

A MASTERY LEARNING MODEL ANALYSIS IN THE CONTEXT OF 21ST- CENTURY LEARNING

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Abstract : The Mastery Learning model is a teaching method which focuses on mastery of learning objectives for students before teaching them the next content. This model is related to 21st-century learning, as it requires 4C (Critical thinking, Creativity, Communication, and Collaboration) skills and caters for a range of individual learners. This article review focuses on the strengths, weaknesses, and relevance of Mastery Learning in the contemporary system of education. The method adopted is a methodical literature review of published scientific articles. This study concludes that Mastery Learning actually strengthens conceptual understanding, motivation for learning material, and academic effectiveness, however has time management and preparation aspect challenges for teachers. Thus, utilizing digital technologies in the classroom is one of the most effective methods of instructional teaching in the 21st-century era; as a matter of fact, Mastery Learning can play an active role in it.

Keywords: Mastery Learning, Learning mastery, differentiated learning, formative assessment, 21 st-century skills digital technology integration.

INTRODUCTION

21st century education requires a paradigm shift in educational practices to foster critical thinking, creativity, communication, collaboration, and more, enabling 21st-century learning. Globalization and digital technology present challenges that offer opportunities for flexible pedagogical solutions tailored to the unique needs of individual students. This flexibility allows teachers to provide personalized teaching solutions as challenges arise. According to Ridwan Abdullah Sani (2019), 21st Century Learning demands technological literacy, higher-order thinking skills (HOTS), integrated learning systems, and student-centered learning systems, among

others, to develop 21st Century learning in an environment prepared to compete globally. One learning mechanism that meets these needs is mastery learning, developed by Benjamin S. Bloom (1968). Bloom noted that nearly all students can achieve a reasonable level of comprehension with sufficient time, a good learning process, and effective additional support. According to this theory, learning failure is often due to a malfunctioning learning model rather than low student ability. Therefore, current research findings confirm the relevance of Mastery Learning. Thomas R. Guskey, in the 2023 Journal of Educational Leadership and Policy Studies, found that Mastery Learning using formative evaluation and remedial action greatly improved student learning outcomes. John Hattie, in the 2021 Educational Research Review, stated that feedback and systematic implementation of formative assessment play a crucial role in students' academic progress—both core principles of Mastery Learning. A third study by Robert E. Slavin (2022) in the Review of Educational Research revealed that mastery-based learning models could enhance motivation and conceptualization among students despite differences in learning levels. Slavin also explained that freedom from learning faults positively impacts student self-efficacy. In Indonesian education, the term “mastery learning” refers to a differentiated methodology. As Rusman (2018) emphasizes in his book "Learning Models," a "learning model" can only succeed if it accommodates students' abilities according to their personalities and needs, modifying its strategies, procedures (methods), and performance measures to achieve instructional objectives. Wina Sanjaya (2018) also confirms this in his book "Learning Strategies Oriented to Educational Process Standards." According to him, learning completion is the best criterion of success in learning as it indicates the degree to which learners comprehend the material.

DESCRIPTION OF THE MASTERY LEARNING MODEL ANALYSIS IN THE CONTEXT OF 21ST-CENTURY LEARNING

The analysis of the Mastery Learning model in the context of 21st-century education is a study that examines how the concept of learning completeness can be adapted to a modern education system that requires critical thinking skills, creativity, collaboration, communication, and digital capabilities. The concept of Mastery Learning was first created by Benjamin S. Bloom (1968) who stated that almost all students can achieve a high level of mastery as long as they are given sufficient learning time, appropriate learning methods, and continuous feedback.

In the development of modern education, this concept was then adapted to 21st-century learning by education experts through a competency-based approach, differentiation in learning, and the use of technology. Rusman (2018) stated that learning must be designed in an organized manner and focused on achieving student abilities, while Wina Sanjaya (2018) emphasized the need for continuous evaluation

so that students can achieve good learning outcomes. Anita Woolfolk (2019) also stated that formative assessment and feedback are essential in improving the quality of learning. In the 21st-century learning era, the Mastery Learning approach is supported by recent research emphasizing student-centered learning and differentiation. Research published in the Humanities and Innovation Conference (2021) shows that mastery-based learning methods help students better grasp concepts because they are given the opportunity to correct errors through remedial and enrichment programs. Furthermore, Linda Darling-Hammond (2022) emphasized that 21st-century learning must provide student-centered, flexible, and individualized learning experiences. This principle aligns with the Mastery Learning approach, which provides different amounts of time and support for each student to achieve their desired competencies. Another 2023 study in the Journal of Education showed that using a Mastery Learning approach with the aid of digital technology can increase student enthusiasm for learning, engagement, and learning progress. This occurs because students can learn at a pace that suits their abilities through digital learning systems. In general, discussions about the Mastery Learning model in the context of 21st-century education indicate that this model remains relevant. With the help of technology, differentiation in learning, and continuous performance monitoring, Mastery Learning can improve learning outcomes and help each student reach their highest level of ability.

ADVANTAGES OF THE MASTERY LEARNING MODEL IN THE 21ST CENTURY LEARNING CONTEXT

The Mastery Learning model is a learning method that focuses on students achieving mastery of material before moving on to the next topic. This approach is well-suited to 21st-century learning because it can improve conceptual understanding, critical thinking skills, and a more student-centered learning process. Based on expert research and recent studies, here are some of the advantages of the Mastery Learning model in the context of 21st-century education.

1. Increase in-depth understanding of concepts.
Mastery-focused learning helps students better understand the material because each student is required to reach a predetermined level of mastery before moving on to the next topic. According to John Hattie (2021) in his book *Visible Learning: The Sequel*, clear learning objectives and systematic feedback significantly impact student learning outcomes. This principle aligns with the Mastery Learning approach, which focuses on ongoing evaluation and continuous improvement, thereby deepening student understanding.
2. Increase students' motivation and learning independence.

In the 21st-century learning era, students are required to be able to learn independently. Research in the Journal of Educational Psychology in 2021 found that learning methods that focus on mastery of material, by providing opportunities to correct mistakes and practice gradually, can increase students' intrinsic motivation and self-regulation skills. When students are given the opportunity to repeat until they achieve good results, they become more confident and engaged in their learning process.

3. Accommodate differences in student abilities

According to research by Ismail (2022) published in the Journal of Tikrit University for Humanities, the mastery learning strategy significantly improves learning outcomes compared to traditional methods because students have the opportunity to improve weaknesses and get more flexible learning time.

4. Assist teachers in developing structured learning that is in accordance with the expected competencies.

According to Rusman (2020) in his book "Learning Models," mastery-based learning helps teachers design organized learning, from goal setting and learning activities to ongoing assessment. This aligns with 21st-century education, which focuses on achieving student competencies.

5. Increase student learning input and self-confidence.

According to Wina Sanjaya (2018) in his book "Strategies for Learning Oriented to Educational Process Standards," mastery-based learning allows for continuous evaluation, helping students understand their learning deficiencies. This opinion is also supported by Richard Arends (2018), who argues that mastery learning increases students' self-confidence because they are given the opportunity to correct mistakes until they succeed.

WEAKNESSES OF THE MASTERY LEARNING MODEL IN THE CONTEXT OF 21ST CENTURY LEARNING

While mastery learning models have many advantages, their implementation also presents several drawbacks that teachers should be aware of. These drawbacks are often related to learning duration, teacher preparedness, and varying classroom conditions. In the context of 21st-century learning, which requires flexibility and innovation, these drawbacks must be addressed appropriately. Below are some of the drawbacks of the mastery learning model, according to experts and recent research.

1. Requires Longer Learning Time

Advanced learning requires students to reach a certain level of mastery before they can move on to the next topic. This makes the learning process longer than conventional methods. The Mastery Learning approach requires students to achieve a sufficient level of mastery before moving on to the next topic. This often makes the learning process take longer than traditional methods. According to Thomas R. Guskey (2020), in his book, "Implementing Mastery Learning," he explains that implementing mastery-based learning requires time adjustments because students need to be given opportunities for deeper or additional study if they don't fully grasp the material. This opinion is also supported by Rusman (2020) who said that learning that focuses on mastery requires good time planning so that all students can achieve the specified competencies.

2. More Complex Teacher Preparation is Needed

Teachers must develop materials in stages, regularly check progress, provide additional questions for students who still lack understanding, and provide supplementary programs for students who have already grasped the material well. This requires creativity and professional readiness from teachers. Research in Teaching and Teacher Education in 2021 showed that implementing learning based on differentiation and mastery requires teachers to have strong pedagogical skills in developing assessments and learning strategies. This is in accordance with the opinion of Wina Sanjaya (2018) who said that mastery-based learning requires teachers to provide continuous evaluation and feedback.

3. In the 21st century learning era

In the 21st-century learning era, the Mastery Learning approach is more effective when supported by technology such as a learning management system (LMS), digital question banks, and interactive media. Without these facilities, teachers struggle to monitor each student's individual learning progress. Research in the 2022 journal Computers & Education shows that digital technology is very helpful in implementing differentiated and mastery learning because it facilitates automatic monitoring of student progress. This opinion is also supported by Richard I. Arends (2018), who stated that adequate learning facilities significantly influence the success of innovative learning models.

4. Not effective for classes with many students

In large classes, teachers struggle to provide sufficient attention to each student to effectively master the material. Research conducted by Ismail in 2022 showed that the mastery learning method is less effective in classes with large numbers of students due to limited time and supervision. According to Robert E. Slavin (2018), learning that focuses on mastery is more effective in small classes or with the help of supporting technology.

5. Requires Support in the Form of Facilities and Technology

In the 21st-century learning era, the mastery learning approach becomes more effective when supported by technology such as learning management systems (LMS), digital question banks, and interactive modules. Without these tools, teachers may find it difficult to monitor their students' progress.

According to Huang (2023), the use of technology-based mastery learning methods requires adequate school facilities. According to Arends (2018), a lack of facilities can hinder learning that focuses on maximizing material mastery.

COMPARISON OF THE MASTERY LEARNING MODEL WITH OTHER LEARNING MODELS IN THE 21ST CENTURY LEARNING CONTEXT

In modern education, the mastery learning model cannot operate in isolation. This model is often compared with other learning methods, such as Problem-Based Learning, Project-Based Learning, and Cooperative Learning.

This comparison is important because it allows teachers to choose the appropriate teaching method to meet their students' needs, thus ensuring their 21st-century skills are developed effectively. The mastery learning model ensures that students fully understand the material before moving on to more advanced ones. This approach focuses on each individual's learning success through formative evaluation and continuous improvement. According to Robert E. Slavin (2018), in his book *Educational Psychology: Theory and Practice*, mastery-based learning can improve student learning outcomes because they are given the opportunity to correct mistakes until they achieve a better understanding. The Problem-Based Learning (PBL) model differs because it focuses more on real-world problem-solving and critical thinking skills through case studies. In the 21st-century learning era, this approach helps effectively cultivate collaborative and creative thinking skills. Recent research conducted by Linda Darling-Hammond and her team in 2022 showed that project-based and problem-based learning methods can improve critical thinking, collaboration, and student engagement. This occurs because students actively seek solutions to the problems presented.

The Project-Based Learning model provides learning experiences by working on real-life projects relevant to students' daily lives. This model helps foster creativity, communication skills, and collaboration in collaborative work. However, according to Richard I. Arends (2018), in his book, *Learning to Teach*, project-based learning requires clear guidance so that students not only focus on the project's results but also deeply understand the concepts within. Meanwhile, cooperative learning models such as STAD or TGT focus on group collaboration and social interaction among students.

This model can help increase enthusiasm for learning and the ability to interact with others. According to Rusman (2020) in his book "Learning Models," cooperative learning helps improve cooperation and communication among students. However, each student's level of understanding can vary because they learn in groups. In the context of the Independent Curriculum and 21st-century learning in Indonesia, combining various learning models is an effective approach. Recent research in the Journal of Educational Psychology (2021–2023) shows that combining mastery learning methods with project- or problem-based learning can improve students' conceptual understanding and 4C skills. Therefore, mastery learning remains crucial for achieving conceptual understanding, while other models help stimulate creativity, collaboration, and problem-solving skills. In general, mastery learning is better at ensuring deep and comprehensive conceptual understanding, while other learning models are better at fostering social skills and creativity. Therefore, in 21st-century learning, teachers can combine the mastery learning approach with other learning models to create a more balanced learning process, both in terms of understanding the material and practicing the skills needed in the 21st century.

CONCLUSION

The Mastery Learning model is a learning approach that ensures students have a good understanding of previous material before moving on to the next. This concept was first coined by Benjamin S. Bloom, who stated that almost all students can achieve a high level of mastery as long as they are given sufficient study time, appropriate methods, and continuous feedback. In the 21st-century learning era, this model remains relevant because it can help improve conceptual understanding, critical thinking skills, independence in learning, and problem-solving skills. The advantages of the Mastery Learning model are evident in its ability to consider differences in student abilities, enhance their enthusiasm for learning, and assist teachers in developing a structured and orderly learning process, as explained by Thomas R. Guskey and Rusman. Furthermore, the continuous evaluation and feedback approach in this model, as explained by Wina Sanjaya, helps students understand their learning weaknesses and improve them gradually and gradually. However, the Mastery Learning model also has several drawbacks, such as requiring longer learning times, requiring more complex teacher preparation, and requiring better learning resources and technology. In large classes, implementing this model becomes more difficult because teachers struggle to provide sufficient attention to each student. Overall, the Mastery Learning Model remains highly suitable for use in 21st-century education, especially when supported by learning technology, differentiated teaching approaches for each student, and effective time management. This model can improve the overall quality of learning because it focuses on deep understanding, critical thinking skills, and optimally developing each student's potential.

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