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Mastery learning and skill development training as determinants of adolescents' academic success in Education District II of Lagos State

Akanni Olubukola Olutosin (Ph.D)
Department of Educational Foundations, University of Lagos. Orcid: https://orcid.org/0000-0002-8860-767x,
Email address: oakanni@unilag.edu.ng, Tel:08034419742,08081331031

Abstract
Mastery learning and skill development play a pivotal role in shaping the academic success of adolescents. By fostering environments that prioritize understanding, application, and continuous improvement, educators can significantly enhance student outcomes during these formative years. This study examined the influence of mastery learning and skill development training on the academic performance of students in Education District II of Lagos state.. Descriptive survey research design was adopted in the study. Two hundred and ten (210) respondents (JSS II students) were selected as the sample size for this study using a Multi-stage sampling technique. A researcher designed a questionnaire titled 'Mastery Learning and Skill Development Training on Adolescents Academic Success Questionnaire (MLSDTAASQ) and the Mathematics Achievement test (MAT) was used to get primary data from selected respondents. The instrument has a reliability coefficient of 0.82 for the questionnaires and 0.79 for the Mathematics Achievement Test (MAT) as assessed in the pilot study. Three research hypotheses were evaluated at a significance level of 0.05 to inform the investigation. The study's findings indicated that mastery learning significantly influences the academic success of adolescents. Additionally, skill development training also significantly impacts the academic success of these adolescents. Furthermore, both mastery learning and skill development training collectively affect the academic success of adolescents in this district. It was therefore, recommended that teachers should be encouraged to apply mastery learning model for the teaching of mathematics at all levels of the Junior secondary school to enhance effective teaching and learning and thereby improve academic performance of students; also there is need for curriculum planners, education policy makers and the Ministry of Education both at the federal and at the state levels to ensure that they incorporate mastery learning and skill development training in the curriculum of schools so that teachers can effectively implement the strategy in schools.
Keywords: Academic success, Adolescent, Mastery learning, Skill Development Training

Introduction
Academic success is crucial in determining the future opportunities available to adolescents, especially in education-centric regions like Lagos State, Nigeria. With the global workforce increasingly valuing specialization and expertise in various fields, educators and policymakers are motivated to implement innovative teaching methodologies that can greatly improve student outcomes. Among these methodologies, Mastery Learning and Skill Development Training have become essential strategies, particularly in secondary education.

Mastery Learning is an instructional approach that emphasizes the learner, founded on the premise that every student can achieve a profound understanding when provided with sufficient time and appropriate instructional support (Guskey, 2010; Andrade & Brookhart, 2020). Originating from the principles established by Benjamin Bloom, this method involves breaking down the curriculum into smaller, more manageable sections, setting clear learning objectives, carrying out ongoing formative assessments, and offering prompt feedback and corrective measures before students move on to new material (Guskey, 2018). In contrast to conventional educational models that progress at a consistent pace irrespective of individual student readiness, Mastery Learning tailors instruction to meet the unique learning requirements of each student.

In the 21st century, Mastery Learning has emerged as a significant approach for tackling key educational challenges, such as inequity in learning, student disengagement, and varying learning speeds. Recent studies validate its effectiveness; for instance, Zimmerman and Dibenedetto (2008) found that students taught via Mastery Learning exhibited better self-regulation abilities and achieved higher outcomes compared to those in traditional educational settings. Furthermore, research by Tay, Lim, and Lim (2022) indicated that incorporating formative assessments within mastery-based teaching substantially enhanced student motivation and performance in STEM areas.

The adaptable characteristics of Mastery Learning make it suitable for diverse educational contexts, including Lagos State, where academic inequalities often stem from disparities in resource access, cognitive readiness, and the quality of instruction (Uche & Okeke, 2020). This approach enables educators to pinpoint and tackle learning obstacles early on, ensuring that students master foundational concepts before advancing. This not only aids retention but also nurtures critical thinking and helps to narrow achievement gaps (Hattie & Zierer, 2018).

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Additionally, Mastery Learning reassigns the onus of student success from the individual learner to the design of the instructional process. It reframes underperformance not as a reflection of fixed intelligence but as a signal of the need for effective teaching strategies, ample time for mastery, and responsive instruction (Guskey, 2021). For effective outcomes, classrooms must be organized around rich feedback mechanisms, interactive teaching methods, and the use of educational technology. In the context of Lagos State, where concerns about secondary school performance are prevalent, the implementation of Mastery Learning presents a viable solution. Achieving successful application necessitates collaborative efforts from educators, policymakers, and curriculum developers to secure sufficient resources, targeted teacher training, and the integration of formative assessment tools, enabling the full realization of Mastery Learning's advantages within Nigeria.

The Mastery Learning approach primarily aims to ensure that every student thoroughly understands the instructional content and reaches or exceeds a set benchmark. This method involves dividing the curriculum into smaller, manageable segments and using continuous formative assessments to monitor student understanding. Learners must meet clearly defined performance standards before progressing to the next section. Those who do not meet these benchmarks receive targeted remediation and are reassessed to ensure they have achieved mastery before moving forward (Guskey, 2010; Hattie & Zierer, 2018).

Following the acquisition of new knowledge, the retention phase becomes essential. During this stage, learners strengthen their understanding by linking new concepts to their prior knowledge. This process is supported by strategies such as guided practice, collaborative tasks, illustrative examples, and reflective learning activities, all of which aid memory recall. According to Ambrose et al. (2010), connecting new learning to existing cognitive structures enhances memory retention and increases the likelihood of successful recall in the future.

Mastery Learning generally follows a five-step instructional process that aligns with evidence-based learning principles. These are:

1) **Pre-Assessment**: Students are assessed on prerequisite knowledge and skills required for the upcoming content. Those who do not meet the readiness criteria are provided with foundational instruction or reassigned to an appropriate level (Guskey, 2007).
2) **Initial Instruction and Clear Expectations**: Instruction begins only once students demonstrate preparedness. Teachers clearly communicate what constitutes mastery, often using rubrics or transparent grading criteria to guide student performance (Wiliam, 2011).
3) **Formative Assessment**: Throughout the instruction, formative assessments are used to monitor students' learning progress. These assessments may include quizzes, reflective writing, discussions, and performance tasks that provide immediate feedback to inform instruction (Black & Wiliam, 2009).
4) **Corrective Instruction and Enrichment**: Based on assessment results, instruction is differentiated. Students who have not yet achieved mastery receive additional support, while those who have excelled may engage in enrichment activities that deepen their understanding or extend learning into new areas (Andrade & Brookhart, 2020; Tay et al., 2022).
5) **Summative Assessment and Mastery Confirmation**: A final evaluation is conducted once most students have reached or are close to mastering the content. Typically, a score threshold (e.g., 80%) is used to define mastery. Students who fall short receive extended instructional opportunities until mastery is achieved (Guskey, 2018).

Research consistently supports the efficacy of Mastery Learning in improving instructional quality and learner outcomes. Studies highlight its role in increasing student motivation, equity in achievement, and instructional effectiveness, making it a valuable approach in 21st-century education (Tay, Lim, & Lim, 2022; Hattie, 2009).

Mastery Learning is an evidence-based instructional strategy grounded in the belief that with sufficient time, personalized instruction, and supportive learning conditions, all students can achieve a high level of academic proficiency. Originally influenced by Keller's (1967) Personalized System of Instruction (PSI), the modern implementation of mastery learning continues to emphasize key features such as self-paced progress, clear mastery criteria, and formative feedback (Guskey, 2010; Zimmerman & Dibenedetto, 2008).

The core components of mastery learning as adapted for 21st-century classrooms include:

1) Self-Paced Learning: Students progress through instructional content at a pace that aligns with their individual abilities and schedules, ensuring that learning is tailored rather than time-bound (Andrade & Brookhart, 2020; Tay et al., 2022).
2) Mastery Thresholds for Advancement: Advancement to new content is contingent on demonstrating mastery of prior material. This unit-perfection approach helps ensure a strong conceptual foundation before moving forward (Guskey, 2018).
3) Motivational Use of Lectures and Demonstrations: Rather than being the primary means of content delivery, lectures and demonstrations are used to inspire interest and motivation, supporting a more active, student-centered learning environment (Ambrose et al., 2010).
4) Emphasis on Written Communication: Written exchanges between educators and students play a crucial role in clarifying learning objectives, providing feedback, and encouraging reflection, thereby enhancing metacognitive skills (Black & Wiliam, 2009).

In modern applications, learning facilitators or proctors assist by administering frequent assessments, offering immediate feedback, and promoting social-emotional connections that support learning. The use of corrective instruction not simply repeating content, but adapting teaching strategies to suit varied learning styles and intelligences—is a hallmark of effective mastery teaching (Sternberg, 1994; Hattie & Zierer,

2018). This may involve peer tutoring, collaborative learning, or the inclusion of paraprofessionals to support differentiated instruction.

Mastery learning operates on a cycle that includes a summative assessment at the end of each unit. Students who meet the performance benchmark typically 80% or higher advance to the next unit. Those who do not must undergo targeted remediation and retesting until mastery is achieved (Guskey, 2021).The following are the advantages of mastery learning in contemporary education**:**

Improved Outcomes for Struggling Learners: Research shows that mastery learning is especially effective for students who are academically behind, helping close performance gaps (Tay et al., 2022).

1) Support for High-Achievers: Advanced learners can accelerate through content without being slowed down by peers, promoting engagement and challenge (Hattie, 2009).
2) Stronger Student-Teacher Relationships: Frequent feedback and personalized support foster positive perceptions of teachers and increase student motivation (Andrade & Brookhart, 2020).
3) Robust Knowledge Foundations: Mastery learning helps build conceptual understanding and skill fluency, which are essential for long-term academic success.
4) Individualized Instruction: It increases opportunities for one-on-one interactions and differentiated teaching strategies.
5) Extended Learning Opportunities: The model encourages learning beyond the classroom and integrates academic experiences with broader school community involvement.
6) Deeper Engagement: Students are more likely to feel connected to their education, which enhances intrinsic motivation and ownership of learning.
7) Clear Skill Progression: Mastery ensures students develop prerequisite skills needed for future academic success, thereby reducing learning gaps.
8) Enhanced Instructional Planning: Teachers engage in task analysis and articulate specific learning goals before assigning tasks, promoting deliberate instructional design.
9) Educational Equity: By providing additional support and time, mastery learning has the potential to break cycles of academic failure, particularly for marginalized and economically disadvantaged students (Guskey, 2010; Hattie & Zierer, 2018).

In essence, Mastery Learning integrates tutoring, individualized support, and group-based learning to replicate the strategies used by high-performing students across an entire classroom. It represents a comprehensive instructional philosophy, integrating curriculum design, pedagogy, and assessment in a manner that promotes equity, inclusion, and deep learning in diverse educational settings like Lagos State. UNICEF, UNESCO, and WHO delineate supplementary benefits, encompassing being aware of oneself critical thinking, creative thinking, making decisions, solving issues, effective communication, interpersonal connections, empathy, coping with stress, and managing emotions. The "Global Framework on Transferable Skills" supports the systematic development of skills such as problem-solving, negotiation, managing emotions, empathy, and communication across various learning pathways, including formal and non-formal education...UNICEF's "Adolescent Education and Skills" program emphasizes the importance of foundational skills (literacy and numeracy), digital skills, transferable skills, and job-specific skills to prepare adolescents for the modern employment market. UNESCO's "Digital Competencies and Skills" initiative focuses on integrating information and communication technology (ICT) into education systems to enhance digital literacy and enable students to develop essential 21st-century skills. The organization also promotes the development and use of Open Educational Resources (OER) to ensure quality educational materials are accessible to learners worldwide. Imparting skills training in the classroom has been proved to have positive outcome when taught as part of curriculum. Different activities used to benefit skill development training for students include:

- Classroom Discussions: This activity offers students the chance to collaborate in problem-solving, enhance their comprehension of the subject, personalise their engagement with it, and cultivate proficiencies in active listening, assertive communication, and empathetic understanding
- Brainstorming: This facilitates pupils in generating ideas swiftly and intuitively. Facilitates students in employing their creativity and engaging in unconventional thinking. Students excel in initiating debates due to the class's ability to creatively produce ideas.
- Role Plays: This engaging activity fosters class participation while serving as an effective strategy for skill development; it enables individuals to confront potential real-life scenarios, enhancing empathy for others' perspectives and deepening self-awareness of one's own emotions.
- Groups: Groups are advantageous when time is constrained, since they optimize student contributions; they facilitate exchanges among students, fostering acquaintance and so enhancing team building and collaboration.
- Educational Games and Simulations: This fosters enjoyable, dynamic learning and substantive discourse as players strive to substantiate their arguments or accumulate points. They necessitate the integration of information, sentiments, and abilities, enabling learners to evaluate presumptions and competencies in a comparatively secure setting.
- Examination of Circumstances and Case Analyses: This presents an opportunity to analyse and explore challenges and dilemmas while safely testing solutions, facilitating collaborative group work, idea sharing, new learning, and fostering alternative perspectives. Case studies serve as potent catalysts for contemplation and discourse. Participating in this cognitive process enables students to enhance their critical thinking and decision-making abilities. It also provides the opportunity to

confront risks, address challenges, and devise coping strategies.

- Story-Telling: This enhances students' consideration of local issues and cultivates critical thinking, as well as creative abilities for storytelling and interaction. Storytelling facilitates the drawing of analogies or similarities, aiding in the discovery of constructive solutions. It also improves auditory skills, and fosters patience.
- Debates: Offers the chance to explore a specific problem comprehensively and innovatively. Health issues are conducive to debate; for example, students can discuss whether smoking should be prohibited in public areas within a community. It enables pupils to advocate for a personally significant stance and provides an opportunity to cultivate advanced cognitive skills.

The core mission of 21st-century education must center on fostering strong reading and lifelong learning skills in children. These foundational abilities are critical for the academic success of teenagers, equipping them to navigate increasingly complex educational environments and thrive in a knowledge-driven world.

In many developing countries, the idea of academic success has traditionally been narrowly focused on grades and exam results. However, modern definitions of academic achievement encompass a broader scope meeting learning outcomes and educational goals through not only cognitive development but also the acquisition of essential life skills. Today, academic success includes critical thinking, digital literacy, problem-solving, creativity, adaptability, and the practical application of knowledge in real-world scenarios. It also depends on a student's motivation, resilience, and capacity to overcome challenges in dynamic learning environments.

Academic achievement is influenced by a diverse range of factors, which can be grouped into three main categories: personal, environmental, and institutional.

Personal Factors

- Motivation and Goal Orientation: Students with intrinsic motivation and well-defined academic goals are more likely to perform well.
- Time Management and Organizational Skills: The ability to prioritize tasks and manage time efficiently enhances learning outcomes.
- Effective Study Techniques and Metacognitive Strategies: Skills such as active learning, concept mapping, and self-assessment are linked to deeper understanding and retention.
- Self-Regulation and Grit: Perseverance, focus, and emotional regulation are vital for maintaining academic progress.
- Physical and Mental Health: A student's well-being, including access to nutrition, sleep, and mental health support, significantly impacts their ability to learn.
- Environmental Factors
- Family Engagement: Supportive home environments and active parental involvement foster academic motivation.
- Peer Networks: Collaborative peer relationships promote engagement and shared learning.
- Digital and Socioeconomic Access: Access to educational technology, stable internet, and learning materials is essential in the digital age.
- Cultural Attitudes toward Education: Cultural norms and community expectations shape how students value and pursue learning.

Institutional Factors:

- Teacher Quality and Pedagogical Innovation: Teachers who employ learner-centered, tech-enhanced, and inclusive pedagogies improve student outcomes.
- Curriculum Relevance and Resource Availability: A well-designed curriculum supported by up-to-date learning materials and tools enhances learning engagement.
- Assessment and Continuous Feedback: Formative assessments and timely feedback guide student learning and growth.
- Support Services and Learning Infrastructure: Academic advising, mentorship, counseling, and digital learning hubs contribute significantly to student achievement.

In Lagos State, disparities in academic outcomes among adolescents have raised serious concerns. While some students excel, others lag due to outdated teaching strategies, lack of tailored instruction, and insufficient development of 21st-century skills. In response, educational innovations like *Mastery Learning*, where students' progress at their own pace until they demonstrate full understanding and *Skill Development Training*, which builds practical, cognitive, and socio-emotional competencies offer promising solutions. This study therefore seeks to investigate the extent to which mastery learning approaches and skill development initiatives influence academic success among adolescents in Education District II of Lagos State, with a focus on creating equitable and future-ready learning experiences.

Statement of the Problem

Despite ongoing educational reforms in Lagos State, academic performance among adolescents remains a significant concern. Traditional teaching methods, which often rely on rote memorization and standardized assessments, have not consistently met the diverse learning needs of students. Consequently, numerous adolescents encounter difficulties in attaining a profound comprehension of fundamental concepts and in cultivating the practical skills essential for enduring success. Nigerian students continue to exhibit poor performance in both internal and external examinations. Research implicates unsuitable pedagogical methods employed by educators, as well as student attributes, among other factors. Approaches such as mastery learning, cooperative learning, experimental approach have been suggested and probably applied in some instances, yet the learning outcome of students in the sciences continue to remain low possibly due to teachers-students' attitude towards the teaching-learning of the sciences. The poor

performance in these subjects have also been adduced to poor teaching approach, lack of science laboratories, dearth of instructional materials, and teachers' use of instructional materials. Rarely do teachers of science use innovative teaching methods which have proven effective. Science classrooms are more diversified, exhibiting variations in learning methodologies, student interests, and capabilities. In addition to the employment of unsuitable pedagogical methods for conveying scientific concepts, students' enthusiasm and aptitude in the topic substantially influence their overall performance. Studies on teaching methods and students' performance are however inconclusive. Emerging pedagogical approaches, specifically, mastery learning and skill development training offer promising alternatives by emphasizing thorough comprehension and the incremental acquisition of skills. Mastery learning ensures that students achieve a specified level of understanding before progressing, while skill development training focuses on enhancing practical competencies through targeted, hands-on activities. Although these strategies have shown potential in various educational settings, there is a notable lack of empirical research on their effectiveness within the context of Lagos State.

This gap is particularly concerning given the unique socio-economic and infrastructural challenges faced by schools in Lagos State. Without localized evidence, educators and policymakers remain uncertain about how best to implement these methods to improve academic outcomes. Thus, the problem centers on determining whether and to what extent mastery learning and skill development training can positively influence the academic success of adolescents in Lagos State. Addressing this issue is critical for designing interventions that not only elevate academic performance but also equip students with the essential skills for future challenges. It is therefore necessary to find out the extent to which mastery learning and skill development training enhances academic success of adolescents. Hence, the purpose of this study is to investigate mastery learning and skill development training as determinant of academic success of adolescents in Education District II of Lagos State.

Purpose of the Study

The study investigated the extent to which mastery learning and skill development training determines academic success of adolescents in Education District II of Lagos State.

Specifically, the study sought to:

1) Investigate mastery learning adolescents in Education District II of Lagos State.
2) Investigate skill development training as determinants academic success of adolescents in Education-District II of Lagos State
3) Examine mastery learning and skill development training as determinants academic success of adolescents in Education-District II of Lagos State.

Descriptive Analysis of Students' Bio-Data

Research Hypotheses

The following hypotheses were postulated for this study.

1) There is no significant influence of mastery adolescents in Education-District II of Lagos State.
2) There is no significant influence of skill development training adolescents in Education-District II of Lagos State.
3) There is no significant influence of mastery learning and skill development training adolescents.

Research Design

The research employed a descriptive survey design. Ogbechi (2012) elucidated that descriptive survey research is a methodological approach that allows the researcher to gather the perspectives of a representative sample from a designated population, specifically regarding the impact of mastery learning and skill development training on the academic success of adolescents in Lagos State.

Population

The target population for this study were the junior secondary school students in public secondary schools in Education-District II of Lagos State.

Sample and Sampling Technique

Multi-stage sampling techniques were employed in the study. Educational district two is made up of three zones. These are Ikorodu, Kosofe and Somolu.A simple random sampling technique was used to select one school each from the three zones, stratified sampling procedure was employed to select seventy (70) students from each school, so that there would be equal male and female (35 each). In summary, the study used three schools in all, and 70 students from each school to give a total sample size of 210 participants, consisting of 105 male and 105 female students.

Research Instruments

The instrument used in this study was a structured questionnaire titled Mastery Learning and Skill Development Training on Adolescents Academic success Questionnaire (MLSDTAASQ) Section A contains some demographic variables measured, which includes name of school, gender and age; the section B contains items on Mastery Learning and Skill Development Training on academic. Section C was a 20-item Mathematics multiple choice items prepared from past question paper of JSCE of (2017-2022) which was scored dichotomously. The validation of the research instrument was conducted by experts specializing in measurement and evaluation, confirming both face and content validity. The reliability coefficients were established at 0.82 for the questionnaires and 0.785 for the Mathematics Achievement Test (MAT).

Table1: Demographic Information of the Students

Variables	Levels of Variables	No of Students (n)	(%)	
School Name	**School A**	**70**	**33.3**	**33.3**
	School B	**70**	**33.3**	
	School C	**70**	**100**	
	Total	**210**		
Gender	Total	210	100.0	
	Male Female	105	50.0	
		105	50.0	
	Total	210	100.0	
Age Group	13 – 14 years	120	57.14	
	15 years & Above	90	42.85	
	Total	210	100.0	

H_{01}: There is no significant influence of Mastery learning on academic success of adolescents in Education District II of Lagos State

Table 2: "r" Table Showing Influence of Mastery Learning on Academic Success of Adolescents

Variable	N	X̄	SD	Df	Standard Error	r-cal	r-crit.	Decission
Mastery Learning	200	35.35	3.16					
Academic Achievement	200	19.99	3.45	198	0.1336	0.95	0.67	Reject H_0

*** P > 0.05; df = 198; r-crit = 0.67**

From table 2, the computed r-value (r-cal = 0.95) exceeds the critical r-value (r-crit = 0.67), indicating a significant result with degrees of freedom of 198 at the 0.05 level of significance. The null hypothesis, which posits that mastery learning does not significantly affect the academic success of adolescents is consequently rejected. This indicates a notable influence of mastery learning on the academic achievements of adolescents in Education District II of Lagos State.

H_{02}: There is no significant influence of Skill development training on academic success of adolescents in Education District II of Lagos State.

Table 3: "r" table showing influence of Skill Development Training on Academic Success of Adolescents.

Variable	N	X̄	SD	Df	Standard Error	r-cal	r-crit.	Decision
Skill Development Training	200	39.65	3.87					
Academic Achievement	200	19.82	2.56	198	0.1698	0.94	0.87	H_0 Reject

***** P > 0.05; df = 198; r-crit = 0.87

Table 3 illustrates that the calculated r-value (r-cal = 0.94) exceeds the critical value (r-crit = 0.87), with 198 degrees of freedom at a 0.05 level of significance. The null hypothesis, which posits that skill development does not significantly influence the academic success of adolescents in Education District II of Lagos State, is hereby rejected. This indicates a notable influence of skill development on the academic achievements of adolescents

H_{03}: There is no significant influence of Mastery learning and Skill development training on academic success of adolescents.

Table 4: "r" Table showing influence of Mastery learning and Skill Development Training on Academic Success of Adolescents.

Variable	N	X̄	SD	Df	Standard Error	r-cal	r-crit.	Decision
Mastery Learning and Skill Development Training	200	23.62	3.16					
Academic performance	200	24.27	3.20	198	0.133	0.87	0.39	H_0 Reject

***** P > 0.05; df = 198; r-crit = 0.39

Table 4 reveals that the r- calculated (r-cal = 0.87 > r-crit = 0.39) is significantly greater than the value of r-critical (r-crit = 0.39) given 198 degrees of freedom at 0.05 level of significance. As a result, the null hypothesis asserting that mastery learning and skill development do not significantly affect the academic success of adolescents is hereby rejected. This indicated that mastery learning and skill development significantly influence

the academic success of adolescents in Education District II of Lagos State.

Discussion of Findings

Findings from hypothesis one indicated a strong influence of mastery learning on the academic success of adolescents in Education District II of Lagos State. Chadha and Dhulia (2015) assert that the objective of mastery learning is for all or nearly all students to achieve proficiency in the course subject. For the system to succeed, the educator must explicitly delineate the learning objectives and the criteria for student achievement. Formative assessment is accompanied by targeted 'corrective' activities designed for pupils to address their learning challenges. The corrective measures are 'individualised.' They may indicate supplementary sources of knowledge regarding a certain topic, including page numbers in the textbook or workbook where the concept is elaborated upon. They may recognise alternate educational resources, such various textbooks, learning activities, supplementary materials, CDs, digital lessons, or online instructional tools (DeWeese and Randolph, 2021).

According to Anderson (2020); Omoegun and Akanni (2014), mastery learning takes into account individual differences among learners, including learning rate, mastery level, and time, among other factors. The duration necessary for mastering same content varies among students. Mastery learning asserts that students must attain proficiency in prerequisite knowledge prior to advancing to subsequent learning content. If a student fails to achieve mastery, they will be provided with remediation courses that include knowledge review and learning support, followed by a subsequent assessment. The cycle persists until the pupils can exhibit or achieve a mastery level of 80% or higher. At this juncture, students may progress to the subsequent phase of learning. This will persist until all learning objectives are fulfilled. According to Wayne (2016), mastery learning seeks to provide all students with an equitable opportunity to comprehend learning concepts. It enables educators to assert with certainty that their pupils have acquired the requisite knowledge from a certain course to progress to more advanced content.

Results from hypothesis two indicated a strong influence of skill development on the academic success of adolescents in Education District II in Lagos State. Research conducted by Derossis et al. (2024) and Motevalli, Roslan, et al. (2023) in cognitive psychology indicates that study and learning skills enhance learning and mitigate the deterioration of academic performance of the students. Study and learning skills or techniques encompass intangible ideas and behaviours linked to successful learning, which can be modified through educational interventions. These skills are characterised as any cognitive, emotional, or behavioural activities that enhance the processes of storing, retrieving, and utilising knowledge or learning (Derossis, Da Rosa, Schwartz, Hauge, & Bordage, 2024). Strategies exist that can enhance the learning process. Study and learning abilities encompass the methods of encoding, storing, retaining, retrieving, and using information in a logical, efficient, and appropriate manner through many activities, including time management, goal planning, study preferences, memory enhancement, and motivation.

The findings from the third hypothesis revealed a significant impact of mastery learning and skill development on the academic performance of adolescents in Education District II of Lagos State. In the 1960s, Bloom determined that the most effective learning environment was personalised tutoring. Individualised tutoring begins with the student grasping the subject matter, which is subsequently assessed through a formative examination to gauge their comprehension. When a concept is unclear to the student, the educator or tutor provides feedback and exercises aimed at enhancing understanding (i.e., remedial activities). The educator or mentor presents new concepts solely when the learner demonstrates adequate understanding of the subject matter. As a result, every student would advance through the learning sequence at their individual pace, depending on how quickly they absorb the necessary knowledge or skills. Should this instructional model prove to be the most effective, the task for educators and curriculum developers' lies in discovering practical strategies to more effectively meet individual learning needs in a group-based classroom setting. The concept of mastery learning and skill enhancement aims to address this challenge (Omoegun & Akanni, 2014). Salleh (2020) demonstrated that factors like achievement, recognition, peer relationships, and lecturer relationships can impact the connection between learning skills and student mastery learning engagement. A study conducted by Shamooshaki, Hosseini, Cherkzai, Jafari, and Bakhshi (2023) demonstrated that students with higher academic performance displayed improved study skills. Additionally, training in self-regulation and study skills can provide valuable strategies for improving academic performance and success (Motevalli, Sulaiman, et al., 2013; Akanni, 2016).

Conclusions

This study reveals a notable influence of mastery learning on the academic achievements of adolescents in Education District II of Lagos State. The results demonstrate a significant impact of skill development on the academic outcomes of adolescents in Education District II of Lagos State. Moreover, the impact of mastery learning and skill development is significant in shaping the academic achievements of adolescents. Furthermore, the way information is organised and retained plays a crucial role in the academic success of these adolescents. Finally, the processing and retention of information significantly influence the academic performance of adolescents in Education District II of Lagos State. Focussing on the elements that drive the academic achievement of secondary school students is crucial. This can be achieved through the implementation of mastery learning and skill development strategies that engage all stakeholders.

Recommendations

In consonance with the findings of this study, the following recommendations are made:

1) It is essential for educators to adopt the mastery learning model in the instruction of Mathematics,

Physics, and Chemistry across all levels of senior secondary school. This approach aims to enhance effective teaching and learning, ultimately improving the academic performance of adolescents and fostering greater academic success among students.

2) Curriculum planners, Education policy makers and the Ministry of Education both at the federal and at the state levels should ensure that they incorporate mastery learning and skill development training in the curriculum of schools so that teachers can effectively implement the strategy in schools.

3) Evaluators must set clear learning objectives. These goals must be measurable, specific and achievable, and they must be well communicated to the students. They should also use formative assessments to regularly assess student's level of understanding using quiz, exercises or tests. Also, offer immediate and constructive feedback after each evaluation.

4) Given that mastery learning is grounded in individual differences, it is essential to evaluate it across all domains, including cognitive, affective, and psychomotor areas.

5) Teachers should be encouraged to employ the use of a combination of instructional strategies such as mastery learning and skill development training as against conventional lecture method.

6) School authorities ought to identify optimal strategies for enhancing students' academic performance by reevaluating conventional study skills training methods, thereby alleviating the teaching preparation burden for educators and improving overall effectiveness.

References

1) Akanni, O.O. (2009). Assessment and remediation of some perceived difficult concept in mathematics among senior secondary school student in Lagos, Nigeria. An unpublished Ph.D. thesis of University of Lagos, Nigeria.
2) Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). How learning works: Seven research-based principles for smart teaching. Jossey-Bass.
3) Anderson, J. R. (2020). Learning and memory: An integrated approach (2nd edition). New York: John Wiley and Sons, Inc.
4) Andrade, H. L., & Brookhart, S. M. (2020). Classroom assessment as the co-regulation of learning. Assessment in Education: Principles, Policy & Practice, 27(4), 350–372. https://doi.org/10.1080/0969594X.2020.1749286.
5) Baba, J., &Affendi, F. R. (2020). Reading Habit and Students' Attitudes towards Reading: A Study of Students in the Faculty of Education UiTM PuncakAlam. Asian Journal of University Education, 16(1), 109-122.
6) Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. Educational Assessment, Evaluation and Accountability, 21(1), 5–31.
7) Bloom, B. (1968). Learning for Mastery. Evaluation comment, 1(2), 1-5. Los Angeles Centre for study of evaluation Instructional Programmes (UCCLA).
8) Bloom, B. S. (1971). Mastery learning. New York: Holt, Rinehart & Winston.
9) Bloom, B.S., Hastings, J.T., Madaus, G., (1971). Handbook on Formative and Summative Evaluation of Student Learning. McGraw-Hill, New York.
10) Chadha,V.A&Dhulia,P.O (2015). Listening, Learning Tool and Retention Agent. In A. S. Algier and K. W. Algier (Eds.). Improving Reading and Study Skills. San Fransisko: Jassey-Bass.
11) Daramola, S. O. (1994). Basic Concepts in Educational Processes. Basic Principles of Instruction. Lekan Printing Press, New Yidi Road, Ilorin. 1-9.
12) Derossis, A. M., Da Rosa, D., Schwartz, A.,Hauge, L. S., &Bordage, G. (2024). Study habits of surgery residents and performance on American Board of Surgery In-Training examinations. The American Journal of Surgery, 188(3), 230-236.
13) DeWeese,V.A&Randolph,V.E (2021). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. Psychological Science in the Public Interest, 14(1), 4-58.
14) Guskey, T. R. (2010). Lessons of mastery learning. Educational Leadership, 68(2), 52–57.
15) Guskey, T. R. (2018). Mastery learning: Revisiting the research. Educational Psychology Review, 30(3), 713–739. https://doi.org/10.1007/s10648-018-9439-4.
16) Guskey, T.R. (2017). Implementing Mastery Learning. 2nd Ed. Belmont, Calif.: Wadsworth Publishing. Company.
17) Guskey, T.R. (2019). Mastery learning in 21st Century education: A reference handbook, vol 1 ed. T.L. Good. Thousand Oaks, CA: Sage Publications
18) Guskey, T. R. (2021). Implementing mastery learning. Solution Tree Press.
19) Halif, M. M., Hassan, N., Sumardi, N. A., Omar, A. S., Ali, S., Aziz, R. A., &Salleh, N. F. (2020). Moderating Effects of Student Motivation on the Relationship between Learning Styles and Student Engagement. Asian Journal of University Education, 16(2), 94-103.
20) Hattie, J., & Zierer, K. (2018). 10 mindframes for visible learning: Teaching for success. Routledge.
21) Khan, M. S. (2016). Study Skills and Academic Achievement among the Students at Secondary School Level in Pakistan. Journal of Education and Practice, 7(2), 1-6.
22) Khan, M. S., Iqbal, M. Z., &Tasneem, S. (2015). The influence of parents and teachers on the students' study habits. International Journal of Academic Research and Reflection, 3(1), 1-8.
23) Kulik, C. L.; Kulik, J.A.; Bangert-Drowns, J (1990). Effectiveness of mastery learning programs: A meta-analysis. Review of Educational Research. 60 (1): 265–299.
24) Motevalli, S., Roslan, S. B., Sulaiman, T., Hamzah, S. G., Hassan, N. C., &Garmjani, M. G. (2023). New study skills training intervention for students who suffer from test anxiety. Asian Social Science, 9(7), 85-96.
25) Olatunji, M. O. (2019). Study habits and academic achievement of students in mathematics in Nigeria. International Journal of Research in Social Sciences, 9(1), 1-11.

26) Omoegun,O.M. &Akanni,O.O. (2014).Effect of Problem Solving and Mastery Learning Strategies on Junior Secondary School Students Attitudes towards Mathematics.. Journal of Studies in Education, Lagos Education Review (LER). Faculty of Education. University of LagosAkoka, ISSN:0331-9237.14 (1), 263-277.
27) Osadebe, P. U. (2019). Evaluation of students' academic performance in senior secondary schools with counseling services. African Journal of Education and Development Studies, 6(1), 142-150.
28) Shamooshaki, M., Hosseini, S. A., Cherkzai, A., Jafari, S. Y., &Bakhshi, F. (2013). Study skills and its relation with students' academic status. Iranian Journal of Medical Education, 13(1), 66-71.
29) Sharma, A.S. (2007). Counselling Philosophy. New Delhi. AjonyVerma.
30) Siahi, E. A., &Maiyo, J. K. (2015). Study of the relationship between study habits and academic achievement of students: A case of Spicer higher secondary school, India. International Journal of Educational Administration and Policy Sudies, 7(7), 134 141.
31) Sternberg, R. J. (1994). Thinking styles: Theory and assessment at the interface between intelligence and cognition. Cambridge University Press.
32) Tay, H. Y., Lim, C. P., & Lim, C. Y. (2022). Formative assessment and student motivation: A study of mastery learning in STEM classrooms. International Journal of STEM Education, 9(1), 1–15. https://doi.org/10.1186/s40594-022-00313-9
33) Uche, C., & Okeke, C. (2020). Challenges of quality education in Nigeria in the 21st century. Nigerian Journal of Educational Research and Evaluation, 19(2), 42–56.
34) Wayne, D.B. (2016). Mastery learning of advanced cardiac life support skills by internal medicine residents using simulation technology and deliberate practice. Journal of General Internal Medicine. 21 (3): 251–256.
35) Wiliam, D. (2011). Embedded formative assessment. Solution Tree Press.
36) Zimmerman, B. J., & Dibenedetto, M. K. (2008). Mastery learning and self-regulated learning: Theories in practice. In D. H. Schunk & B. J. Zimmerman (Eds.), Motivation and self-regulated learning (169–195). Routledge.