

ROTE MEMORIZATION IN PAKISTAN: HIGH SCHOOL STUDENTS' PERSPECTIVES AND CHALLENGES

Maryam Sohail¹, Dr. Fatima Murtaza², Dr. Nasreen Akhtar³

¹BS Psychology Student, Department of Psychology, Government College University (GCU), Katchery Road, Lahore 54000, Pakistan

²Deputy Course Coordinator, Department of Psychology, Government College University (GCU), Katchery Road, Lahore 54000, Pakistan

³Assistant Professor, Department of Psychology, Government College University (GCU), Katchery Road, Lahore 54000, Pakistan

¹maryamsohail2k24@gmail.com, ²fatima.murtaza@gcu.edu.pk, ³nasreenakhtar@gcu.edu.pk

Corresponding Author: *

Dr. Fatima Murtaza

DOI: <http://doi.org/10.5281/zenodo.20844139>

Received
25 April 2026

Accepted
04 June 2026

Published
21 June 2026

ABSTRACT

Rote memorization is the dominant mode of academic preparation in Pakistan, yet the lived experiences of the students who navigate it remain largely absent from the research literature. This study explored how high school students at the matriculation and intermediate levels perceive and experience rote memorization, and what challenges their reliance on it creates for understanding, motivation and well-being. A qualitative design was adopted: semi-structured, bilingual (Urdu–English) interviews were conducted with six purposively selected students from Lahore, Gujranwala and Okara, and the data were analyzed using Braun and Clarke's six-phase thematic analysis. Six master themes emerged: perceptions of rote versus conceptual understanding; motivational and engagement dynamics; learning strategies and academic self-regulation; psychological and emotional impact; impact on creativity and critical thinking; and the role of teachers, environment and system. Students universally framed rote learning as a short-term survival tool rather than genuine knowledge, reported stress, anxiety and boredom, and described creativity and critical thinking as casualties of an exam-driven system. The findings indicate that meaningful reform must extend beyond classroom pedagogy to the examination structures that make rote memorization rational and necessary.

Keywords: Rote Memorization, Student Perspectives, Thematic Analysis, Conceptual Understanding, Academic Self-Regulation, Examination Culture

Introduction

Education systems have long debated how best to support meaningful learning. In Pakistan, rote memorization has persisted as the dominant mode of academic preparation at the high school level, embedded within an examination culture that rewards the accurate reproduction of textbook content over genuine

understanding (Halai & Durrani, 2018). Despite its prevalence, the voices of the students who live within this system every day remain largely absent from scholarly conversation (Shamim, 2011). National policy increasingly calls for critical thinking and conceptual learning, yet classroom realities continue to demand memorization above all else (Ministry

of Federal Education and Professional Training, 2017). Understanding the distance between these two worlds, through the perspectives of the students caught between them, is the central concern of this study.

A growing body of Pakistan-based scholarship has traced these costs in increasingly fine-grained detail. Pakistani secondary curricula are organized almost entirely around summative assessment, leaving little pedagogical space for conceptual engagement (Halai & Durrani, 2018), and classroom observation confirms a heavy reliance on dictation and memorization drills justified by examination pressure and overcrowding (Mahmood, 2019). Many teachers have internalised rote instruction as a legitimate marker of achievement (Tahir & Arif, 2019). The consequences for students include motivational depletion and academic anxiety (Khan & Inamullah, 2019), elevated stress and sleep disruption during examination periods (Iqbal et al., 2021), reduced critical-thinking capacity (Aziz & Mahmood, 2019; Bashir & Ali, 2020), and diminished creativity (Riaz & Hassan, 2021; Farooq & Bashir, 2022). Structural factors, including private tuition cultures that supply pre-memorized model answers (Memon & Khurram, 2021), classrooms that rarely move above the remembering level of the taxonomy (Raza et al., 2020; Jabeen & Shah, 2020), and digital tools used mainly to access ready-made notes (Baig & Mirza, 2022), reinforce rather than disrupt the culture.

Set alongside international and cross-cultural evidence, the Pakistani case reads as one instance of a broader global pattern. High-stakes examination environments push students towards memorization as an emotional coping strategy (Putwain et al., 2021), simultaneously activate anxiety and boredom that predict surface learning (Pekrun et al., 2023), and erode intrinsically motivated engagement over time (Schiefele & Schaffner, 2020). Cross-national analyses link memorization-heavy systems to weaker reasoning, transfer and reading outcomes (Scherer & Siddiq, 2019; Fernández-Alonso et al., 2022), while controlling, autonomy-thwarting climates consistently undermine well-being and deep learning across

cultures (Vansteenkiste et al., 2020; Niemiec & Ryan, 2019). Comparative work in South Asian and African contexts captures a recurring posture of critical awareness combined with pragmatic resignation: students recognising rote learning as unsatisfying yet defending it as the only rational option (Salifu & Agbenyega, 2021).

Current research almost completely ignores the experiential factor of how Pakistani high school students in grades 9 through 12 navigate a memorization-centered test system. The studies closest to this question are mostly quantitative, set in higher education, or conducted in other South Asian or East Asian contexts, and their findings cannot be transposed directly. The present study addresses this gap by positioning students as the primary source of knowledge about what rote memorization means for their learning, motivation and academic experience.

Theoretical Framework

This study is anchored in two complementary frameworks. Ausubel's (1968) assimilation theory holds that the critical variable in learning is not the material presented but whether the learner anchors incoming information to an existing idea in their cognitive structure. When anchoring occurs, the learner forms a subsumer capable of absorbing and transforming new knowledge, making later retrieval flexible; when it does not, information can be reproduced verbatim under ideal conditions but cannot be used to think with. Crucially, the same content can be learned either way, and the learner's orientation is shaped by what the instructional environment implicitly demands. Where examinations test only recall, anchoring becomes, for the rational learner, unnecessary work, which helps explain why recall-oriented board examinations systematically produce rote learners even among students who would prefer to understand.

Cognitive load theory (Sweller, 1988) approaches the same problem from working-memory research, distinguishing intrinsic, extraneous and germane load. Because rote learning removes the conceptual cues that allow material to be compressed into schemas, each

fact must be held as an isolated unit, multiplying load on an already constrained system and frequently producing overload, a state in which no further learning occurs regardless of additional rehearsal. For students expected to memorize entire chapters across six or more subjects, this suggests many are operating at or beyond the limits of what working memory can sustainably support, with foreseeable consequences for both learning and well-being.

Rationale of the Study

The Pakistani educational landscape continues to center rote memorization as its dominant mode of learning (Halai & Durrani, 2018; Mahmood, 2019), yet the students who move through this system are rarely given a voice in the conversation about it (Shamim, 2011). Policy documents advocate competency-based and conceptual learning (Ministry of Federal Education and Professional Training, 2017), while assessment structures continue to reward verbatim reproduction (Raza et al., 2020; Memon & Khurram, 2021); the gap between these aspirations and students' daily realities remains poorly understood from the inside. By sitting with students and asking them to speak honestly about how rote memorization has shaped their relationship with learning, this study seeks to produce a human account of what the system does to the people inside it: an account that can inform pedagogy, assessment reform and teacher development (Tahir & Arif, 2019). Its premise, consistent with Ausubel's (1968) distinction between rote and meaningful learning, is that understanding cannot be mandated by a syllabus, that curiosity struggles to survive in a culture of compliance (Salifu & Agbenyega, 2021), and that a system asking students to memorize rather than think risks failing the very generation it claims to educate.

Research Objectives

1. To explore the daily study and examination-preparation practices of high school students, with particular attention to how rote memorization fits within them and how students perceive its effects on understanding, creativity and critical thinking.

2. To investigate the emotional and psychological experiences associated with rote memorization, including stress, anxiety and motivational challenges arising from examination-driven pressure.

3. To understand how teachers and institutional culture shape students' reliance on rote memorization and to explore the alternatives students envision as more meaningful and effective.

Research Questions

Main question. What are the perspectives and challenges of Pakistani high school students regarding rote memorization as a tool for learning?

1. What study and examination-preparation strategies do Pakistani high school students typically employ?
2. What emotional and psychological challenges do students experience as a result of rote memorization?
3. How does rote memorization affect students' understanding, critical thinking and creativity?
4. How do teachers and institutional practices reinforce students' reliance on rote memorization?
5. How durable is knowledge acquired through rote memorization once examinations have passed?
6. What alternative learning approaches do students envision as more meaningful and effective?

Research Design

An exploratory qualitative design was used, with semi-structured interviews as the means of data generation and reflexive thematic analysis as the analytic approach. This combination allowed the study to remain open to participants' own framings while retaining a consistent interview structure across cases.

Sample

Six high school students currently enrolled in grades 9 to 12 were selected through purposive, non-probability sampling. Three participants were drawn from Lahore, two from Gujranwala

and one from Okara, capturing experiences across Punjab's provincial capital, a major city and a smaller district town. All were enrolled in schools affiliated with the Board of Intermediate and Secondary Education (BISE) and therefore

subject to the same examination structure and curriculum demands. Demographic characteristics of the sample are summarized in Table 1.

Table 1
Demographic Characteristics of the Sample

Characteristic	P1	P2	P3	P4	P5	P6
Age (years)	16	14	17	17	15	19
Gender	Female	Female	Female	Male	Male	Male
Grade	9	9	Inter.	Inter.	Matric	Inter.
City	Lahore	Lahore	Lahore	Gujranwala	Gujranwala	Okara

Note. Inter. = intermediate (grades 11–12); Matric = matriculation (grades 9–10). Mean age = 16.3 years.

Inclusion and Exclusion Criteria

Students were eligible if they were currently enrolled in grade 9, 10, 11 or 12 in a BISE-affiliated school in Punjab; had prepared for at least one formal board or school examination; and were willing to participate with informed assent and parental or guardian consent. Students enrolled in international curricula (e.g., Cambridge O- or A-Level), those who had not yet sat any formal examination, and those enrolled below grade 9 were excluded, as their assessment experiences differ from the BISE model under investigation.

Semi Structured Interview Guide

Data were generated through semi-structured interviews, which balance the consistency of structured formats with the flexibility to probe emerging issues and to follow non-verbal cues such as pauses and signs of confusion (Kallio et al., 2016). An interview guide of 16 open-ended, bilingual (Urdu–English) questions was developed from the research questions, covering study habits and examination preparation, the experience of memorization, creativity and critical thinking, the role of teachers and the educational environment, post-examination retention, and ideal learning preferences. Interviews were conducted in person and lasted between 15 and 40 minutes; each was audio-recorded with consent and transcribed verbatim.

Ethical Considerations

The study was conducted in line with the ethical standards of the Department of Psychology, Government College University, Lahore, and the APA ethical principles. Participants and, where applicable, their guardians were informed of the study's purpose, procedure and use of data, and provided informed consent prior to interview, including permission for audio recording. Confidentiality and anonymity were maintained, participants were identified only as P1–P6, and they were free to take breaks, skip questions or withdraw at any point without consequence.

Data Analysis

Data were analysed using Braun and Clarke's (2006) six-phase thematic analysis: familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Audio-recorded interviews were transcribed verbatim and coded manually (Maguire & Delahunt, 2017); codes were collated into candidate themes and refined through iterative discussion with the supervisor before being organised under master themes. The approach was primarily inductive and data-led, while remaining informed by the study's theoretical framework.

Results

Thematic analysis of the six interviews yielded six master themes: (1) perceptions of rote memorization versus conceptual understanding; (2) motivational and engagement dynamics; (3) learning strategies and academic self-regulation;

(4) psychological and emotional impact; (5) impact on creativity and critical thinking; and (6) the role of teachers, the educational environment and the system. The themes, their sub-themes and their distribution across participants are summarised in Table 2.

Table 2

Summary of Master Themes, Sub-themes and Participant Distribution

Master Theme	Sub-themes	Description	Participants
1. Rote memorization vs. conceptual understanding	Rote as a temporary/short-term tool; conceptual learning as superior for retention and application; hybrid (understand-then-memorize) approaches	Participants consistently distinguished rote (surface, mechanical, short-term) from conceptual learning (deeper, durable, meaningful). Rote was valued instrumentally for exams but rarely treated as genuine learning.	All (P1-P6)
2. Motivational and engagement dynamics	Energy/mood fluctuations across the day; interest, relevance and intrinsic motivation; task-oriented compliance vs. genuine engagement	Engagement was highly context-dependent (time of day, mood, teacher, perceived relevance). Intrinsic interest promoted deeper learning; external pressure produced rote compliance.	All (P1-P6)
3. Learning strategies and academic self-regulation	Time-dependent strategy choice (rote under pressure); active techniques (flashcards, story/pattern building, self-testing, Pomodoro); prioritisation and revision	Students showed agency in selecting strategies based on time, syllabus load and exam proximity. Conceptual preparation was preferred when time allowed; rote served as a fallback.	All (P1-P6)
4. Psychological and emotional impact	Stress, anxiety, boredom and pressure; post-exam forgetting and regret; mixed/paradoxical feelings	Rote-heavy preparation generated chronic negative emotions, especially under time pressure and heavy syllabi; some participants reported short-lived satisfaction or thrill.	All (P1-P6)
5. Impact on creativity and critical thinking	Rote restricts original thinking and creativity; conceptual learning enables application and new ideas;	Strong agreement that pure rote narrows creativity and critical engagement, while understanding supports creative extension and real-life application.	P1, P2, P3, P4, P6 (5/6)

Master Theme	Sub-themes	Description	Participants
6. Role of teachers, environment and system	mechanical reproduction vs. generative thinking Teacher variability and influence; ideal pedagogy (examples, discussion, visuals, concepts-first); systemic pressures (syllabus, exams, assessment)	Teachers and the wider system strongly shaped learning approaches. Participants criticised exam-focused, textbook-reproduction systems and advocated conceptual, interactive, supportive teaching.	All (P1-P6)

Note. Quotations in the Interpretation section are translated from Urdu where the original response was in Urdu.

Interpretation of Themes

Theme 1: Rote Memorization versus Conceptual Understanding

All participants drew a clear line between memorizing something and understanding it, describing rote as a surface-level, temporary activity that served examination performance without contributing anything lasting. Conceptual understanding, by contrast, was described as durable, transferable and a source of genuine ownership over knowledge.

"We learn with understanding, because if we forget a little in the test, the concept comes back to us and once the concept comes, everything that follows comes too. With cramming, the moment you forget one part, you forget all of it." (P1, female, grade 9)

"Cramming is just for the moment, it's temporary; it doesn't stay with you for long." (P2, female, grade 9)

Students also articulated hybrid approaches, building understanding first and then committing key points to memory. One participant proposed a deliberate ratio of understanding to memorization, suggesting that students have already developed workable alternatives to pure rote that the system gives them little room to use.

"Understanding without memorization doesn't hold much value, and the two go together 25% memorization and 75% understanding. That, in my opinion, is a balanced formula that lets you learn 100%." (P6, male, intermediate)

These accounts are consistent with research showing that rote memorization alone is

insufficient for conceptual understanding and is negatively associated with performance on tasks requiring comprehension and application, while deep learning entails intrinsic motivation, critical inquiry and the integration of prior and new knowledge (Scherer & Siddiq, 2019; Fernández-Alonso et al., 2022).

Theme 2: Motivational and Engagement Dynamics

Motivation emerged as highly context-sensitive, fluctuating with the time of day, the subject, the teacher and, above all, the perceived relevance of the content. When conditions were favourable, students described feeling alert and curious; when they were not, they drifted into task-completion, treating the goal as getting through the material rather than engaging with it.

"When we come to school we feel fresh, because it's our favourite teacher's period and our favourite subject then the lesson makes sense to us." (P1, female, grade 9)

"I take the lesson as a task, a target I have to complete, neither with much interest nor by force." (P6, male, intermediate)

The role of perceived relevance was recurrent: students who saw no connection between the content and their lives or futures were the most likely to fall back on rote as the most efficient way of meeting the minimum requirement. This suggests that students do not rote-learn merely because they cannot understand, but because the system fails to give them a compelling reason to try. The finding aligns with evidence that

intrinsic interest supports deeper engagement while externally pressured, compliance-driven responses undermine it (Niemic & Ryan, 2019; Schiefele & Schaffner, 2020).

Theme 3: Learning Strategies and Academic Self-Regulation

This was the most salient theme across the data. Far from being passive recipients, participants displayed considerable agency, deploying strategies that ranged from metacognitively sophisticated techniques the Pomodoro technique, active recall with flashcards, and story-based encoding in the mother tongue to reactive, surface-level cramming under time pressure.

"To memorize, I turn any answer into a story; first I translate it into my own language, Urdu, then I fix a pattern in my mind and attach the grammar to it." (P6, male, intermediate)

"If I have more time, I do it with concepts; if there's less time and the syllabus is heavy, then I cram." (P1, female, grade 9)

The decisive variable was structural: students reached for rote not by preference but when time was short, syllabi were heavy and teacher pressure was high. The problem of rote memorization therefore appears less a matter of student capability or attitude than of structural conditions that make deep learning impractical. This is consistent with self-regulated-learning research showing that students manage and adapt their strategies and motivation capacities that here emerge despite a rote-heavy system rather than because of it.

Theme 4: Psychological and Emotional Impact

Rote-heavy preparation carried a significant emotional toll. Stress, anxiety, boredom, cognitive overload and a sense of being overwhelmed recurred across all six participants, and were chronic and intense rather than occasional, particularly when the volume of content felt unmanageable and the consequences of failure severe.

"It feels very boring, and there's pressure; my parents keep saying study, study so I end up cramming in a hurry because there isn't enough time." (P1, female, grade 9)

"In the board exams I felt bored, more nervous and frustrated, and I had to memorize because I couldn't understand everything in such a short time. Strangely, I also enjoyed the frustration and once the exams ended I felt flat, because the adrenaline was gone." (P6, male, intermediate)

Several participants also described a longer-term sense of disconnection and post-examination regret on realising that hard-memorized content had vanished almost immediately, producing a demoralising cycle of effort without retention. The pattern echoes Pakistani and international evidence that rote learning, parental pressure and examination-based assessment jointly generate academic stress, anxiety and boredom (Iqbal et al., 2021; Kiran & Rashid, 2022; Putwain et al., 2021; Pekrun et al., 2023).

Theme 5: Impact on Creativity and Critical Thinking

Across five of the six participants there was strong agreement that heavy reliance on rote had narrowed their thinking, conditioning them to retrieve and reproduce rather than question, analyse or generate. The experience of rote was described as cognitively constraining, reducing learning to the production of an accurate copy.

"With cramming we can't think of anything new; we just stamp down what we memorized and copy-paste it. If we understand, we can build something new from it." (P1, female, grade 9)

"Those who only cram don't really learn, so they can't produce anything new if you have to write your own essay, you can't." (P2, female, grade 9)

Participants noted in particular that students trained mainly through rote struggled with original writing, and that the examination system rewarded accurate recall rather than clear reasoning. The finding is consistent with the broader shift away from content-heavy, memorization-driven instruction towards competency-based curricula, and with evidence that rote learning impedes creativity and problem-solving in standardised-testing environments that reward mechanical reproduction (Riaz & Hassan, 2021; Farooq & Bashir, 2022; Aziz & Mahmood, 2019).

Theme 6: Role of Teachers, the Educational Environment and the System

Teachers emerged as the most immediate determinant of students' experience, with their pedagogy, conduct and assessment practices shaping how students felt and which strategies they chose. Participants contrasted teachers who explained concepts clearly, used real-life examples and rewarded understanding with teachers who demanded word-for-word reproduction, issued threats before examinations and marked against the textbook rather than the quality of thinking.

"Before a test some teachers say, if your marks aren't good I'll do this or that; they should prepare us and appreciate us instead of pressurising us, and not insist that we write exactly what is in the book." (P2, female, grade 9)

"The best way is to understand a topic, turn it into a story, discuss it as a teacher-student discussion, and only then memorize it for the exam." (P6, male, intermediate)

Beyond the individual teacher, participants identified the examination system itself with its premium on accurate recall as the most powerful structural driver of rote dependence, effectively overriding individual pedagogical intentions. As long as examinations reward memorization over understanding, they reasoned, the rational response for teachers and students alike will continue to be rote. This insight, offered spontaneously by participants with no training in educational theory, is among the study's most important findings and aligns with evidence that autonomy-supportive teaching enhances motivation, engagement and well-being while reducing disengagement (Vansteenkiste et al., 2020; Niemiec & Ryan, 2019).

Discussion

Read together, the six themes describe an educational culture at odds with genuine learning. Students were not naive participants in the rote system; they distinguished memorizing from understanding with notable sophistication, preferred understanding, and in some cases had articulated explicit hybrid formulas for combining the two. Viewed through Ausubel's

(1968) framework, they were attempting meaningful, anchored learning in an environment whose assessment signals made anchoring appear, much of the time, like unnecessary work. Their accounts of overload during heavy-syllabus, time-compressed preparation map closely onto cognitive load theory (Sweller, 1988): stripped of conceptual cues, content had to be held as isolated units until working memory was exhausted.

The motivational and emotional findings reinforce one another. Engagement rose with perceived relevance and teacher rapport and collapsed under externally imposed pressure, consistent with self-determination accounts of how controlling climates undermine intrinsic motivation (Niemiec & Ryan, 2019; Schiefele & Schaffner, 2020). The emotional costs, chronic stress, anxiety and boredom, followed by post-examination forgetting and regret, were not incidental but structural, echoing both Pakistani evidence (Iqbal et al., 2021; Kiran & Rashid, 2022) and international work linking high-stakes examinations to surface learning and negative affect (Putwain et al., 2021; Pekrun et al., 2023).

Perhaps most consequential is the convergence between students' lived experience and the structural analysis offered in the literature. Participants located the root of rote dependence not in their own limitations but in the examination system, the heavy syllabus and teacher pressure the same forces identified in observational and policy research (Halai & Durrani, 2018; Raza et al., 2020; Memon & Khurram, 2021). That students reached this analysis unprompted strengthens the case that reform aimed solely at classroom technique, without changes to assessment, is unlikely to alter how students learn.

The findings also speak directly to the experiential gap identified at the outset of this study. Where prior Pakistani research has documented the structural and curricular drivers of rote dependence largely from the outside, through policy analysis, classroom observation and teacher survey (Halai & Durrani, 2018; Mahmood, 2019; Tahir & Arif, 2019), the present interviews show how these same forces are felt, narrated and reasoned about from

within. Theme 5 illustrates this most clearly: participants did not merely confirm, as quantitative studies have, that rote learning is associated with weaker creativity and critical thinking (Riaz & Hassan, 2021; Aziz & Mahmood, 2019), they described the mechanism in their own words, characterising memorization as a process of mechanical reproduction that left no room for the original construction of ideas. This experiential layer adds texture to statistical associations reported elsewhere and suggests that the erosion of creativity under rote-heavy schooling is not incidental but is built into the cognitive habits the system trains into its students.

A further point worth underlining is the spontaneity with which participants, adolescents with no formal training in educational theory, arrived at an analysis that closely mirrors the conclusions of professional researchers and policymakers. This convergence across very different epistemic positions is itself a finding: it suggests that the costs of rote-centred schooling are neither subtle nor contested but are immediately legible to the people who bear them day to day, which strengthens the normative case for reform and weakens any suggestion that students are complicit in, or indifferent to, the limitations of the system they navigate. The hybrid strategies several participants described, in which understanding is built first and rote rehearsal is layered on only afterward, further suggest that students are not asking to abandon memorization altogether, but to be allowed to memorize from a position of understanding rather than in its place. Read this way, the present findings extend the regional literature (Salifu & Agbenyega, 2021) by showing that the posture of critical awareness combined with pragmatic resignation documented elsewhere coexists, at least among these participants, with a clearly articulated and largely self-taught theory of how better learning would work.

Conclusion

This study offers a grounded account of how rote memorization shapes the academic, emotional and intellectual lives of Pakistani high school students. Students consistently associated

rote with temporary survival and conceptual learning with lasting knowledge; described a drift from curiosity to mechanical performance; demonstrated genuine self-regulatory agency that flourished despite, rather than because of, the system; reported anxiety, exhaustion and boredom born of pressure to reproduce rather than understand; and experienced creativity and critical thinking as casualties of reproduction-centered schooling. Teachers and the wider system emerged as the most powerful mediating force, with autonomy-supportive teachers standing out as rare but transformative. Taken together, the findings indicate that rote memorization is less a pedagogical technique than a structural feature of a culture that prizes performance over understanding and that a more just and effective system would actively support, rather than undermine, students' evident desire to learn.

Limitations and Strengths

The study's limitations include a small sample of six participants, which restricts generalizability; limited geographic and socioeconomic diversity, leaving open how school type, parental education and resources mediate outcomes; an exclusive focus on student perspectives, omitting teachers, parents and administrators; and the possibility of social-desirability bias. Its strengths include a bilingual (Urdu-English) methodology that allowed participants to speak in their most comfortable language, in-depth interviews that captured nuance unavailable to quantitative methods, inclusion of participants across grade levels and genders, and a contextual grounding in an underrepresented Pakistani setting.

Implications and Recommendations

The findings point to four practical recommendations.

1. **Make content feel relevant.** Students disengaged most when they could not see how a topic connected to their own lives. Teachers and curriculum designers can address this with real-world examples and local context that show why the material matters.
2. **Change what exams reward.** This is the most important step. As long as exams reward

accurate recall over real understanding, students and teachers will keep choosing rote memorization, because it works. Trialling assessments that reward conceptual clarity and original thinking, such as open-ended or project-based questions, could change that incentive.

3. **Support teachers to teach differently.** Professional development should help teachers build a wider range of conceptual and discussion-based methods. Schools also need to reward teachers who try these approaches instead of pushing them back toward rote-friendly habits.

4. **Listen to students.** Schools and policymakers should create simple, ongoing ways for students to share what they think about curriculum, teaching and assessment, and should actually act on that feedback rather than treat it as an afterthought.

None of these steps would remove the need for memorization entirely. But together, they could ease its cognitive, emotional and creative costs, and move the system closer to one where students are genuinely supported to understand, think and grow.

Declarations. The authors declare no competing interests. The study involved human participants; informed consent (and parental/guardian consent for minors) was obtained, and the research was conducted in accordance with the ethical standards of the Department of Psychology, Government College University, Lahore. This article is extracted from the first author's BS (Hons.) dissertation.

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