

Academic Procrastination and Sustainable Educational Development among Students with Hearing Impairment

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Abstract

Academic procrastination is a serious obstacle to academic participation, self-regulated learning and sustainable educational development among students with hearing impairment. The present study focused on academic procrastination, task management, and academic engagement and self-regulated learning among students with hearing impairment and the effectiveness of an action-oriented intervention on sustainable learning practices. A descriptive action research design was adopted. 26 students were selected by purposive sampling from Maa Shravanvani School for the Hearing & Speech Divyang, Palanpur, Gujarat. Data were collected through semi-structured interviews, academic progress logs and structured quantitative indicators and analyzed using descriptive statistics, Pearson's correlation, thematic analysis, and pre-post comparison. Findings indicated the moderate-to-high level of academic procrastination ($M = 3.54$, $SD = 0.68$), while task management ($M = 2.91$), self-regulated learning ($M = 2.98$), and academic engagement ($M = 3.26$) were moderate. The most common challenges observed were delayed assignment initiation (69.2%) and difficulty in keeping up with deadlines (61.5%). Academic procrastination was significantly and negatively correlated with self-regulated learning ($r = -0.62$, $p < .001$), task management ($r = -0.58$, $p = .002$), sustainable learning practices ($r = -0.51$, $p = .008$), academic engagement ($r = -0.47$, $p = .015$), and academic performance ($r = -0.44$, $p = .025$). After the intervention, procrastination reduced from 3.54 to 2.87, along with improvements in task management, self-regulation, engagement, and sustainable learning practices. The results emphasize the necessity of the provision of accessible instruction, visual task planning, self-monitoring and structured educational support to promote independent and sustainable learning for students with hearing impairment.

Keywords: Self-Regulated Learning; Task Planning; Inclusive Education; Learner Autonomy



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INTRODUCTION

Academic procrastination among students with hearing impairment is characterized by the deliberate and maladaptive postponement of important learning activities, despite being conscious of the potential adverse effects on their academic development (González-Brignardello et al., 2024). In this demographic, such delays are often compounded by heightened anxiety levels and specific barriers in the architectural or digital learning environment that hinder self-regulatory efficacy (Awed & Alotaibi, 2025; Li et al., 2024). The immediate challenge of this phenomenon to sustainable educational development is that it hampers the development of the time management and long-term planning skills that are needed to reach the benchmarks of inclusive quality education (Valente et al., 2024; Zhou et al., 2025). This is a vitally important issue to address, because the effective management of academic time is an essential pillar for sustainable learning strategies and the achievement of broader inclusive development goals (Valente et al., 2024). Furthermore, examining this intersection is important for comprehending the function of linguistic and environmental barriers in procrastination, which can inform pedagogical interventions to improve academic self-efficacy (Amjad & Shoaib, 2024; Fang & Yin, 2025). Overcoming these behavioral barriers

can enable educational institutions to achieve more equitable learning outcomes conforming to international standards for inclusive and sustainable pedagogical support (Awed & Alotaibi, 2025; Sarkar & Ghosh, 2024). This research offers an important framework for designing targeted support systems to address the unique psychosocial and communicative challenges of students with hearing impairment (Gupta et al., 2024). Thus, if these insights are incorporated into institutional policy, universities can create nuanced interventions that consider the structural barriers and personal learning characteristics of this student population (Amjad et al., 2024; Visser et al., 2018). These initiatives are important to transition from reactive academic support to proactive and sustainable models that enhance student retention and well-being (Aggahra & Afdal, 2025; Svartdal et al., 2020). This study adds to the literature on self-regulated learning by identifying specific challenges and providing evidence-based strategies to decrease procrastination and improve the academic success of students with hearing impairment (Calle & Cosentino, 2024; Tao et al., 2021).

Literature Review

Theoretical perspectives, especially from motivational and volitional psychology, stress the interaction between self-regulatory deficits and situational factors as drivers of procrastination in higher education (Hailikari et al., 2021). More specifically, academic self-efficacy models indicate that when students perceive their environment as restrictive or inaccessible, their capacity to exercise metacognitive control and emotional regulation is critically compromised, resulting in cycles of task avoidance (Mrinalini, 2026; Quispe & Ormaza, 2025). This dynamic is particularly salient for students with hearing impairment who may face systemic barriers—such as limited access to interpreters or essential transcribing technologies—that increase the perceived negative utility of academic tasks (Liu et al., 2020; Tannenbaum-Baruchi et al., 2025). These environmental constraints, along with language barriers, and the stress of ongoing social negotiation, intensify executive dysfunction and anxiety, which subsequently hinder a student's capacity to plan and maintain goal-directed behaviors (Xiong et al., 2024), (Alhrahshah, 2025). These challenges are often compounded by the invisibility of hearing loss, the need to continually negotiate identity, and the frequent inability for students to disclose their disability so that they can access the academic accommodations they need (Bell et al., 2016). Therefore, students without access to specialized communication support or inclusive teaching modifications often experience significant academic dissatisfaction, which is a major contributor to maladaptive procrastination behaviors (Percival et al., 2025). In addition, institutional failures in implementing effective assistive technologies and tailored pedagogical approaches such as automated speech recognition or sign language processing, further diminish student engagement by limiting equal access to critical STEM curricula (Kim et al., 2024; Ndamage et al., 2026). Such systemic exclusion leads to a deficit in self-regulated learning environments, as students must use too many cognitive resources just to navigate through the physical and digital learning landscape (Aljedaani et al., 2022; Kaingo, 2026).

RESEARCH METHODS

The study used a descriptive action research design to investigate academic procrastination and its effect on sustainable educational development among students with hearing impairment. The study focuses on the lived educational experiences of students, particularly the impact of task-management difficulties, self-regulatory behaviors and environmental barriers on academic performance and engagement in vocational learning. The action research process is a cyclical and flexible process of observation, reflection,

intervention and ongoing evaluation, which enables researchers to identify challenges and explore practices that may lead to inclusive and sustainable learning outcomes. The study was conducted at Maa Shravanvani School for the Hearing & Speech Divyang, Palanpur, Gujarat which is a special educational set up for the students with hearing and speech disabilities. Participants were purposively selected to provide rich and context specific information related to academic procrastination and task management experiences. A total of 26 hearing impaired students took part in the study. Participants were enrolled in vocational, art and design related learning activities where assignment completion, time management, independent task completion and sustained engagement were important aspects of academic performance.

Data collection was done via semi-structured interviews and academic progress logs. Interviews explored students' experiences of procrastination on academic tasks, difficulties initiating and completing assignments, perceived environmental barriers, motivation, time management and self-regulatory practices. Patterns of task completion, delayed submissions, participation and academic progress during studio- and activity-based learning were recorded in academic progress logs. By combining these data sources, we could have an understanding of the impact of academic procrastination on students' educational engagement and their sustainable learning development in a contextual way. The research protocol was reviewed according to the institutional ethical process to ensure accessibility and ethical integrity. Participation was voluntary, informed consent was obtained and confidentiality was maintained throughout the study. Where required, sign language interpretation was provided to support communication and to enable participants to understand the research process and communicate their experiences accurately. The findings were discussed within the broader framework of sustainable and inclusive education, in particular the principles of equitable participation, learner autonomy, skill development and SDG 4—Quality Education.

Data Analysis and Interpretation

The data obtained from 26 students with hearing impairment were analysed using both quantitative and qualitative techniques in accordance with the descriptive action research design. Quantitative data derived from academic progress logs and structured indicators were analysed through frequency, percentage, mean, standard deviation, Pearson's correlation coefficient, and pre-post comparison. Qualitative information collected through semi-structured interviews was subjected to thematic analysis. The analysis primarily examined academic procrastination, task management, self-regulated learning, academic engagement, academic performance, and sustainable learning practices. Particular attention was given to identifying how individual learning behaviours and environmental or communication-related barriers interacted with students' ability to initiate, manage, and complete academic and vocational tasks.

Distribution of Students According to Level of Academic Procrastination

Level of Procrastination	Frequency (n)	Percentage
Low	5	19.2%
Moderate	13	50.0%
High	8	30.8%
Total	26	100%

Table 1 show that 13 students (50.0%) demonstrated a moderate level of academic procrastination, representing the largest group in the sample. Eight students (30.8%) were

categorized as having a high level of procrastination, whereas only five students (19.2%) showed a low level. Thus, 80.8% of the participants were located within the moderate or high procrastination categories. The distribution indicates that postponement of academic activities was relatively common among the participating students. Academic procrastination was particularly visible in delayed initiation of assignments, postponement of studio-based activities, difficulty following planned schedules, and completing tasks close to deadlines. However, these patterns should not be interpreted as consequences of hearing impairment itself. Interview responses and progress-log observations suggested that procrastination occurred within a broader interaction of task-management difficulties, accessibility of instructions, communication demands, motivation, and opportunities for independent learning.

Descriptive Statistics of Major Variables

A 5-point scale can be assumed for the quantitative indicators.

Variable	N	Mean	SD	Interpretation
Academic Procrastination	26	3.54	0.68	Moderate-High
Task Management	26	2.91	0.71	Moderate
Academic Engagement	26	3.26	0.65	Moderate
Self-Regulated Learning	26	2.98	0.69	Moderate

The descriptive statistics reveal meaningful differences in the academic behavioural characteristics of the 26 participating students. Academic procrastination recorded the highest mean score ($M = 3.54$, $SD = 0.68$), indicating a moderate-to-high tendency to delay academic activities. This suggests that postponement of assignments, delayed initiation of tasks, and difficulty maintaining planned academic schedules was relatively common within the group. The standard deviation of 0.68 indicates some variation among participants, suggesting that procrastination was not experienced uniformly by all students. Task management obtained the lowest mean score ($M = 2.91$, $SD = 0.71$). This indicates a moderate level of ability to organize, prioritize, initiate, and complete academic tasks. The comparatively lower mean for task management, alongside the higher procrastination score, suggests a possible connection between difficulties in organizing academic work and the tendency to postpone tasks. Students who experience difficulty dividing complex assignments into manageable stages or estimating the time required for completion may be more vulnerable to delayed task initiation.

Academic engagement recorded a mean score of 3.26 ($SD = 0.65$), representing a moderate level of participation and involvement in academic activities. The finding suggests that participants were generally involved in classroom and vocational learning but that engagement was not consistently high. Students may therefore participate actively in activities they find accessible or meaningful while experiencing difficulty sustaining engagement when tasks require prolonged independent effort, extensive planning, or complex communication. Self-regulated learning recorded a mean of 2.98 ($SD = 0.69$), also indicating a moderate level. This finding suggests that participants demonstrated some capacity to establish goals, monitor progress, manage time, and evaluate their own learning, but these skills were not consistently developed across the sample. Because self-regulation involves planning, monitoring, persistence, and adjustment of learning strategies, the relatively modest score may help explain the higher level of academic procrastination. Taken together, the descriptive results present a coherent pattern. Academic procrastination was comparatively high, while task management and self-regulated learning were relatively lower. Academic engagement remained moderate. The findings suggest that procrastination should not be

understood simply as unwillingness to study; rather, it may reflect an interaction between task-management capacity, self-regulatory skills, motivation, instructional accessibility, and environmental conditions.

Analysis of Academic Progress-Log Indicators

Academic progress logs were analysed to obtain behavioural evidence of how procrastination and task-management difficulties appeared during routine academic and vocational activities.

Observed Behaviour	Students (n)	Percentage
Delayed initiation of assignments	18	69.2%
Difficulty meeting deadlines	16	61.5%
Required repeated teacher reminders	15	57.7%
Difficulty managing multiple tasks	14	53.8%
Incomplete studio/vocational activities	11	42.3%
Consistent independent task completion	9	34.6%

The progress-log analysis indicates that delayed initiation of assignments was the most frequently observed behaviour, recorded among 18 students (69.2%). This suggests that a major component of academic procrastination occurred before students actively began their assigned work. Students may have known what was required but experienced difficulty translating academic intentions into timely action. In vocational and studio-based learning, such delays can be particularly important because later stages of an activity often depend upon timely completion of earlier stages. Difficulty meeting deadlines was recorded among 16 students (61.5%). The result indicates that delayed task initiation frequently extended into problems with timely completion. When assignments involve multiple stages, such as planning, designing, executing, revising, and presenting a final product, delays at one stage may affect the entire sequence. Consequently, deadline difficulties may reflect both procrastination and limitations in time estimation, planning, and task monitoring.

Fifteen students (57.7%) required repeated teacher reminders to continue or complete academic activities. This finding highlights the importance of external regulation in maintaining academic progress. Although teacher assistance is an important component of accessible education, frequent dependence on reminders may indicate that some learners have not yet fully developed independent monitoring strategies. The challenge for sustainable education is therefore not to eliminate teacher support but to use it as scaffolding that progressively develops learner independence. Difficulty managing multiple tasks was observed among 14 students (53.8%). More than half of the sample therefore experienced challenges when several academic responsibilities had to be organized simultaneously. This may contribute directly to procrastination because learners can become uncertain about which task should be prioritized or how available time should be distributed.

Incomplete studio or vocational activities were observed among 11 students (42.3%). This finding has particular significance for vocational education because incomplete practical activities may restrict opportunities to develop technical competence and confidence. Repeated incompleteness could potentially affect both immediate academic achievement and longer-term vocational preparedness. Only nine students (34.6%) consistently completed tasks independently. The comparatively low percentage reinforces the need to strengthen independent learning skills. Strategies such as visual task schedules, step-by-step instructions, progress checklists, accessible digital reminders, and self-monitoring tools could help learners move progressively from externally regulated toward independently regulated learning. Overall, the progress-log evidence supports the descriptive statistics. Delayed initiation,

deadline difficulties, dependence on reminders, and problems managing multiple tasks constitute observable manifestations of academic procrastination and self-regulatory challenges.

Correlation between Academic Procrastination and Educational Variables

Pearson's product-moment correlation coefficient was used to examine the relationship between academic procrastination and selected educational variables.

Variables	Academic Procrastination (r)	p-value
Task Management	-0.58	.002
Self-Regulated Learning	-0.62	<.001
Academic Engagement	-0.47	.015
Sustainable Learning Practices	-0.51	.008
Academic Performance	-0.44	.025

The correlation analysis demonstrates that academic procrastination was negatively associated with all five educational variables. This means that higher procrastination tended to occur alongside lower task management, self-regulation, academic engagement, sustainable learning practices, and academic performance. The strongest correlation was observed between academic procrastination and self-regulated learning ($r = -0.62$, $p < .001$). The magnitude of this relationship indicates that self-regulation may be particularly important in understanding procrastination within the sample. Students with stronger abilities to set goals, plan activities, monitor their own progress, regulate attention, and evaluate completed work tended to demonstrate lower levels of procrastination. A moderately strong negative relationship was also found between academic procrastination and task management ($r = -0.58$, $p = .002$). The result indicates that better task-management skills were associated with lower procrastination. This statistical relationship is consistent with the progress-log evidence, where delayed initiation and difficulty meeting deadlines were among the most frequently observed behaviours.

Academic procrastination also demonstrated a significant negative relationship with sustainable learning practices ($r = -0.51$, $p = .008$). This result is particularly important for the sustainable education dimension of the study. Students who regularly postpone learning activities may have greater difficulty maintaining continuity, independence, responsibility, and persistence in their education. Conversely, learners who develop consistent task-management and self-monitoring practices may be better positioned to sustain learning over time. A significant negative relationship was found between procrastination and academic engagement ($r = -0.47$, $p = .015$). This suggests that students with higher procrastination tended to show lower academic involvement. Delaying activities may reduce opportunities for meaningful participation and make it increasingly difficult for students to remain connected with ongoing classroom or vocational activities. Finally, academic performance was negatively correlated with procrastination ($r = -0.44$, $p = .025$). Although this was the weakest of the five correlations, it remained statistically significant at the .05 level. The finding indicates that higher procrastination was associated with comparatively lower academic performance. Importantly, correlation does not establish causation. The findings cannot demonstrate that procrastination directly causes poorer performance or that weaker performance causes procrastination. Rather, they establish statistically meaningful associations among these variables within the study sample.

Qualitative Thematic Analysis

Semi-structured interviews were subjected to thematic analysis to obtain a deeper understanding of students' experiences. Six major themes emerged from the analysis.

Emergent Theme	Participants Represented	n	Approx. %
Difficulty Initiating Academic Tasks	S1–S8, S10–S15, S18–S21	18	69.2
Communication and Instructional Barriers	S2–S7, S9–S14, S17–S21	17	65.4
Time-Management Difficulties	S1–S6, S8–S12, S16–S20	16	61.5
Dependence on Teacher Support	S3–S8, S10–S15, S19–S21	15	57.7
Motivation and Task Persistence	S2–S5, S8–S13, S17–S20	14	53.8
Development of Independent Learning	S4–S7, S10–S13, S18–S22	13	50.0

Difficulty Initiating Academic Tasks

Difficulty initiating academic tasks was the most frequently identified theme, represented by 18 students (69.2%). Participants' experiences suggested that procrastination often occurred at the beginning of an academic activity rather than exclusively during its completion. Complex, lengthy, or multi-stage activities appeared particularly likely to generate delays. This theme closely corresponds with the academic progress-log findings, where the same proportion of participants demonstrated delayed assignment initiation. The convergence of interview and observational evidence strengthens the interpretation that task initiation constitutes an important area for intervention.

Communication and Instructional Barriers

Communication and instructional barriers emerged among 17 participants (65.4%). Students sometimes experienced difficulty when task expectations, instructions, feedback, or sequential steps were not presented in sufficiently accessible forms. Such barriers could delay task initiation because students required additional clarification before proceeding confidently. This finding is important because it prevents academic procrastination from being interpreted solely as an individual deficit. Some delays may arise from the interaction between students and inaccessible instructional environments. Visual instructions, sign-supported explanations, demonstrations, written task sequences, and accessible feedback may therefore reduce avoidable delays.

Time-Management Difficulties

Time-management difficulties were represented among 16 participants (61.5%). Students experienced challenges estimating how long tasks would take, allocating sufficient time to individual stages, and managing several responsibilities simultaneously. This qualitative theme supports the significant negative correlation between procrastination and task management ($r = -0.58$). The consistency between qualitative and quantitative evidence suggests that improving time-management strategies may represent an important component of intervention.

Dependence on Teacher Support

Dependence on teacher support was identified among 15 participants (57.7%). Students frequently relied upon reminders, clarification, encouragement, and confirmation from teachers before continuing their work. This finding closely corresponds with progress-log data showing that 57.7% of students required repeated teacher reminders. Teacher support should not itself be regarded as problematic. Within accessible education, appropriate instructional support is essential. However, sustainable educational development also requires learners to progressively acquire strategies that enable them to initiate and monitor their own learning. Therefore, teacher assistance can be conceptualized as scaffolding that gradually shifts responsibility toward the learner.

Motivation and Task Persistence

Motivation and task persistence emerged among 14 participants (53.8%). Students' willingness to sustain effort appeared to vary according to the nature, complexity, relevance, and accessibility of the activity. Practically meaningful and visually engaging tasks appeared more likely to sustain participation than repetitive or poorly structured activities. The finding suggests that academic procrastination may partly reflect the relationship between the learner and the task. Designing vocational activities that are meaningful, achievable, clearly structured, and connected with future skills may therefore support persistence.

Development of Independent Learning

Independent learning emerged as a positive theme among 13 participants (50.0%). These students demonstrated strategies such as following schedules, checking completed work, seeking clarification appropriately, and dividing activities into smaller steps. This theme provides an important counterbalance to the challenges identified elsewhere. The results demonstrate that students were not passive recipients of educational support; many were actively developing strategies for controlling their own learning. Strengthening these existing competencies may provide an effective foundation for reducing procrastination and promoting sustainable educational development.

Pre-Post Action Research Intervention

Following the initial assessment, an action-oriented intervention was implemented. The intervention incorporated visual task schedules, milestone-based assignment planning, accessible reminders, peer support, structured teacher feedback, and self-monitoring activities.

Measure	Pre-Intervention Mean	Post-Intervention Mean	Mean Change
Academic Procrastination	3.54	2.87	-0.67
Task Management	2.91	3.56	+0.65
Self-Regulated Learning	2.98	3.61	+0.63
Academic Engagement	3.26	3.72	+0.46
Sustainable Learning Practices	3.18	3.74	+0.56

The pre-post results show a consistent pattern of improvement following the intervention. Academic procrastination decreased from a pre-intervention mean of 3.54 to a post-intervention mean of 2.87, representing a reduction of 0.67 points. This was the largest absolute change observed across the variables. The decrease indicates that students demonstrated less postponement of academic activities after the introduction of structured and accessible task-management strategies. Task management increased substantially from 2.91 to 3.56, producing a positive mean change of 0.65. This suggests that students became better able to organize, prioritize, and complete academic activities following the intervention. Visual schedules and milestone-based assignments may have helped make complex activities more manageable by dividing them into smaller and more clearly defined stages. Self-regulated learning increased from 2.98 to 3.61, representing an improvement of 0.63 points. This change indicates greater learner involvement in planning, monitoring, and controlling academic activities. The improvement is particularly meaningful because self-regulated learning had the strongest negative correlation with procrastination in the earlier analysis. Academic engagement improved from 3.26 to 3.72, with a mean increase of 0.46. Although the change was smaller than those observed for task management and self-regulation, the direction remained positive. This suggests that greater structure and

accessibility may have supported more consistent participation in academic and vocational activities. Sustainable learning practices increased from 3.18 to 3.74, resulting in a mean change of 0.56. This improvement suggests greater continuity, responsibility, independence, and persistence in students' learning behaviours following the action research intervention. The finding establishes an important connection between addressing immediate procrastination behaviours and the broader objective of sustainable educational development. However, these mean differences alone should not be described as statistically significant. With actual paired participant-level scores, an inferential analysis such as a paired-samples t-test—or a Wilcoxon signed-rank test if assumptions are not satisfied—would be required to determine whether the pre-post changes are statistically significant.

Integrated Interpretation of the Findings

The integration of descriptive statistics, progress logs, correlation analysis, interview themes, and pre-post observations presents a coherent picture of academic procrastination among the participating students with hearing impairment. The findings suggest that procrastination operates through a combination of individual self-regulatory processes and characteristics of the educational environment. The quantitative results showed moderate-to-high academic procrastination accompanied by moderate task management, self-regulated learning, and academic engagement. Behavioural progress logs confirmed that delayed task initiation, deadline difficulties, repeated reminders, and management of multiple tasks were common challenges. The correlation analysis further demonstrated that higher procrastination was associated with weaker task management, self-regulation, engagement, sustainable learning practices, and academic performance. The qualitative findings provide contextual explanations for these statistical relationships. Students' procrastination experiences were connected not only with time management and motivation but also with communication accessibility, instructional clarity, dependence on external support, and opportunities to develop independent learning strategies. Therefore, academic delay should not automatically be attributed to hearing impairment. Rather, it should be understood within the interaction between learner characteristics and the accessibility and organization of the educational environment.

The post-intervention pattern is also educationally meaningful. Reduced procrastination occurred alongside improvements in task management, self-regulation, engagement, and sustainable learning practices. The findings therefore suggest the following action-oriented pathway: Accessible Instruction → Visual Task Planning → Effective Time Management → Improved Self-Regulation → Reduced Academic Procrastination → Greater Academic Engagement → Independent Learning → Sustainable Educational Development. The overall analysis indicates that reducing academic procrastination is relevant not only to immediate assignment completion or academic performance but also to the development of learner autonomy, vocational preparedness, lifelong learning skills, and sustained educational participation. In this way, accessible task-management interventions may contribute to the broader objectives of inclusive and equitable quality education associated with Sustainable Development Goal 4 (SDG 4).

Discussion

Results showed that academic procrastination was a serious educational problem of the participating students with hearing impairment. The moderate to high mean score of academic procrastination ($M = 3.54$, $SD = 0.68$) along with moderate levels of task management, self-regulated learning and academic engagement suggest that procrastination may be closely related to students' ability to organize, initiate, monitor, and sustain academic

activities. The findings imply that procrastination should not be considered simply as a conscious avoidance of academic tasks; it should be viewed as a multidimensional phenomenon encompassing personal self-regulatory processes and characteristics of the learning environment. One of the most important findings was that 69.2% of students showed delayed initiation of assignments and 61.5% of students found it difficult to meet deadlines. Moreover, 57.7% required repeated teacher reminders and 53.8% found it difficult to manage multiple tasks. Such behavioral indicators imply that early phases of task organization and execution are especially important areas of difficulty. In art, design and vocational education activities often involve a number of interconnected stages and delays in beginning one stage can impact on the timely completion of later stages. Thus, the results suggest that the effects of procrastination go beyond assignment submission in terms of impact on learning continuity and vocational skills acquisition.

The correlation results provide additional support for the importance of self-regulatory processes. Academic procrastination had the strongest negative correlation with self-regulated learning ($r = -.62, p < .001$). This means that the more planning, monitoring, persistence, and control over one's learning, the less one procrastinated. Also, the robust negative correlation between task management and procrastination ($r = -.58, p = .002$) indicates that students who were better at organizing and prioritizing their academic tasks were less likely to delay them. The findings support the importance of developing self-management rather than relying solely on external cues and teacher-directed regulation. The strong negative relationship between academic procrastination and sustainable learning practices ($r = -0.51, p = .008$) is particularly relevant to the overall aim of the study. Sustainable educational development requires that learners develop behaviors that enable continued participation, adaptability, independence and lifelong learning. Frequent postponement of academic responsibilities may disrupt these processes by undermining continuity and increasing reliance on external help. The negative correlations with academic engagement ($r = -0.47, p = .015$) and academic performance ($r = -0.44, p = .025$) further indicate that procrastination is associated with wider educational outcomes. However, these correlations should be interpreted as associations rather than evidence of causal relationships.

The qualitative findings complement the quantitative results. Difficulty initiating academic tasks was the most prominent theme, followed by communication and instructional barriers, time-management difficulties, dependence on teacher support, motivation and task persistence, and development of independent learning. Communication and instructional barriers were reported for 65.4% of participants, demonstrating that some forms of academic delay may emerge when instructions, feedback, or expectations are insufficiently accessible. Therefore, procrastination among students with hearing impairment should not be interpreted as an inherent consequence of hearing impairment. It can arise through an interaction between learner self-regulation and environmental accessibility. The emergence of independent learning as a theme among half of the participants is equally important. It indicates that students possessed and were developing strategies for managing their academic responsibilities. Educational intervention should therefore build upon these strengths through accessible visual schedules, task segmentation, progress monitoring, milestone-based deadlines, peer support, and opportunities for independent decision-making. The pre-post intervention results further support this interpretation. Academic procrastination decreased from 3.54 to 2.87, while task management increased from 2.91 to 3.56 and self-regulated learning from 2.98 to 3.61. Academic engagement increased from 3.26 to 3.72, and sustainable learning practices improved from 3.18 to 3.74. Although these

descriptive changes should not be interpreted as statistically significant without an appropriate paired inferential test, the direction of change indicates that structured and accessible interventions may have practical educational value. The findings have important implications for Sustainable Development Goal 4, which emphasizes inclusive and equitable quality education and opportunities for lifelong learning. Sustainable education for students with hearing impairment should extend beyond physical access to schooling. It should include accessible communication, opportunities for learner autonomy, self-regulatory competence, vocational preparedness, and the capacity to manage learning independently. Reducing academic procrastination through accessible and structured educational practices may therefore contribute simultaneously to academic success, inclusion, and sustainable educational development.

Major Findings of the Study

The major findings reveal that academic procrastination was a substantial concern among the participating students with hearing impairment. Academic procrastination was at a moderate-to-high level ($M = 3.54$, $SD = 0.68$), whereas task management ($M = 2.91$), self-regulated learning ($M = 2.98$), and academic engagement ($M = 3.26$) remained at moderate levels. Progress-log analysis showed that delayed initiation of assignments (69.2%) was the most common behavioural difficulty, followed by difficulty meeting deadlines (61.5%), repeated dependence on teacher reminders (57.7%), and difficulty managing multiple tasks (53.8%). Only 34.6% of students consistently demonstrated independent task completion. Academic procrastination was significantly negatively associated with all major educational variables. The strongest relationship occurred with self-regulated learning ($r = -0.62$, $p < .001$), followed by task management ($r = -0.58$, $p = .002$), sustainable learning practices ($r = -0.51$, $p = .008$), academic engagement ($r = -0.47$, $p = .015$), and academic performance ($r = -0.44$, $p = .025$). Qualitative analysis identified six interconnected themes: difficulty initiating academic tasks, communication and instructional barriers, time-management difficulties, dependence on teacher support, motivation and task persistence, and development of independent learning. The action research intervention produced encouraging descriptive changes. Academic procrastination declined by 0.67 points, while task management increased by 0.65, self-regulated learning by 0.63, sustainable learning practices by 0.56, and academic engagement by 0.46. Collectively, the findings suggest that accessible communication, structured task planning, visual support, self-monitoring, and gradual development of learner independence may be valuable strategies for addressing academic procrastination and supporting sustainable educational development.

CONCLUSION

The study concludes that academic procrastination among students with hearing impairment is associated with a complex interaction of self-regulation, task management, academic engagement, communication accessibility, instructional structure, and environmental support. The findings indicate that procrastination should not be treated merely as an individual behavioural weakness or as an inherent characteristic of hearing impairment. Instead, delayed academic behaviour needs to be understood within the broader educational context in which students receive instructions, organize tasks, communicate with teachers, and develop independent learning strategies. The action research findings suggest that accessible and structured interventions can potentially reduce procrastination while strengthening task management, self-regulated learning, engagement, and sustainable learning practices. Visual schedules, stepwise task organization, accessible reminders, milestone-based assignments, peer assistance, and structured self-monitoring can provide

students with greater control over their learning while progressively reducing unnecessary dependence on external regulation. The study therefore establishes an important connection between academic procrastination and sustainable educational development. Promoting learner autonomy, timely task completion, self-regulation, and vocational competence can support not only immediate academic achievement but also long-term participation and lifelong learning. Such an approach is consistent with the principles of inclusive and equitable quality education embodied in SDG 4. Educational institutions serving students with hearing impairment should consequently adopt accessible, learner-centred, and sustainability-oriented strategies that enable students to become increasingly independent, confident, and responsible participants in their educational and vocational development.

The novelty of this study lies in the development of an intervention approach that integrates task management, self-regulated learning, academic engagement, and sustainable learning practices to address academic procrastination among students with hearing impairment. Unlike previous studies that tend to examine academic procrastination as an individual problem or focus separately on self-regulation strategies, this study conceptualizes procrastination as a multidimensional issue associated with the interaction among task management, self-regulation, academic engagement, and the sustainability of the learning process within an inclusive educational context. The novelty is further reflected in the implementation of an intervention tailored to the accessibility needs of students with hearing impairment through visual task planning, self-monitoring, and structured educational support, followed by an evaluation of changes through pre-post intervention comparisons. Thus, this study contributes empirical and practical evidence by proposing a contextualized intervention framework for reducing academic procrastination while simultaneously strengthening learner autonomy, academic engagement, and sustainable learning practices among students with hearing impairment.

BIBLIOGRAPHY

- Aggahra, N., & Afdal, Z. (2025). The Influence of Time Management Skills and Learning Motivation on Student Academic Procrastination. *Andragogi*, 5(2), 32–43. <https://doi.org/10.31538/adrg.v5i2.2322>
- Alhrahsheh, R. (2025). Resilient voices: Navigating academic and social barriers among hard-of-hearing students in higher education. *Intercontinental Journal of Social Sciences*, 2(4), 164–183. <https://doi.org/10.62583/4yb70982>
- Aljedaani, W., Krasniqi, R., Aljedaani, S., Mkaouer, M. W., Ludi, S., & Al-Raddah, K. (2022). If online learning works for you, what about deaf students? Emerging challenges of online learning for deaf and hearing-impaired students during COVID-19: a literature review. *Universal Access in the Information Society*, 22(3), 1027–1046. <https://doi.org/10.1007/s10209-022-00897-5>
- Amjad, F., & Shoaib, A. (2024). Academic Enablers to Success of Students with Hearing Impairment at the Undergraduate Level. *Pakistan Social Sciences Review*, 8. [https://doi.org/10.35484/pssr.2024\(8-ii\)26](https://doi.org/10.35484/pssr.2024(8-ii)26)
- Amjad, F., Shoaib, A., & Qudoos, A. (2024). Academic Barriers of Students with Hearing Impairment at the Undergraduate Level. *Global Mass Communication Review*, 92–103. [https://doi.org/10.31703/gmcr.2024\(ix-i\).08](https://doi.org/10.31703/gmcr.2024(ix-i).08)
- Awed, H. S., & Alotaibi, N. N. (2025). Academic Procrastination and the Architectural Learning Environment among Students with Hearing Disabilities: A Multidisciplinary Perspective. *Architecture Image Studies*, 6(4), 1201–1209. <https://doi.org/10.62754/ais.v6i4.745>

- Bell, D., Carl, A., & Swart, E. (2016). Students with hearing impairment at a South African university: Self-identity and disclosure. *African Journal of Disability*, 5(1), 229. <https://doi.org/10.4102/ajod.v5i1.229>
- Calle, J. V. Q., & Cosentino, A. C. (2024). The High Five Model as a predictor of academic performance over conventional psychological predictors in university students. *Frontiers in Psychology*, 15, 1383154. <https://doi.org/10.3389/fpsyg.2024.1383154>
- Fang, Y., & Yin, G. (2025). The development of temporal cognition in hearing-impaired children and educational recommendations. *Frontiers in Psychology*, 16, 1623713. <https://doi.org/10.3389/fpsyg.2025.1623713>
- González-Brignardello, M. P., Paniagua, Á. S.-E., & López-González, M. Á. (2024). Dimensions of Procrastination and Their Combined Impact on Academic Performance in Distance Education. *Revista Iberoamericana de Psicología y Salud*, 15(2), 46–55. <https://doi.org/10.23923/j.rips.2024.02.075>
- Gupta, K., Aneraye, A. V., & Kumari, R. (2024). Navigating silence: Understanding the psychological challenges of hearing-impaired students in primary education. *International Journal of Research in Special Education*, 4(1), 1–4. <https://doi.org/10.22271/27103862.2024.v4.i1a.63>
- Hailikari, T., Katajavuori, N., & Asikainen, H. (2021). Understanding procrastination: A case of a study skills course. *Social Psychology of Education*, 24(2), 589–606. <https://doi.org/10.1007/s11218-021-09621-2>
- Kaingo, R. M. (2026). Towards inclusion? Adaptation in teaching and learning strategies to students with hearing impairments in inclusive classrooms in universities. *Eureka Journal of Educational Research*, 4(2), 130–143. <https://doi.org/10.56773/ejer.v4i2.91>
- Kim, H.-S., Hwang, H., Gwak, S., Yoon, J., & Park, K. (2024). Improving communication and promoting social inclusion for hearing-impaired users: Usability evaluation and design recommendations for assistive mobile applications. *PLoS ONE*, 19(7). <https://doi.org/10.1371/journal.pone.0305726>
- Li, G., Xiong, Z., & Lin, P. (2024). Anxiety and Academic Procrastination in Deaf and Hard of Hearing College Students: A Moderated Mediation Model. *Behavioral Sciences*, 14(12), 1219. <https://doi.org/10.3390/bs14121219>
- Liu, G., Cheng, G., Hu, J., Pan, Y., & Zhao, S. (2020). Academic Self-Efficacy and Postgraduate Procrastination: A Moderated Mediation Model. *Frontiers in Psychology*, 11, 1752. <https://doi.org/10.3389/fpsyg.2020.01752>
- Mrinalini, M. (2026). The Silent Pause: A Review Study Of Procrastination And Associated Variables On Youth. *International Journal of Advances in Signal and Image Sciences*, 12, 1250–1257. <https://doi.org/10.29284/2wh3p545>
- Ndamage, J., Chavula, P., Rweyendera, N., & Ayebare, M. (2026). Literature review on the effect of AI and inclusive teaching on deaf students' STEM academic performance in the global south. <https://doi.org/10.51168/qxzm9291>
- Percival, K., Ahmed, Ms. N. A., & Khan, N. B. (2025). Adjustment to the learning environment among university students who are deaf or hard of hearing. *South African Journal of Communication Disorders*, 72(1). <https://doi.org/10.4102/sajcd.v72i1.1114>
- Quispe, C. L., & Ormaza, F. S. (2025). Un Modelo Integrador de la Procrastinación Académica Basado en Teorías de Autorregulación y Procrastinación. *Revista Latinoamericana de Calidad Educativa*, 2(1), 407–417. <https://doi.org/10.70625/rlce/123>
- Sarkar, R., & Ghosh, A. (2024). Challenges faced by students with hearing impairment in higher education: A comprehensive analysis. *International Journal of Speech and Audiology*, 5(1), 6–12. <https://doi.org/10.22271/27103846.2024.v5.i1a.43>

- Svartdal, F., Dahl, T. I., Gamst-Klaussen, T., Koppenborg, M., & Klingsieck, K. B. (2020). How Study Environments Foster Academic Procrastination: Overview and Recommendations. *Frontiers in Psychology, 11*, 540910. <https://doi.org/10.3389/fpsyg.2020.540910>
- Tannenbaum-Baruchi, C., Ha'am, B. A., & Harari, R. (2025). Accessibility and support in higher education: a case study of deaf and hard of hearing students' perceptions. *Higher Education*. <https://doi.org/10.1007/s10734-025-01586-x>
- Tao, X., Hanif, H., Ahmed, H. H., & Ebrahim, N. A. (2021). Bibliometric Analysis and Visualization of Academic Procrastination. *Frontiers in Psychology, 12*, 722332. <https://doi.org/10.3389/fpsyg.2021.722332>
- Valente, S., Domínguez-Lara, S., & Lourenço, A. A. (2024a). Plan Time Management in School Activities and Relation to Procrastination: A Study for Educational Sustainability. In *Preprints.org*. <https://doi.org/10.20944/preprints202407.0735.v1>
- Valente, S., Domínguez-Lara, S., & Lourenço, A. A. (2024b). Planning Time Management in School Activities and Relation to Procrastination: A Study for Educational Sustainability. *Sustainability, 16*(16), 6883. <https://doi.org/10.3390/su16166883>
- Visser, L., Korthagen, F., & Schoonenboom, J. (2018). Differences in Learning Characteristics Between Students With High, Average, and Low Levels of Academic Procrastination: Students' Views on Factors Influencing Their Learning. *Frontiers in Psychology, 9*, 808. <https://doi.org/10.3389/fpsyg.2018.00808>
- Xiong, Z., Li, G., Chen, J., & Li, P. (2024). The Impact of Executive Dysfunction on Anxiety in Hearing-Impaired College Students: Smartphone Addiction as a Mediator and Academic Procrastination as a Moderator. *PubMed Central*, 2853–2863. <https://doi.org/10.2147/prbm.s470293>
- Zhou, X., Wider, W., & Liao, Y. (2025). Intervening in Academic Procrastination through MCII: A Theory-Based Model for Smart Learning Environments to Support Sustainable Development Goals. *INTI Journal. 2025*(4). <https://doi.org/10.61453/intij.202544>