

Revisiting Mastery Learning Theory in Deaf Education: A Narrative Review

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Abstract

This article presents a narrative review of the relevance of Mastery Learning Theory in deaf education. The review aims to examine the conceptual foundations and core principles of Mastery Learning Theory, analyse its relevance to deaf education, and identify its theoretical and pedagogical contributions to more equitable instruction for deaf students. A narrative review approach was employed to synthesize relevant literature from mastery learning, deaf education, special education, formative assessment, and differentiated instruction. The review indicates that Mastery Learning Theory is highly relevant to deaf education because its core principles, including explicit learning objectives, formative assessment, corrective support, differentiated pacing, and progression based on demonstrated understanding, align closely with the educational needs of deaf students. The review also shows that existing scholarship in deaf education and mastery learning remains insufficiently integrated, despite clear areas of conceptual convergence. Overall, this article argues that Mastery Learning Theory offers a meaningful framework for supporting more structured, responsive, and language-accessible teaching in deaf education, while highlighting the need for further research on its application in deaf learning contexts.

Keywords: Mastery Learning Theory, Deaf Education, Deaf Students, Formative Assessment, Differentiated Pacing, Language Access

Introduction

Mastery Learning Theory remains one of the most influential frameworks in educational thought because it challenges the assumption that differences in student achievement are primarily determined by fixed ability. Instead, it proposes that most learners can attain high standards when instruction is carefully organized, learning objectives are explicit, formative assessment is used systematically, and corrective support is provided before students move to subsequent content (Bloom, 1968; Guskey, 2005; Winget & Persky, 2022). The theoretical basis of mastery learning can be traced to Carroll's model of school learning, which reconceptualized aptitude as the amount of time a learner needs to master a task rather than the limit of what the learner can achieve (Carroll, 1989). Bloom (1968) later translated this proposition into a practical instructional model through *Learning for Mastery*, while later scholars, particularly Guskey (2010), clarified that the enduring value of mastery learning lies in its emphasis on formative assessment, feedback, correction, enrichment, and alignment among goals, instruction, and evaluation. More recent studies have reaffirmed mastery

learning as a relevant framework for competency-based education and structured progression across disciplines (Wong & Kang, 2012; Winget & Persky, 2022).

This perspective is especially relevant to deaf education, where academic development is closely connected to language access, communication conditions, and the quality of instructional support. Research shows that deaf students' outcomes are shaped not simply by hearing status, but by whether they have meaningful access to classroom language, clear communication, and sustained pedagogical support (Hrastinski & Wilbur, 2016; Marschark et al., 2015). When access to instruction is partial, delayed, or inconsistently mediated, the consequences extend beyond language development to affect comprehension, participation, and later academic progress. Under such conditions, the core features of mastery learning, especially explicit teaching, differentiated pacing, frequent checks for understanding, corrective feedback, and repeated opportunities to demonstrate learning, appear highly relevant to the needs of deaf students. This relevance becomes even stronger when mastery learning is considered alongside the broader literature in special education, which emphasizes individualized instruction, structured preparation, content adaptation, varied teaching materials, and teacher guidance as important elements in improving learning outcomes among students with diverse needs (Pocan, 2022; Ahmad Sabri & Zakaria, 2022; Ahmad et al., 2024).

Recent scholarship further reinforces the importance of language access and communication quality in deaf education. Holcomb et al. (2025) found that classroom communication practices influenced how deaf students with limited language proficiency engaged with instruction, particularly in relation to responsiveness, classroom interaction, and teacher communication style. This suggests that access to learning in deaf education is shaped not only by content itself, but also by the form, clarity, and accessibility of classroom communication. In a related way, Conama (2025) argues that language education policy can directly affect the use and recognition of sign language within deaf education, with implications for access, inclusion, and educational equity. These perspectives strengthen the relevance of Mastery Learning Theory to deaf education because they indicate that progression in learning should be tied not only to content exposure, but also to whether students have had accessible pathways to understanding through language and instruction. Despite this conceptual alignment, the relationship between Mastery Learning Theory and deaf education has not been sufficiently synthesized in the literature. Deaf education scholarship has largely developed through strands such as sign language development, communication access, literacy, inclusive education, and differentiated instruction, whereas mastery learning scholarship has focused more directly on instructional sequencing, competency, assessment, and progression (Guskey, 2005; Álvarez et al., 2025). As a result, these two bodies of work often remain disconnected, even though they address closely related concerns. This gap limits the field's ability to interpret deaf education through a more integrated instructional lens that connects access, understanding, pacing, and progression within a single framework. Recent scholarship also indicates that mastery learning, although pedagogically promising, has not been adopted consistently across educational settings because of definitional ambiguity, institutional constraints, teacher workload, and the difficulty of scaling individualized support (Álvarez et al., 2025; Szabo et al., 2025). Nevertheless, empirical and review-based studies continue to suggest that mastery learning can improve academic achievement, strengthen affective outcomes, and support more

equitable learning when implemented effectively (Guskey & Gates, 1986; Guskey & Pigott, 1988; Kulik et al., 1990; Onuoha et al., 2025).

The need to foreground language access is also supported by recent research showing that inadequate access to communication in childhood may have lasting consequences for deaf individuals. McRae et al. (2025) reported that deaf participants linked inadequate early communication access with later mental health impacts, underscoring how language deprivation and communication barriers can shape wider educational and developmental outcomes. Although this work is not a classroom intervention study, it reinforces the argument that access to communication should be treated as a foundational condition for learning rather than as an optional support. In this respect, the relevance of Mastery Learning Theory to deaf education lies not only in improving achievement, but also in ensuring that progression occurs under conditions of meaningful access to language, concepts, and instructional support.

Accordingly, this narrative review examines the relevance of Mastery Learning Theory in deaf education by exploring its conceptual foundations, core instructional principles, application to deaf learners, and relationship with prior studies in mastery learning, special education, and related teaching contexts. It argues that Mastery Learning Theory offers a useful framework for understanding how language-accessible, structured, and responsive teaching can be organized in ways that better support deaf students' learning, while also contributing a more integrated conceptual perspective for future scholarship and instructional practice. This narrative review is guided by three objectives. First, it aims to examine the conceptual foundations and core principles of Mastery Learning Theory. Second, it seeks to analyse the relevance of Mastery Learning Theory to deaf education, particularly in relation to language access, instructional clarity, formative assessment, corrective support, and differentiated pacing. Third, it aims to identify the theoretical and pedagogical contributions of Mastery Learning Theory in supporting more equitable and language-accessible instruction for deaf students.

Problem Statement

Although Mastery Learning Theory has long been recognised as a powerful instructional approach, its relevance to deaf education remains insufficiently articulated in the literature. A major concern in deaf education is that students may be expected to progress through curricular content even when access to instructional language, conceptual explanation, and opportunities for clarification are not yet fully secured. In such contexts, learning difficulties cannot be understood simply as a matter of student ability or low achievement. Rather, they are closely tied to the extent to which deaf students have meaningful access to classroom communication, clear instructional support, and sufficient time to consolidate understanding (Hrastinski & Wilbur, 2016; Marschark et al., 2015). When progression occurs without secure understanding, the result may not only be incomplete mastery of isolated topics, but the accumulation of conceptual and linguistic gaps over time. This phenomenon is particularly significant in deaf education because language access is not peripheral to learning, but foundational to how content is received, interpreted, and understood.

Despite the importance of this issue, existing scholarship has not sufficiently examined it through the lens of Mastery Learning Theory. Research in deaf education has generated

substantial insights into language development, literacy, sign language access, communication modality, and instructional support, while mastery learning scholarship has focused more directly on explicit objectives, formative assessment, corrective instruction, pacing, and progression based on demonstrated understanding (Bloom, 1968; Guskey, 2005, 2010; Winget & Persky, 2022). However, these two bodies of literature have largely developed in parallel rather than in direct dialogue. As a result, there remains limited conceptual synthesis explaining how mastery learning might function as a meaningful framework for addressing language access, instructional clarity, supported progression, and educational equity in deaf education.

This gap is important for both theory and practice. From a theoretical perspective, it limits understanding of how mastery should be interpreted in contexts where access to communication is itself a condition of learning. From a practical perspective, it leaves teachers without a sufficiently integrated framework for deciding how to align objectives, instruction, assessment, corrective support, and progression when teaching deaf students. Although research in special education repeatedly highlights the need for structured teaching, adapted materials, individualized support, and responsive pedagogy (Ahmad Sabri & Zakaria, 2022; Pocaan, 2022; Ahmad et al., 2024), these recommendations are often presented in fragmented ways rather than connected through a coherent instructional model. Therefore, the rationale for this study lies in the need to critically examine how Mastery Learning Theory may be understood and applied in deaf education, and to clarify whether it can provide a more integrated framework for supporting equitable, language-accessible, and understanding-based learning for deaf students.

Methodology

This study employed a narrative review approach to synthesize literature related to Mastery Learning Theory and deaf education. The narrative review approach was selected because the purpose of this article was not to measure the effect size of mastery learning interventions, but to develop a critical conceptual synthesis across several related bodies of literature. These included mastery learning scholarship, deaf education research, special education literature, and studies on formative assessment and differentiated instruction. Relevant studies were identified through databases including Scopus, Web of Science, ERIC, and Google Scholar using keywords such as “mastery learning,” “deaf education,” “formative assessment,” “language access,” and “special education.” Priority was given to peer-reviewed journal articles, review studies, and conceptual works published in English between 1968 and 2025. Sources were included when they provided theoretical, empirical, or conceptual relevance to the relationship between mastery learning principles and the educational needs of deaf students. This included studies that addressed explicit learning objectives, formative assessment, corrective instruction, differentiated pacing, feedback, enrichment, language access, accessibility, instructional clarity, and learner support. Studies that focused only on general achievement without clear relevance to instructional design, assessment, accessibility, or learner support were excluded from the main synthesis. In this way, the review remained conceptually focused while drawing from a broad interdisciplinary literature relevant to education, deaf studies, and pedagogy.

The analysis was conducted thematically. The selected literature was read repeatedly to identify recurring concepts related to explicit learning objectives, formative assessment,

corrective instruction, differentiated pacing, feedback, enrichment, language access, and instructional equity. These themes were then compared across mastery learning and deaf education literature to identify areas of conceptual convergence, gaps, and implications for future research. The review did not aim to provide an exhaustive systematic synthesis, but rather to develop a critical and thematic understanding of the relevance of Mastery Learning Theory in deaf education.

Concepts and Core Principles of Mastery Learning Theory

Mastery Learning Theory is grounded in a fundamentally different understanding of educational achievement from that underpinning conventional time-based instruction. Rather than accepting variation in student performance as an inevitable consequence of fixed differences in ability, mastery learning begins with the proposition that most learners can attain a high standard of achievement if they are provided with appropriate instruction, sufficient time, and targeted support (Bloom, 1968; Guskey, 2005). This proposition does not deny learner variation. Instead, it relocates the source of educational inequality from the learner alone to the interaction between learner needs and instructional conditions. In doing so, mastery learning offers not merely a teaching strategy, but a broader instructional philosophy that challenges deficit interpretations of student performance.

The foundations of mastery learning are commonly traced to Carroll's model of school learning, in which aptitude is conceptualized as the amount of time required to learn a task rather than the limit of what can be learned (Carroll, 1989). Bloom's contribution was to convert this proposition into a workable classroom model by arguing that if teachers varied instruction and learning time, they could reduce variation in outcomes (Bloom, 1968). This shifts the logic of schooling away from fixed-time progression, where all learners move through content at the same pace regardless of understanding, and toward a mastery-based model in which progression is contingent on demonstrated learning. In this sense, mastery learning is intrinsically opposed to instructional systems that privilege coverage over understanding.

The first core principle is the explicit specification of learning outcomes. Mastery learning requires teachers to identify clearly what students are expected to know, understand, or do, and to define in advance the level of performance that will count as mastery (Bloom, 1968; Winget & Persky, 2022). This makes mastery learning criterion-referenced rather than norm-referenced. Students are judged against articulated standards, not against the relative performance of peers. Wong and Kang (2012) emphasize that mastery learning depends on clear alignment between learning goals, instruction, and evaluation, while Guskey (2007) similarly argues that without such alignment, the logic of mastery breaks down.

The second core principle is formative assessment. In mastery learning, assessment is not treated primarily as a terminal event used to rank students or certify failure. Instead, it functions diagnostically to determine what has been learned well and what still requires attention (Bloom, 1968; Guskey, 2005). Formative assessment is therefore central, not peripheral, to the mastery process. As Guskey (2005) explains, Bloom regarded well-constructed formative classroom assessments as the key mechanism through which variation in achievement could be reduced. Winget and Persky (2022) likewise describe formative

assessment as one of the essential steps in mastery learning because it provides evidence about students' current standing in relation to desired objectives.

Closely linked to formative assessment is corrective instruction. Bloom (1968) argued that students who do not initially reach the expected standard should not simply move on with unresolved misunderstanding. Instead, they should receive corrective activities specifically designed to address the concepts or skills they have not yet mastered. These correctives may include alternative explanations, additional practice, different materials, guided support, or reteaching. Importantly, the purpose of correction is not repetition for its own sake, but pedagogical adjustment. As Winget and Persky (2022) note, corrective activities should respond directly to the source of error or misunderstanding rather than merely replicate the original instruction. Guskey (2010) similarly emphasizes that the feedback-corrective cycle is what gives mastery learning its instructional power.

Another foundational principle is differentiated pacing. Mastery learning rejects the assumption that all students must learn the same material in the same amount of time. Instead, it assumes that while desired achievement may remain relatively constant, the time and support needed to reach that achievement may vary substantially across learners (Bloom, 1968; Carroll, 1963). Wong and Kang (2012) identify pacing as one of the defining distinctions between mastery learning and conventional instruction, while Álvarez et al. (2025) note that student-paced learning remains one of the central but also most difficult aspects of mastery learning to implement at scale. The critical point is that differentiated pacing is not an optional enhancement within mastery learning. It is one of its defining commitments.

Feedback is another central principle, but its role is more specific than is sometimes assumed. In mastery learning, feedback is not simply the communication of scores or the general indication that an answer is right or wrong. It is instructional information that helps learners understand the gap between their current performance and the mastery criterion, and it guides the next phase of learning (Bloom, 1968; Guskey, 2007). Wong and Kang (2012) argue that one of the two defining features of mastery learning is the provision of feedback together with correctives and enrichment. Feedback alone may raise awareness of difficulty, but within mastery learning it becomes pedagogically meaningful only when linked to action.

A further principle is enrichment for students who achieve mastery early. Bloom's model was not designed solely to assist lower-performing students. Students who demonstrate mastery at the first formative assessment are not expected merely to wait while others complete corrective work. Instead, they are given enrichment or extension activities that broaden, deepen, or apply learning in more complex ways (Bloom, 1968; Guskey, 2010). This principle is often overlooked in critiques that portray mastery learning as merely remedial. In fact, enrichment is essential because it preserves challenge and ensures that high achievement remains meaningful.

Instructional alignment binds the model together. According to Guskey (2007), mastery learning only functions effectively when learning goals, instructional activities, formative assessments, correctives, and summative evaluations all focus on the same intended outcomes. Wong and Kang (2012) identify this alignment as one of the two essential defining features of mastery learning. In analytical terms, instructional alignment is what allows

mastery learning to operate as a coherent system rather than a collection of disconnected classroom techniques.

That said, mastery learning should not be interpreted simplistically. One recurring problem in the literature is that it is sometimes described as if it merely involves breaking content into smaller units and requiring students to pass each unit before continuing. Such interpretations reduce mastery learning to a procedural model of segmented instruction. In reality, mastery learning is more demanding than that. It requires high-quality objective design, meaningful formative assessment, valid mastery criteria, pedagogically responsive correctives, and a level of instructional flexibility that many institutions struggle to sustain (Álvarez et al., 2025; Wong & Kang, 2012). Taken together, the core principles of mastery learning are conceptually strong but practically demanding.

In sum, Mastery Learning Theory is best understood as a coherent instructional system built on explicit learning objectives, formative assessment, corrective instruction, differentiated pacing, meaningful feedback, and enrichment following demonstrated mastery. These are held together through instructional alignment and the underlying assumption that most learners can succeed when teaching is designed responsively. This conceptual foundation is especially important for the present review because it provides the basis for considering whether these principles can be meaningfully adapted to deaf education, where access to instruction, clarity of communication, and progression based on secure understanding are especially important.

Application of Mastery Learning Theory in Deaf Education

The application of Mastery Learning Theory in deaf education is not simply a matter of transferring a general instructional model into a different learner population. Rather, it requires critical consideration of how the theory's principles intersect with the linguistic, communicative, and pedagogical conditions under which deaf students learn. Deaf education is not defined only by the presence of hearing loss, but by the educational consequences of differential access to language, classroom discourse, and instructional mediation. In such contexts, the promise of mastery learning lies not in its procedural features alone, but in its potential to organize teaching around secure understanding, responsive pacing, and timely support before misunderstanding accumulates into long-term educational disadvantage (Hrastinski & Wilbur, 2016; Marschark et al., 2015).

A first point of application concerns instructional clarity and explicitness. Deaf students often depend on teaching that is linguistically accessible, highly structured, and carefully sequenced. This should not be reduced to the simplistic assumption that deaf learners merely require more visual teaching. Rather, effective deaf education depends on whether instruction is made sufficiently explicit for students to access, process, and connect concepts meaningfully. Mastery learning offers a useful framework here because it requires teachers to define learning outcomes clearly, teach toward those outcomes deliberately, and verify whether students have understood them before moving forward (Bloom, 1968; Guskey, 2010).

A second major area of application lies in language access and progression through content. Deaf students do not simply need exposure to content; they need access to the language

through which content is communicated, explained, clarified, and assessed. Hrastinski and Wilbur (2016) found that stronger sign language proficiency was associated with better reading comprehension and academic achievement, while Marschark et al. (2015) demonstrated that educational outcomes among deaf and hard of hearing learners reflect the interaction of communication and educational factors rather than hearing status alone. If progression in mastery learning is meant to depend on demonstrated understanding, then in deaf education that understanding cannot be assumed unless teachers are attentive to whether students had full access to the language of instruction in the first place. In other words, mastery in deaf education must be understood not only as mastery of content, but also as mastery under conditions of accessible communication.

This point becomes especially important in relation to formative assessment. In conventional settings, a weak formative assessment result may reflect conceptual misunderstanding, lack of preparation, or insufficient practice. In deaf education, however, it may also reflect interrupted access to explanation, reduced clarity in teacher language, unfamiliar vocabulary, or limited opportunities to ask questions within an accessible communicative environment. For this reason, formative assessment in deaf education cannot be treated as a neutral measurement event. It must function diagnostically in a deeper sense by helping teachers determine whether a learner's difficulty stems from concept complexity, language mediation, or a combination of both (Bloom, 1968; Guskey, 2005; Winget & Persky, 2022).

Corrective instruction is therefore especially important. In mastery learning, correctives are designed to address those concepts or skills not yet mastered. In deaf education, corrective instruction may involve re-explaining content through clearer signed or spoken language, using more accessible examples, reducing linguistic complexity, introducing concept-specific vocabulary more explicitly, or offering guided practice with more direct teacher mediation. The special education literature supports this kind of responsive teaching. Ahmad Sabri and Zakaria (2022) emphasize that planned preparation and structured teaching are necessary to provide meaningful learning experiences for students with special needs, while Pocaan (2022) highlights individualized instruction, content modification, and motivational support as major strategies in effective special education teaching. From a mastery learning perspective, these are not peripheral accommodations. They are precisely the types of corrective responses required when students do not yet demonstrate secure understanding.

Differentiated pacing is another major point of application. Deaf students are not a homogeneous group. They vary in age of language exposure, communication mode, family background, prior educational access, literacy experience, and degree of linguistic support. Marschark et al. (2015) make this variability clear, and broader mastery learning scholarship similarly stresses that students differ in the time and support required to achieve mastery (Bloom, 1968; Wong & Kang, 2012). In deaf education, fixed pacing may disadvantage students whose access to prior learning has been uneven. A mastery learning approach offers a more equitable alternative by allowing more time, additional explanation, and repeated demonstration of competence before introducing more advanced material. This does not imply lowering expectations. On the contrary, mastery learning maintains a high standard while varying the route and pace by which students reach it.

The application of mastery learning in deaf education also has implications for teacher decision-making and instructional planning. The theory assumes that teachers can define mastery criteria, design aligned formative assessments, interpret assessment evidence accurately, and provide suitable correctives or enrichments. Yet studies in Special Education suggest that this level of instructional responsiveness cannot be taken for granted. Ahmad et al. (2024) found that teacher readiness in handling learners with specific learning difficulties was only moderate, especially in relation to identifying effective techniques and strategies. This matters for deaf education because the success of mastery learning depends heavily on the teacher's pedagogical judgment. If a teacher cannot distinguish between a language access problem and a conceptual misunderstanding, then the corrective pathway may be poorly targeted.

At the same time, the potential of mastery learning in deaf education should not be overstated. The theory is highly attractive because it aligns with key pedagogical concerns in deaf education, but its implementation is also demanding. Recent literature has pointed to barriers such as teacher workload, definitional ambiguity, institutional rigidity, and the difficulty of sustaining individualized support at scale (Álvarez et al., 2025; Szabo et al., 2025). These concerns are even more salient in deaf education, where teachers may already need to manage adapted materials, communication supports, specialized language demands, and wide variation in learner profiles. This means that mastery learning in deaf education must be understood critically. It is not a self-executing solution.

Nevertheless, when interpreted carefully, Mastery Learning Theory offers a strong pedagogical lens for deaf education because it insists on a principle that is especially important in this field: students should not be moved forward merely because instruction has been delivered, but because understanding has been demonstrated under conditions of genuine access. In this way, mastery learning reframes teaching from coverage to comprehension, from fixed pacing to responsive progression, and from one-time exposure to supported attainment.

Table 1

Mapping the Principles of Mastery Learning Theory to the Educational Needs of Deaf Students

Principle of Mastery Learning Theory	Relevance to Deaf Education
Explicit learning objectives	Deaf students benefit from clearly stated learning goals because explicit objectives reduce ambiguity and make instructional expectations more accessible. This is particularly important in contexts where access to classroom language may be partial or delayed.
Formative assessment	Formative assessment helps teachers determine whether difficulties arise from conceptual misunderstanding, language barriers, or both. In deaf education, this allows earlier identification of learning needs before misunderstanding becomes cumulative.
Corrective instruction	Corrective support is especially important for deaf students because it enables teachers to re explain content through more accessible language, visual strategies, sign language clarification, guided practice, and adapted examples.
Differentiated pacing	Deaf students vary in language background, communication mode, prior educational access, and literacy development. Differentiated pacing allows

	them more time and support to achieve mastery without lowering expectations.
Feedback	Meaningful feedback helps deaf students understand the gap between current performance and expected mastery. In deaf education, feedback must be clear, accessible, and connected directly to corrective action.
Enrichment	Enrichment ensures that students who achieve mastery early continue to be challenged through extension activities. In deaf education, this supports not only equity but also higher order learning and deeper engagement.
Progression based on demonstrated understanding	This principle is highly relevant in deaf education because students should not move to new content merely because instruction has been delivered. Progression should occur only when understanding has been demonstrated under conditions of genuine access.
Instructional alignment	Alignment between objectives, instruction, assessment, and corrective support ensures that deaf students are evaluated on learning that has been taught in accessible and meaningful ways.

As shown in Table 1, the principles of Mastery Learning Theory are not only conceptually compatible with deaf education, but also pedagogically relevant to the practical demands of teaching deaf students. In particular, the emphasis on explicit objectives, formative assessment, corrective instruction, and differentiated pacing provides a useful framework for ensuring that progression is based on demonstrated understanding rather than curriculum coverage alone.

Review of Previous Studies

Previous Studies on Mastery Learning in General Education

Previous studies on mastery learning in general education have generally produced a positive, although not entirely uniform, picture of its educational value. Since Bloom's early work, mastery learning has been associated with improved academic performance, reduced variation in student outcomes, and stronger student confidence when compared with conventional instructional models that move all learners through content at the same pace (Bloom, 1968; Guskey, 2010). Guskey (2005), for example, argued that Bloom's central contribution lay in showing that variation in achievement could be reduced not by lowering standards, but by increasing variation in instructional support and learning time. Later review work has reinforced this claim by emphasizing that mastery learning remains one of the most systematically developed approaches for linking assessment, feedback, correction, and progression within a coherent instructional model.

The literature also reveals that mastery learning is neither singular nor uncontested in its implementation. One recurrent theme is that the term has been used to refer to multiple instructional variants, including Bloom's *Learning for Mastery*, Keller's Personalized System of Instruction, precision teaching, direct instruction models, and more recent competency-based or adaptive systems (Wong & Kang, 2012; Guinness et al., 2021; Szabo et al., 2025). This diversity partly explains why the evidence base, although broadly favorable, is difficult to interpret straightforwardly. Studies may all claim to investigate mastery learning while actually examining different pacing structures, assessment systems, mastery criteria, or forms of learner support. As Álvarez et al. (2025) argue, definitional ambiguity remains one reason mastery learning has not achieved more consistent adoption.

A consistent finding across the literature is that formative assessment, corrective instruction, and repeated opportunities to demonstrate competence are among the most influential elements of mastery learning. Bloom (1968) originally framed formative evaluation as the mechanism through which learning difficulties could be identified before they became cumulative failures. Guskey (2005) later reaffirmed that well-designed formative classroom assessments are essential because they guide teachers in differentiating instruction. Winget and Persky (2022) similarly explain that mastery learning requires learners to complete formative assessments tied to specific learning outcomes and, when mastery is not reached, to move through corrective activities and reassessment until the desired level is attained. This repeated cycle of diagnosis, correction, and retesting remains central to the instructional identity of mastery learning.

Another recurring theme concerns the educational benefits of mastery learning. Several studies and reviews suggest that mastery-oriented instruction can improve academic achievement, retention, motivation, and student attitudes toward learning. Wong and Kang (2012) note that mastery learning has consistently produced positive academic and affective outcomes, although the size of these effects varies depending on contextual factors such as assessment type, instructional quality, mastery threshold, and study duration. More recent empirical work by Onuoha et al. (2025) likewise reported that students exposed to a mastery learning teaching method achieved better academic performance and developed more positive attitudes than those taught through conventional chalk-and-talk instruction. However, the literature also cautions that the success of mastery learning depends heavily on implementation quality and instructional context, including teacher quality, subject matter, study duration, mastery criteria, and the quality of instructional materials (Wong & Kang, 2012; Álvarez et al., 2025).

Previous Studies on Mastery Learning in Special Education

The literature in special education provides an important point of convergence because many studies emphasize pedagogical conditions that are highly consistent with mastery-oriented instruction, even when they do not explicitly frame their work through Mastery Learning Theory. Ahmad Sabri and Zakaria (2022), for instance, found that meaningful learning experiences for students with special needs depend on planned preparation and structured implementation by teachers. Pocaan (2022) similarly identified individualized instruction, content modification, strong motivation, and adapted materials as major strategies in effective special education teaching. Ahmad et al. (2024) further reported that teachers in mainstream settings showed only moderate readiness when handling students with specific learning difficulties, particularly in determining effective teaching techniques, although they did attempt to diversify their methods. Collectively, these studies suggest that educational contexts involving learner diversity and support needs repeatedly call for explicit structure, adaptation, practice, and responsiveness, all of which are strongly compatible with the logic of mastery learning.

A more direct connection appears in studies linking mastery learning with broader intervention frameworks in special education. Guskey and Jung (2011) argue that Response to Intervention and mastery learning share several common elements, including diagnostic preassessment, high-quality initial instruction, formative assessment, corrective support, and increasingly intensive intervention when difficulties persist. Brink's (1997) thesis on the

implications of mastery learning for learning disabled and emotionally impaired students also highlights the theory's potential to enhance learning, self-concept, and motivation through individualized help and more appropriate instruction. These works are conceptually significant because they show that the relationship between mastery learning and special education has long been recognized, even if it has not been sufficiently extended to deaf education specifically.

Recent studies also indicate that mastery learning remains relevant in adaptive and technology-mediated teaching contexts closely related to special education concerns. Bouarour et al. (2023), for example, propose adaptive test recommendation for mastery learning in digital environments, emphasizing learner aptitude, expected performance, and skill gap as important variables in determining progression toward mastery. Razak et al. (2024) likewise found that teachers considered mastery learning the most suitable learning technique for AI-based self-learning materials. These studies suggest that mastery learning continues to be interpreted as a flexible instructional logic capable of supporting responsiveness, personalization, and differentiated progression across diverse learner contexts.

Previous Studies Related to Deaf Education, Language Access and Instructional Support

When the focus shifts specifically to deaf education, the literature becomes more fragmented. There is a substantial body of work on language access, literacy, sign language proficiency, communication modality, and academic achievement among deaf and hard-of-hearing learners, yet relatively little of this work explicitly engages Mastery Learning Theory. Hrastinski and Wilbur (2016) showed that stronger sign language proficiency was associated with reading comprehension and academic achievement, while Marschark et al. (2015) demonstrated that outcomes are shaped by a complex interaction of communication, educational, and contextual factors rather than by hearing status alone. These findings do not test mastery learning directly, but they strongly suggest that educational success for deaf students depends on the quality of access, mediation, and support provided during instruction. In conceptual terms, this aligns closely with mastery learning's emphasis on understanding before progression.

The deaf education literature also repeatedly highlights concerns that are highly relevant to mastery learning, including language accessibility, instructional clarity, teacher support, and the need for meaningful opportunities to consolidate learning. These concerns suggest that deaf students may be particularly disadvantaged by instructional approaches that assume equal access to classroom language, fixed pacing, or progression based on curriculum coverage rather than demonstrated understanding. However, despite this conceptual overlap, deaf education scholarship has rarely synthesized these concerns through mastery learning as an explicit interpretive framework. As a result, while the field recognizes the importance of accessible teaching and structured support, it has not fully explored how mastery learning might provide a coherent instructional basis for organizing such practices.

Gaps in the Existing Literature

Overall, the review of previous studies points to a clear gap in the existing literature. First, the literature on mastery learning itself offers substantial support for the educational value of formative assessment, corrective instruction, flexible pacing, and progression based on

demonstrated competence. Second, the broader literature in special education repeatedly emphasizes individualized instruction, structured support, adaptation, and teacher responsiveness, all of which are strongly compatible with mastery learning. Third, deaf education research highlights language access, instructional clarity, and ongoing support as central to student success. Yet these three strands of scholarship have seldom been brought into direct dialogue with one another.

This indicates not a lack of relevant evidence, but a lack of conceptual synthesis. The unresolved issue is therefore not whether mastery learning is useful in general, nor whether deaf education requires accessible and responsive teaching. Rather, the key gap lies in how Mastery Learning Theory can be interpreted and applied as a meaningful framework for understanding language access, instructional clarity, formative assessment, corrective support, and supported progression in deaf education. The present review responds to this gap by bringing these strands together and by arguing that mastery learning offers a potentially valuable lens for more structured, equitable, and language-accessible teaching for deaf students.

Benefits of Mastery Learning Theory in Deaf Education

Mastery Learning Theory offers several important benefits for deaf education because it shifts the focus of instruction from curriculum coverage to demonstrated understanding. In conventional teaching, students often move forward once content has been delivered, even when understanding is incomplete. In deaf education, this is especially problematic because access to instruction cannot be assumed simply because students are present in class. Meaningful learning depends on whether students have access to the language, explanation, visual communication, and conceptual support required for understanding (Hrastinski & Wilbur, 2016; Marschark et al., 2015). In this respect, mastery learning provides a more equitable basis for progression by ensuring that students are not moved to new content before mastery has been demonstrated (Bloom, 1968; Guskey, 2005, 2010).

A second major benefit is its emphasis on structured and explicit teaching. Deaf students often benefit from clearly stated objectives, visible success criteria, accessible explanations, and carefully sequenced learning. Mastery learning strengthens these elements by aligning objectives, instruction, assessment, and corrective support (Guskey, 2007; Wong & Kang, 2012). This reduces the risk that misunderstanding will go unnoticed, especially when students rely on sign language mediation, visual presentation, adapted materials, or repeated clarification. The theory is therefore highly compatible with instructional practices that support language accessibility and communication clarity in deaf education (Ahmad Sabri & Zakaria, 2022; Pocaan, 2022).

Another important benefit lies in formative assessment and corrective support. In deaf education, learning difficulties may arise not only from conceptual misunderstanding but also from limited language access, unfamiliar vocabulary, or incomplete explanation. Mastery learning is especially valuable because it treats assessment as a tool for identifying such difficulties early and addressing them before they accumulate (Bloom, 1968; Guskey, 2005; Winget & Persky, 2022). Through corrective teaching, students can receive clearer explanation, adapted examples, visual support, and additional guided practice. This makes mastery learning particularly relevant in contexts where instructional misunderstanding may

stem from both content and communication barriers (Hrastinski & Wilbur, 2016; Marschark et al., 2015).

Mastery learning also supports differentiated pacing without lowering expectations. Deaf students vary widely in language background, communication mode, prior educational access, and academic preparation, so a fixed pace may not provide equitable opportunities for learning. A mastery-oriented approach recognizes this variability by allowing more time and support where needed while maintaining the same intended standard of achievement (Carroll, 1963; Bloom, 1968; Álvarez et al., 2025). It may also strengthen student confidence and motivation because repeated opportunities for success can reduce the likelihood that difficulty is internalized as inability (Guskey & Gates, 1986; Guskey & Pigott, 1988). Overall, in the context of deaf education, mastery learning should not be understood only in terms of academic improvement. More importantly, it offers a structured way to ensure that deaf students are not expected to progress before they have meaningful access to the language, concepts, and instructional support required for understanding.

Discussion

The present review indicates that Mastery Learning Theory offers a conceptually strong and pedagogically relevant framework for deaf education because its core assumptions align closely with the conditions under which deaf students are most likely to learn successfully. Bloom (1968) originally framed mastery as the result of clear objectives, formative assessment, corrective teaching, and sufficient time for learning. Later scholarship by Guskey (2007) and more recent work by Winget and Persky (2022) reaffirm that mastery learning is not merely a remedial model, but a structured instructional approach designed to reduce variation in achievement by improving the quality and responsiveness of teaching. When interpreted in relation to deaf education, this framework becomes especially compelling because it addresses several recurring concerns in the field, including language access, instructional clarity, learner variability, and progression based on secure understanding rather than exposure alone. Research in deaf education similarly shows that student outcomes are strongly mediated by communication and educational conditions rather than hearing status alone (Hrastinski & Wilbur, 2016; Marschark et al., 2015). From this perspective, mastery learning shifts attention away from presumed learner limitation and toward instructional responsibility. Low performance should therefore not be interpreted automatically as limited capacity, but as a signal to examine whether students were given sufficient access, clarity, support, and time to understand what was taught.

The review also shows that mastery learning is especially relevant to deaf education because it prioritizes verification of understanding. In contexts where access to instructional language may be partial, delayed, or mediated by multiple factors, it is not enough to assume that teaching has been successful simply because content has been delivered. The distinction between exposure and comprehension is especially significant. Mastery learning responds to this issue by requiring teachers to determine whether students have actually learned what was intended before new content is introduced (Bloom, 1968; Guskey, 2005). This is particularly important in deaf education, where misunderstanding may arise not only from concept difficulty but also from incomplete access to explanation, vocabulary, and communication. The theory is therefore well suited to a context in which supported

progression, language accessibility, and instructional responsiveness are central to equitable learning.

Another important insight concerns learner variability. Both mastery learning scholarship and deaf education research reject the assumption that uniform pacing is pedagogically neutral. Mastery learning recognizes that learners differ in the time and support required to achieve the same standard, while deaf education research points to wide variation in language background, communication mode, age of exposure, and prior access to schooling (Marschark et al., 2015). These literatures converge on a common point: equal pacing does not necessarily produce equitable outcomes. Mastery learning addresses this by making time more flexible while maintaining high expectations for achievement. At the same time, this review cautions that mastery learning should not be treated as a simple solution. Recent work points to barriers such as definitional ambiguity, institutional rigidity, workload pressures, and the difficulty of sustaining individualized support at scale (Álvarez et al., 2025; Szabo et al., 2025). In deaf education, these difficulties may be intensified by the need to prepare accessible materials, support multiple communication pathways, and respond to wide variation in learner profiles. This means that the success of mastery learning in deaf education depends heavily on teacher expertise, accessible resources, and institutional support.

Theoretical Contribution

Theoretically, this review contributes by extending Mastery Learning Theory into the field of deaf education. While mastery learning has often been discussed in relation to general education, competency-based learning, and assessment, this article argues that the theory also provides a meaningful lens for understanding language access, instructional equity, and supported progression among deaf students. This contribution is important because it reframes mastery not merely as achievement of content, but as achievement that occurs under conditions of accessible communication and pedagogical responsiveness. In doing so, the review brings together three bodies of literature that have often remained disconnected, namely mastery learning scholarship, special education literature, and deaf education research. The contribution of this article therefore lies not only in summarizing previous work, but in proposing a more integrated conceptual framework for interpreting how deaf students may be supported through structured, responsive, and language-accessible teaching.

Practical Implications

Practically, the findings suggest that teachers of deaf students should not progress through content solely based on curriculum coverage. Instead, instruction should be guided by evidence of understanding. Teachers need to design clear mastery criteria, provide accessible formative assessments, identify whether learning difficulties are caused by conceptual misunderstanding or language barriers, and offer corrective support through visual explanation, sign language clarification, guided practice, and adapted learning materials. These practices may help reduce cumulative misunderstanding and support more equitable learning experiences for deaf students. In this sense, mastery learning offers not only a theoretical framework, but also a practical basis for improving teaching decisions in deaf education. Its strongest practical value lies in helping teachers ensure that progression occurs only when students have had meaningful access to the language, concepts, and instructional support required for understanding.

Conclusion

This narrative review has shown that Mastery Learning Theory remains highly relevant to deaf education because its core principles align closely with the conditions required for meaningful and equitable learning among deaf students. In particular, the theory provides a useful framework for understanding how access to language, instructional clarity, formative assessment, corrective support, and differentiated pacing can work together to support learning based on demonstrated understanding rather than curriculum coverage alone. In this respect, the main contribution of this article lies in connecting Mastery Learning Theory with deaf education through issues of language access, instructional clarity, formative assessment, corrective support, and supported progression.

The review also highlights an important gap in the literature. Although deaf education research has generated substantial insights into language development, literacy, communication access, and effective pedagogy, relatively little of this scholarship has been interpreted through the lens of Mastery Learning Theory. Likewise, mastery learning has been widely discussed in general education, but has rarely been extended explicitly to the educational needs of deaf students. By bringing these strands into dialogue, this article offers a more integrated conceptual perspective for understanding how deaf students may be supported through structured, responsive, and language-accessible teaching.

At the same time, the application of mastery learning in deaf education should not be treated as automatic or uncomplicated. Its effectiveness depends on teacher expertise, accessible instructional resources, meaningful formative assessment, and institutional support. Future research should therefore examine more directly how mastery-oriented teaching can be adapted and implemented in deaf education settings, particularly in relation to sign language access, bilingual approaches, and accessible pedagogy. Overall, Mastery Learning Theory offers substantial promise as a framework for supporting more coherent, equitable, and understanding-based learning in deaf education.

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