept & attitude of pupils towards statistics. He found MLS as an effective strategy in terms of achievement, self concept & attitudes towards
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statistics for both under Graduate & Post graduate students.

Kulik et.al (1990) conducted a meta analysis involving 108 evaluations of ML programs. The result showed positive effects on student achievement although these effects were higher on locally prepared examination than on nationally standardized test. The majority of the students showed a positive effect correlation in students attitudes towards instruction & content of ML programs.

Vaidya, S. (1990) attempted to study the effect of MLS on pupil’s achievement, Pupils’ self concept & attitude towards Hindi. The major finding was the mastery learning strategy was more effective in facilitating learning & raising the achievement of learners than either the concept attainment model or the traditional method.

Zapico (1991) investigated the effect of quasi-mastery learning instructional system for community college chemistry. The result revealed that quasi Mastery learning system of instruction is significantly more effective than the traditional method in terms of greater achievement and better retention.

Thomas (1995) Studied on ‘Mastery Learning in regular classroom.’ The result showed that mastery learning offers a way for teachers to offer individualization instruction to students & help more of their students be successful in learning.

Budhdev, Preavina V. (1996) reported findings on attitude towards various school subjects. He found that MLS affected the attitude towards mathematics. Attitude towards mathematics of the experimental group was more positive than that of the control group in the post-test.

Lancy (1996) Studied the effect of cooperative and mastery learning methods on primary grade students’ learning and retention of facts. The result revealed that mastery learning is in line with the current early childhood practices and has the capacity for simultaneously boosting.

Thankam (1997) examined effect of ML approach & traditional approach on mathematics interest of ninth standard students. The major finding was the ML approach is more effective than the traditional method in enhancing mathematics interest of ninth standard students.

Kazu et.al (2005) assessed the effect of Mastery learning model on the success of the students who attended teaching of unit “usage of Basic Information Technologies.” The Control group was taught by conventional method while the experimental group was taught by mastery learning method. The students were given pre test & post test. The result of the study found that experimental group had a better achievement rate than the control group.

Wambugu & Changeiowo (2006) tried to find out the Effects of MLA on students’ achievement in Physics. The researcher trained the teachers in the experimental groups according to MLA before the treatment of pre test; post test was administered after three weeks. The result showed that gender has no significant influences on their achievement but MLA method results in higher achievement.

Francis et.al (2009) investigated mastery learning in first year physics course of Australian National University. The finding suggested that Mastery approach had a number of unexpected benefits, such as students started doing more work with less complaint. Students spontaneously started asking for help and student learnt to solve problems collaboratively.

Rowe (2010) examined whether a mastery learning environment promotes students’ intrinsic motivation for learning? The finding of the research indicates that mastery learning environment group demonstrated a positive and significant difference while the control group showed no significant difference.

Hill-Miller (2011) studied the effectiveness of Mastery Learning instruction on developmental reading While Significant difference was found between two groups on three of the five unit exams and retest opportunities resulted in improved academic achievement in the mastery learning conditions.

Sadeghi and Sadeghi (2012) investigated the effects of ML approach on the learning in students in learning English and on the cognitive skills. The finding of the study was that students who recognize that they can think and react to Mastery Learning approach are more likely to report greater use of these learning strategies.

Need for Mastery learning in the present Scenario

Mastery learning enhances student learning by:
- Providing a shared cognitive set of information between students.
- Ensuring that students construct their own knowledge.
- Motivating students to learn the material.
- Providing formative feedback.
- Create more positive attitudes about learning.
- Student’s help each other learn and encourage the success of individual team members.
- Individuals in the group understand that they are accountable to each other and to the group as a distinct unit.

Mastery learning orienting students

The success of any mastery learning program depends largely on the quality of individual classroom applications. Orienting students to the
Mastery learning is an important part of each application. The mastery learning process is different from most students’ classroom experiences; some may not catch on at first. Teachers often must periodically reorient their students, emphasizing again & again the important aspects of the process and the teacher’s expectations for learning success. After a relatively short time, however, most teachers discover that even their slowest students develop more positive attitudes about learning, the class, and their ability to succeed.

Mastery learning orienting parents

Most teachers find that informing parents about mastery learning and involving them in the process serves several useful purposes.

* It facilitates communication between teachers and parents. In particular formative assessment provide an excellent vehicle for letting parents know what is being taught and what skills are being emphasized.

* When parents understand the teacher’s specific expectations and instructional procedures, then the consistency between home and school supports for learning are greatly enhanced.

* Parents are usually willing to offer their support if they know precisely what help their children need and how they can assist.

Mastery learning orienting teachers

Teachers are the most vital resource in our education system and they have the responsibility to prepare our students to live and work in a digital society. Teachers in a class can employ ML by spending a few more hours per week than they would spend on a traditional lecture course. The amount of additional time required depends on the magnitude of changes adopted. Teachers are encouraged to start with small changes and then expand their use of ML. Achievement without teacher is zero, because if a teacher is not paying his/ her full attention to students (for slow learners and high performers) the result will not be generated properly as per the level of learners.

The Future of Mastery learning in the schools

A school is not merely a building of bricks and cement with furniture, but it is the fruit of the collective efforts and hopes of managing members, the principal, the teachers and of course the students. The future of ML looks particular bright from the perspective of both educational practitioners and researchers. ML offers tools they need to have a more powerful influence on the learning of their students. It empowers to be more effective and, as a result, makes teaching more rewarding and enjoyable (Guskey, 1986).

Mastery learning stems from an exceptionally optimistic view of the potential of education. Strong support for mastery learning comes from parents, teachers, and school administrators throughout the world. Equally strong support from educational researchers whose studies on the elements of effective instruction (Brophy & Good, 1986; Weinert & Helmke, 1995).

Mastery learning shifts learning from high to low achievers. ML coverage for mastery and since rapid coverage is likely to be of greatest benefit to high achievers and high mastery is of greatest benefit to low achievers, pure group based mastery learning will likely produce a “Robin Hood” effect (Arlin, 1984; Slavin, 1987).

As students catch on to mastery learning, they become more involved during class sessions. They begin to use the results from their formative assessment and often start helping one another with learning problems. In its full form it includes a philosophy, curriculum structure, instructional model, the alignment of student assessment, and a teaching approach.

Research shows that academic achievement for students is not influenced by students’ efficacy alone but the teachers’ efficacy also has the capability to make equally substantial contribution to students’ motivation, achievement and their sense of learning. Mastery learning is a key to improve achievement in school education and help to develop a chain among ‘School’, ‘Teacher’, ‘Learner’, and ‘Curriculum’.

References


