Mastery Learning: Understanding Its Purpose and Implementation

What is Mastery Learning?

Mastery learning, a teaching methodology widely adopted in modern schools and extensively applied in e-learning and distance learning (DaD), was developed half a century ago. The approach aims to ensure that at least 90% of students master a specific discipline. It is based on the division of content into mini-units and utilizes a stimulus-response-feedback framework.

Let's delve into the details of what mastery learning entails, why it is gaining popularity as a teaching approach, and how it is practically implemented in educational settings.

The Concept and Origin of Mastery Learning

Drawing on the theories introduced by psychologist John B. Carrol, educationalist Benjamin S. Bloom refined a teaching technique in the early 1970s that would later be named mastery learning. Bloom's key premise was that most learners can achieve a high level of competence given the appropriate conditions tailored to their individual needs. This foundational idea is not new; it has been the basis of tutorial instruction throughout history. The Jesuits, as well as renowned educators Comenius and Pestalozzi, recognized the significance of individualized teaching. In the 1920s, Morrison's laboratory school also emphasized this principle. Today, mastery learning encompasses various strategies but generally operates on the belief that 90% of students can attain a high level of learning under these conditions:

- Systematic instruction
- Breakdown of content into manageable mini-units
- Provision of sufficient time for students to master the discipline
- Support and assistance for struggling learners
- Establishment of clear mastery criteria

The Benefits of Mastery Learning

Bloom's theories highlight that educational progress should be contextualized within a student group, rather than based on a universal, objective standard. For instance, while a grade of 6 may be considered mediocre if the rest of the class has an average of 8, it could be viewed as a good grade if other students have an average of 5. Assuming students are normally distributed in terms of aptitude for a particular subject, in a traditional teaching setting where the same instruction and learning time are allocated to all students, performance will mirror the initial aptitude distribution. Many traditional educational models demonstrate this outcome. However, when instruction quality and learning time are tailored to individual characteristics and needs, the majority of the

class (around four-fifths) will have a high probability of mastering the subject. Essentially, the aim is to minimize the correlation between initial aptitude and final achievement. Mastery learning strategies strive to achieve this goal.

Strategies Utilized in Mastery Learning

To effectively implement mastery learning, it is crucial to define the concept of "mastery" within the framework of assessment. This necessitates breaking down the content into small units to enable progressive assessments at the end of each mini-course. These assessments are accompanied by feedback in the form of homework assignments, questions, and workbooks. Students who encounter difficulties during these checkpoints receive corrective feedback and assistance to overcome obstacles. Rather than allowing students to fall behind in their learning, personalized teaching strategies are adopted to help them succeed in areas where they initially struggled. In these cases, the teacher's role is to find effective remedies and demonstrate sufficient creativity in adopting strategies that benefit struggling students. Effective tools in this context may include:

- Grouping students into small peer-assistance groups
- Allowing adequate time for each student
- Consistent teacher support
- Audio files, workbooks, and multimedia materials
- Programmed instruction

The Significance of Timing

Within the framework of mastery learning, teaching content must be fragmented into units. Only when students have achieved mastery of each programmed sequence can they progress to the next one. Therefore, adhering to optimal learning times and offering recovery opportunities through regular mini-assessments play a crucial role in personalized instruction. Time becomes a vital factor; approximately 10-20% more time than the regular school schedule is needed to ensure that four-fifths of the class successfully masters the discipline. This additional time largely depends on the quality of diagnostic tests conducted throughout the learning process. These tests are administered at the end of each instructional unit and may be repeated for students who did not achieve satisfactory results initially.

Decades of research, particularly studies by Block, have demonstrated that mastery learning strategies have a significant level of effectiveness across various learning levels and educational settings. With few exceptions and in specific contexts, these results show that almost all students can acquire any knowledge if provided with optimal learning conditions.

Variables Influencing Mastery Learning

In addition to the aforementioned timing aspects, several variables affect mastery learning. One critical variable is the quality of instruction provided. The level at which explanations and the organization of instructional units cater to individual learners determines instruction quality. Not all teaching methodologies are suitable for every student. Consequently, the only parameter for evaluating the quality of instruction is its effectiveness, rather than its presentation. Another variable to consider is the diversity of learning abilities, which vary among students. By leveraging an array of instructional materials and administering regular mini-assessments, mastery learning aims to reduce the achievement gap as much as possible. Lastly, perseverance, defined as the time each student is willing to dedicate to mastering a mini-unit, is an important variable. Perseverance should not be confused with the time allotted, as a student may have ample time but still lack perseverance in overcoming a learning challenge. Conversely, students who achieve mediocre results may develop frustration towards learning, opposing the principles of lifelong learning.

Implementing Mastery Learning

Mastery learning strategies aim to establish an objective evaluation standard, a level achievable by all students at the end of each micro-learning unit. The primary goal is to create a shared target for the entire class, instead of evaluating students based on competition. Formative tests conducted between units allow both learners and teachers to assess the adequacy of study methods and instructional approaches, respectively. In the event of test failure, the teacher will reorganize the content using different instructional materials and methodologies. This approach also improves students' perseverance, as they develop a deeper interest in the subject matter as their understanding improves. This trial-and-error method is indicative of student modeling, a behavioral technique that encompasses three main phases:

1. Identify the skills to enhance in the student.
2. Highlight the initial skills that are closest to the desired outcome.
3. Facilitate the student's continuous mastery of the identified skills until the goal is achieved.

The purpose of student modeling is to assimilate lessons gradually, approximating the final outcome through a series of iterations. Mastery learning delegates the task of bringing