

IMPLEMENTING A VYGOTSKY-INSPIRED PEER MENTORING SCAFFOLD FOR REPEATING DATABASE STUDENTS: A FEASIBILITY AND ACCEPTABILITY STUDY

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Abstract: *Database Management System (DBMS) courses present unique cognitive challenges, combining relational modelling logic with declarative query syntax. Although peer mentoring is an established pedagogical practice in introductory programming courses, targeted peer mentoring for students repeating DBMS courses remains under-explored. This study set out to implement and assess the feasibility, mentee acceptability, and contextual variation of a four-week Structured Peer Mentoring Program (SPMP) for undergraduates repeating the course. The program was implemented with 17 repeating students at a public university in Malaysia using Vygotsky-inspired paper-based scaffolding over four sessions across four weeks with approximately two hours per session and eight hours in total. The intervention incorporated past-year examination question modules. Feasibility and acceptability were evaluated using self-reported process metrics and a post-program survey data, with a 100% response rate. Feasibility metrics suggested relatively high participation, with 76.5% of mentees attending all four sessions and all 17 mentees reporting full topic coverage. Acceptability was also high, with the overall satisfaction item rated highest at a mean score of 4.94 on a five-point scale and mentees reporting high psychological comfort and module relevance. Descriptively, all 17 mentees passed the repeat examination, with the cohort mean increasing from 43.47 to 63.24, representing a mean increase of 19.77 marks. The main limitation of this study is the small sample size. Given the single-group design and the absence of a control group, the score changes are reported descriptively and cannot be interpreted as causal effects of the program. Rather than claiming causal superiority over existing models, this practitioner study contributes a practical implementation blueprint and evidence of mentee acceptability. The novelty of this work lies in adapting a Vygotsky-aligned scaffolding sequence*

for DBMS repeaters through a low-resource, mentor-intensive model that foregrounds structured human scaffolding over automated tutoring alternatives, within a public university in Malaysia.

Keywords: *Database, DBMS, Peer Mentoring*

Introduction

Database Management System (DBMS) forms a core component of computer science and information systems curricula. Students frequently encounter academic challenges in mastering fundamental database concepts such as Entity-Relationship Diagrams (ERD), normalization concept, and basic Structured Query Language (SQL) skills (Rashkovits & Lavy, 2021). Novice learners need targeted support to connect abstract data modeling with declarative query formulation, which demands different thinking from procedural programming (Migler & Dekhtyar, 2020). To address these challenges, this study implements a Structured Peer Mentoring Program (SPMP). While peer mentoring and Peer-Led Team Learning (PLTL) are well established in introductory programming (Migler & Dekhtyar, 2020), interventions for repeating students have shown mixed results, often producing improved engagement but limited impact on pass rates (Marco-Galindo et al., 2025). Therefore, PLTL still requires refinement for this specific cohort. To address this gap, the study adopted the SPMP grounded in Vygotsky's Zone of Proximal Development (Vygotsky & Cole, 1978) and scaffolding frameworks (Wood et al., 1976), both of which remain relevant in modern computing education (Bull & Kharrufa, 2023; Chen et al., 2025; Liu et al., 2026; Xu et al., 2023). By utilizing these frameworks, the SPMP enables peer mentors to scaffold repeating students through abstract DBMS logic at an appropriate cognitive level.

To examine the execution and response to this intervention without claiming causal efficacy, this study is guided by three objectives. First, it assesses the implementation feasibility, specifically the extent to which the SPMP can be implemented with high adherence to planned attendance and topic coverage among repeating students. Second, it evaluates mentee acceptability by examining how repeating students perceive the psychological comfort and relevance of the Vygotsky-inspired scaffolding sessions. Third, focusing on descriptive outcomes, the study observed changes in final examination performance among repeating students in conjunction with SPMP participation. Rather than proving causal superiority over standard models, this study aims to evaluate implementation feasibility and mentee acceptability. The novelty of this paper is framed around three intersections which are combining complex DBMS content into a targeted module, employing Vygotsky-inspired scaffolding specifically for repeating students, and executing a low-resource model within a public university in Malaysia.

Literature Review

This section reviews the literature in four subsections. First, it discusses the cognitive challenges of DBMS education, followed by a review of peer mentoring and scaffolding as instructional approaches in computing education. The next section examines prior interventions for students repeating introductory computing and database courses. Finally, the review identifies the research gap and outlines the contribution of the study.

Cognitive Challenges in DBMS Education

Database Management Systems (DBMS) is a fundamental subject in Computer Science and related programs, as it equips students with essential knowledge and skills required in the software industry (Gaitantzi & Kazanidis, 2025). This subject, typically offered in the early semesters, combines theoretical and practical components, focusing on database analysis, design, and application development. However, teaching and learning in database courses often face challenges such as excessive theoretical emphasis, outdated teaching methods, and lack of alignment with the practical demands of modern data-driven enterprises (An & Qu, 2020).

Beyond these delivery challenges, DBMS requires critical competencies in data modelling, relational design, and efficient information retrieval (Abdel-Aziz et al., 2025). However, the shift from conceptual modelling to executable syntax requires students to visualize structural connections between static diagrams and dynamic query logic, a process often hindered by limited procedural knowledge (Chen et al., 2026). If this learning gap remains unaddressed, it may leave graduates lacking the practical competencies expected by employers. In a survey of undergraduate IT students, only about half of respondents acknowledged significant exposure to modern technologies like Non-relational SQL (NoSQL) and cloud platforms, raising concerns about curriculum alignment with industry needs (Yeboah et al., 2026). The rapid emergence of NoSQL systems further enhances the value of practice-oriented and technology-supported teaching approaches (Yu et al., 2025).

Peer-Led Team Learning and Near-Peer Models in Computing

Peer-led and near-peer models have become widely adopted strategies for improving engagement and retention in computing education, with peer mentoring programs increasingly deployed to address the Computer Science (CS) capacity challenges (Yates & Plagnol, 2021). Among the most prominent instructional models, Peer-Led Team Learning (PLTL) integrates peer facilitation directly into credit-bearing coursework for large introductory computing cohorts (Servín et al., 2023). In PLTL, students work in small teams facilitated by a peer leader who has recently completed the same course (McAlpin et al., 2023), positioning the leader as a relatable near peer rather than an authority figure (Winterton et al., 2020). Research in science, technology, engineering and mathematics (STEM) education has linked PLTL to improved academic achievement and reduced achievement gaps for underrepresented students (Dotson et al., 2020). Collaborative PLTL variants have reported improvements in student success and retention in introductory Computer Science (Audette et al., 2023). Complementing these structured models, near-peer mentoring frameworks emphasize mentor preparation, community building, and code review in introductory programming (CS1/CS2) (Jayaraman & Kolarkar, 2025). Whereas PLTL prescribes a fixed, course-attached workshop structure, near-peer mentoring is a broader relational framework in which mentors operate at a closer cognitive distance to mentees than instructors, enabling mentees to identify them as role models (Rayford et al., 2024).

These peer-led models are underpinned by the sociocultural theory of learning, in which novices progress within Vygotsky's Zone of Proximal Development (ZPD), the gap between what learners can achieve alone and what they can achieve with guidance through interaction with more capable peers (Vygotsky & Cole, 1978). This principle is operationalized through scaffolding, which structures tasks to keep difficulty within the student's ZPD while controlling frustration, and fading, the progressive withdrawal of support until the learner performs independently (Bull & Kharrufa, 2023; Wood et al., 1976). In programming education, a growing body of research reports the benefits of scaffolding for students' computational

thinking. However, synthesizing these effects remains challenging given the variation of scaffolding characteristics, programming contexts, and participant populations (Chen et al., 2025). For DBMS students, these difficulties lie in bridging procedural knowledge with the abstract demands of relational modelling and query formulation (Chen et al., 2026), where guided progression eases entry into conceptual content. The SPMP operationalizes this sequence, from mentor-led modelling to independent mentee execution, through low-resource and paper-based mentoring sessions.

Intervention for Repeating Students

Repeating cohorts are a substantial and persistent concern in computing education. Studies report global failure rates of 33% in 2007 and 28% in 2017 for introductory programming (Utamachant et al., 2023). Students who repeat courses are not a homogeneous group. Analyses of CS1 cohorts distinguish students who disengage early from those who persist throughout the semester yet still fail, with both groups reporting motivation to learn but difficulty reconciling course demands with personal circumstances (Marco-Galindo et al., 2022). Beyond these motivational and circumstantial factors, implementing peer-led interventions for repeating students presents distinct hurdles, ranging from performance anxiety to a disconnect between prior procedural knowledge and the abstract requirements of database modelling. Despite the documented benefits of peer mentoring in introductory programming (Pon-Barry, John, et al., 2017; Pon-Barry, Packard, et al., 2017), targeted interventions remain scarce (Marco-Galindo et al., 2025), particularly in specialized DBMS courses, where the application of peer-led models remains largely under-explored.

Research Gap and Contribution

The gap identified above sharpens when contrasted with recent developments in database education. Active and collaborative designs have begun to emerge, such as paired assessment in large database courses (Senapathi, 2025), Think-Pair-Share and team peer review in introductory database courses (Catania et al., 2022) and active learning strategies in database programming (Marco-Pérez & Pérez, 2026), yet none appear designed for repeating students, the exact population this study addresses. Consequently, a lack of documented frameworks appears to combine three features central to the SPMP which are explicit targeting of repeating DBMS students who previously failed, a Vygotsky-aligned scaffolding sequence (Wood et al., 1976) and delivery through a low-resource, near-peer mentoring structure. This practitioner study therefore contributes a practical, descriptive account of the SPMP's implementation feasibility and mentee acceptability, positioning the work as an implementation blueprint for database educators rather than a causal efficacy claim.

Methodology

This section describes the methodology in four subsections. The first covers program design and scaffolding progression, followed by participant and mentor preparation, and the implementation indicators and criteria. The final subsection addresses data collection and the survey instrument.

Program Design and Scaffolding Progression

This initiative was structured as a practitioner implementation narrative. The study employed a single-group, pre-post descriptive design and is reported as a feasibility and acceptability study.

The intervention was designed as a Structured Peer Mentoring Program (SPMP) lasting four weeks during the revision period from week 10 to week 13 of the 14-week teaching period.

Participants were students repeating a first-year database course at a public university in Malaysia. A total of four mentoring sessions were planned, with each session designed to last approximately two hours, yielding an intended eight hours of total intervention time. Mentors and mentees scheduled sessions flexibly in small groups. The 17 mentees were distributed across eight groups where seven groups consisted of one mentor with two mentees each and one group consisted of one mentor with three mentees, giving an overall ratio of approximately 1:2.

Drawing on Vygotsky-inspired scaffolding concepts and recent computing education evidence that near-peer mentoring yields mutual benefits, reinforcing mentors' programming knowledge, programming self-efficacy, and computing identity, the four-week curriculum was designed to implement an explicit fading protocol, progressing from mentor-led conceptual modelling to independent mentee execution, as detailed in Table 1.

Table 1: Vygotsky-Inspired Weekly Scaffolding Progression Plan

Week & Topic	Level Of Mentor Support	Mentor Activity	Mentee Activity
Week 1: Entity Relationship Diagrams (ERD)	High	Direct modelling of business rules from narrative-heavy past-year questions, complete solution discussion and clarification of core conceptual misunderstandings.	Joint problem-solving involving the extraction of primary and foreign keys, relationship identification, and cardinality mapping in examination scenarios.
Week & Topic	Level Of Mentor Support	Mentor Activity	Mentee Activity
Week 2: Normalization (First, Second and Third Normal Forms; 1NF–3NF)	Moderate-High	Facilitates discussion on attempted answers from unnormalized datasets and explains targeted logic gaps based on mentee difficulties.	An independent attempt is followed by a small-group exercise in which anomalies and functional dependencies are identified before normalization to 3NF.
Week 3: Basic & Intermediate Structured Query Language (SQL)	Moderate	The mentor conducts post-exercise answer verification and elucidates syntax logic, subquery mechanics and logical errors in questions with which mentees struggle.	Individual SQL formulation (from basic SELECT to multiple tables/aggregations) followed by group discussion.
Week 4: Advanced SQL and Integration	Low	Reviews final answers for a complete past-year exam paper and explains residual misconceptions.	Independent timed resolution of a full multi-topic exam paper under exam conditions, followed by presenting their answers and explaining their solution logic for group discussion, with the mentor validating final answers.

The weekly reduction in support levels from High to Low in Table 1 operationalizes the planned fading of mentor support according to a schedule. This fixed-interval progression is a recognized approach in the scaffolding literature (Siu et al., 2025). Mentors used structured practice modules developed exclusively from publicly archived past-year DBMS examination papers. This approach was intended to support academic integrity and to avoid providing advance access to current assessment items.

Before implementation, feasibility was evaluated against the following planned thresholds. Attendance at all four mentoring sessions, a self-reported average session duration of one to two hours per session, and full coverage of the three core topics. Receipt of external academic help was recorded separately from the feasibility and fidelity criteria and is treated as a potential confound rather than as an indicator of program differentiation.

Participant and Mentor Preparation

The program targeted students repeating the DBMS course who had previously failed with fewer than 50 marks. No additional inclusion or exclusion criteria were applied. Eligible repeaters were invited to participate through the repeating class's WhatsApp group. All 17 eligible repeaters volunteered and participated, yielding a 100% participation rate. Eight senior students who had previously obtained grades A or B in DBMS served as mentors, with one mentor assigned to each group. Seven groups consisted of two mentees and one group consisted of three mentees.

Mentors completed a mandatory two-hour orientation on near-peer facilitation principles. Near-peer facilitation refers to an instructional arrangement in which a senior student supports one or a small number of junior students, with its effectiveness rooted in cognitive congruence. The similarity in knowledge and thought processes arising from proximity in age and academic experience can foster a less threatening environment and position the mentor as a relatable role model (Rayford et al., 2024). Accordingly, the orientation equipped mentors to apply these principles in practice, covering small-group dynamics, non-judgmental questioning and fading techniques to promote consistency across the eight groups. Mentors were also provided with past-year examination question modules and answer schemes. Where uncertainties arose, such as when a past-year question followed a pattern that the mentees had not previously encountered, the course lecturer remained available to provide clarification and ensure consistent academic guidance across the groups. The SPMP was coordinated by the student academic society while mentors participated voluntarily and received certificates alongside a nominal honorarium.

Implementation Indicators and Criteria

In this study, feasibility refers to whether the SPMP could be implemented as planned. It was assessed using attendance and session duration, as these indicators reflect participants' participation and exposure to the program. Fidelity refers to whether the planned intervention content was delivered. Coverage of the three core DBMS topics was used as a self-reported indicator of fidelity. However, because the sessions were not directly observed, the topic coverage was considered an estimate of fidelity rather than verified fidelity.

Acceptability refers to how favorably mentees perceived the program, the learning materials and the mentoring experience. The following criteria were used to interpret implementation. The program was considered feasible if at least 80% of participants attended the planned sessions and the reported average session duration fell within the one-to-two-hour category.

Fidelity was considered adequately approximated if at least 80% of mentees reported coverage of all three core topics. Acceptability was considered satisfactory if the mean rating for the relevant Likert-type items was at least 3.50 out of 5. External academic help was not considered a measure of fidelity or program differentiation because the single-group design could not distinguish the SPMP from other academic support mentees received. It was recorded instead as a potential confound and is reported as such in the Limitations.

Data Collection and Survey Instrument

Data were drawn from two sources which were examination records and a post-program survey. Pre-semester failing exam scores and repeating-semester final exam scores were retrieved from departmental databases after official grade publication, approximately one month after the final examination deadline. Examination performance data were obtained from official departmental records. Examination marks were reported on a 0–100 scale, with a mark of 50 or above representing a pass in accordance with the institution's applicable academic grading regulations. The institutional grade categories and corresponding mark ranges were based on university academic guidelines. For consistency, the examination taken in the semester when students previously failed the DBMS course is referred to as the prior-semester examination, while the examination taken after repeating the course and participating in the SPMP is referred to as the repeating-semester examination. The prior-semester examination mark served as the baseline measure, and the repeating-semester examination mark was used to assess subsequent examination performance. The change in examination performance was calculated as the difference between the repeating-semester and prior-semester examination marks. To evaluate feasibility and acceptability, a self-developed post-program survey was administered digitally at the end of the four-week SPMP, before the study week and the final examination period from week 16 to week 18 and well before official grade publication.

The survey was distributed to all 17 mentees via the repeating class's WhatsApp group, yielding a 100% response rate. No missing responses were recorded, and complete examination records were available for all 17 mentees. Responses were anonymized and confidential and were not linked to student identification numbers or academic records. Survey responses are reported only in aggregate, and no individual survey response is presented alongside any examination result. Examination marks were retrieved from departmental records after official grade publication and are reported at the cohort level only; no subgroup comparison of examination performance by attendance or by survey response is reported. The survey was self-developed, as no existing validated instrument measures the acceptability of a structured peer mentoring program for repeating database students in this specific implementation context. It was reviewed for face and content validity by two senior computing faculty members before distribution and comprised 11 survey items in three sections. The full 11-item instrument is provided in Appendix A. The four categorical survey items operationalized the feasibility and fidelity variables emphasized in program evaluation methodology (Lipsey & Cordray, 2000), capturing attendance, average session duration, coverage of the three core topics and receipt of external academic help. The five Likert-type survey items, rated on a five-point scale (1 = Strongly Disagree to 5 = Strongly Agree), operationalized constructs grounded in the Zone of Proximal Development and scaffolding (Vygotsky & Cole, 1978; Wood et al., 1976), capturing perceived conceptual understanding, module relevance, psychological comfort, mentor competence, and overall satisfaction. Two open-ended survey items elicited qualitative feedback on what mentees liked most and what improvements they suggested but responses to these survey items are not part of the quantitative analyses in this paper. Because the study was descriptive in scope and involved a single cohort of 17 mentees, no inferential statistics were

computed. Categorical items were summarized as frequencies and percentages, and Likert-type items as means and standard deviations. The five Likert-type items measured distinct constructs rather than a single underlying scale.

Results and Discussion

This section presents the SPMP findings in four subsections. The first section reports implementation feasibility and fidelity based on self-reported process metrics, including attendance, session duration, and topic coverage. The second section reports mentee acceptability and psychological comfort. The third section presents contextual descriptive outcomes, including examination performance. Finally, the fourth section discusses the methodological and practitioner limitations of the study.

Implementation Feasibility and Fidelity

The four-process metrics were grounded in the implementation fidelity framework, which assesses fidelity through adherence, exposure or attendance, quality of delivery, participant responsiveness, and program differentiation (Carroll et al., 2007). Attendance and session duration operationalized exposure, while topic coverage operationalized adherence. Program differentiation was not assessed, as the single-group design could not isolate the SPMP from other academic support that mentees may have received. The external academic help was recorded instead as a contextual covariable. Process evaluation methodology holds that delivery must be measured rather than assumed from its design (Lipsey & Cordray, 2000).

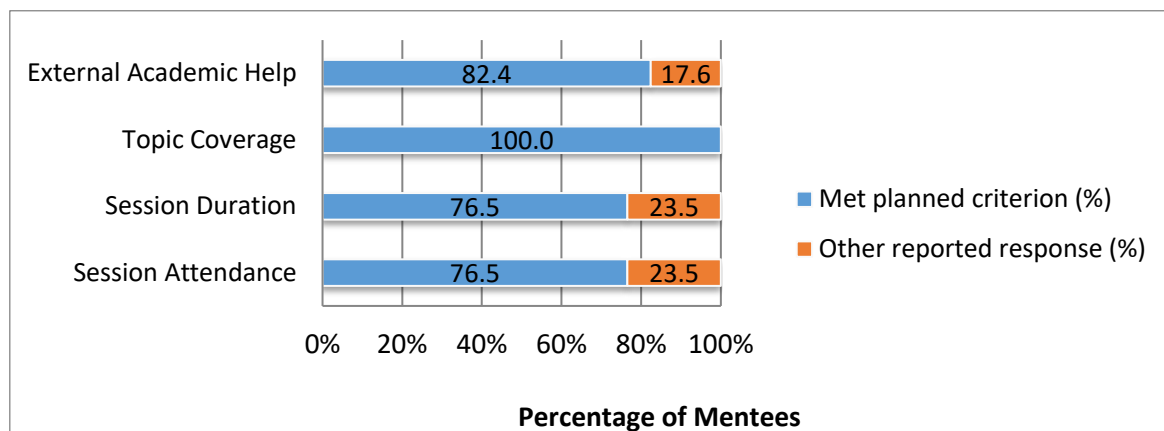


Figure 1: Percentage of mentees meeting the planned criterion for the four categorical survey items.

Figure 1 summarizes the four categorical survey items. Note, the "Met planned criterion" segment applies to the three feasibility and fidelity items. External academic help was a contextual covariable with no planned criterion; its segment shows the percentage reporting no external tutoring. Attendance and session duration operationalized implementation feasibility, topic coverage operationalized fidelity, while receipt of external academic help was recorded as a contextual covariable rather than as a criterion. Attendance approached but did not fully meet the planned criterion where 76.5% of mentees (13 of 17) attended all four sessions, while four attended three sessions and none attended fewer than three. Average session duration likewise fell within the planned one-to-two-hour category for 76.5% of mentees, again falling short of the 80% threshold. All 17 mentees reported full coverage of entity relationship diagrams, normalization and structured query language. In addition, 82.4% of mentees (14 mentees) reported no external academic help while 17.6% (three mentees) received external tutoring other than this SPMP. Together, these self-reported metrics indicate that the SPMP was

delivered broadly as planned, with the participation threshold approached rather than fully met. Because these findings are based on self-reports rather than direct observation, they estimate rather than verify fidelity. This constraint is addressed in the final section.

Mentee Acceptability and Psychological Comfort

The acceptability and psychological comfort constructs are grounded in Vygotsky's theory of learning. Development occurs within the Zone of Proximal Development alongside a more capable peer with support progressively withdrawn as competence grows (Vygotsky & Cole, 1978). Because near-peer mentors are close to mentees in experience, they serve as relatable role models, reducing the perceived hierarchy and supporting the psychological comfort measured here (Rayford et al., 2024).

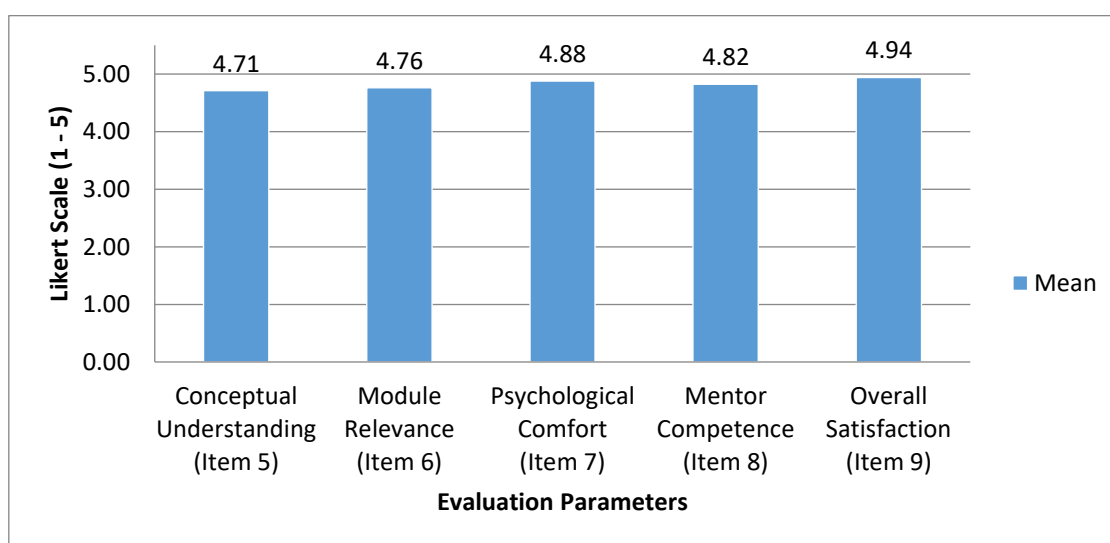


Figure 2: Mean item ratings for mentee acceptability and psychological comfort.

Figure 2 displays the mean ratings for the five Likert-type items based on responses from all 17 mentees. Item means were analyzed individually, and no composite acceptability score was computed. Overall satisfaction was highest at 4.94 ($SD = 0.24$). Psychological comfort followed at 4.88 ($SD = 0.33$), indicating that mentees felt at ease in the near-peer sessions. Mentor competence was rated 4.82 ($SD = 0.39$) and module relevance 4.76 ($SD = 0.44$). Perceived conceptual understanding was the lowest at 4.71 ($SD = 0.47$) yet remained high in absolute terms. All ratings fell between 4 and 5, no mentee rated any item below 4, and every mean exceeded the scale midpoint of 3.

The relational items, overall satisfaction (4.94, $SD = 0.24$) and psychological comfort (4.88, $SD = 0.33$), were rated higher than the learning-related item, perceived conceptual understanding (4.71, $SD = 0.47$). This pattern is descriptive and the present data cannot establish the direction of the relationship between comfort and conceptual development.

Contextual Descriptive Outcome

This section reports the contextual descriptive outcomes associated with course repetition and participation in the SPMP, it is descriptive and does not establish causal efficacy. Prior to repeating the course, all 17 students had failed the DBMS course, with a mean score of 43.47 ($SD = 3.73$). After repeating the 14-week course and participating in the SPMP, all 17 students achieved passing grades, with the cohort mean shifting to 63.24 ($SD = 8.28$) on the repeating-

semester departmental final examination, a descriptive mean increase of 19.77 marks. The post-program standard deviation ($SD = 8.28$) was more than double the prior standard deviation ($SD = 3.73$). This wider dispersion is reported descriptively and is not interpreted as evidence of differential program response. The percentage of mentees meeting the planned program criterion. Given the small subgroup sizes, this contrast is exploratory only. In this descriptive single-group design, the sources of this heterogeneity, including prior attainment, attendance, and external support, cannot be fully disentangled. Table 2 presents the complete grade distribution shift.

Table 2: Cohort Examination Grade Distribution Shift for All 17 Mentees

Grade Category	Grade Range	Pre-Test Count (%)	Post-Test Count (%)	Description
Excellent Pass	A (≥ 75 marks)	0 (0.0%)	3 (17.6%)	Highest performance tier.
Average Pass	B, C (50–74 marks)	0 (0.0%)	14 (82.4%)	Standard passing threshold.
Fail	D, E, F (< 50 marks)	17 (100.0%)	0 (0.0%)	Failing threshold.

Note. Pre-test scores stem from the prior failed semester; post-test scores stem from the repeating semester final examination. Instruments were non-equivalent. Shifts reflect total re-enrolment outcomes rather than isolated intervention effects.

Methodological and Practitioner Limitations

This study is subject to several limitations. Participants were recruited through convenience sampling, and self-selection cannot be ruled out. The program targeted repeating students at a single public university, and the analysis therefore reflects a small convenience sample ($n = 17$) rather than a representative cohort constraining precision and generalizability. Student intake and course delivery were not identical across semesters so differences between the prior and repeating-semester attempts may partly reflect cohort differences rather than the program itself. As participants were selected based on their low prior scores, the observed mean increase of 19.77 marks, from 43.47 to 63.24, should be interpreted descriptively rather than as evidence of a causal effect. This may also partly reflect regression to the mean (Morton & Torgerson, 2005). In addition, the two examinations were not commensurable instruments (Langer & Swanson, 2010) and the absence of a control group precludes causal attribution. Familiarity with past-year examination modules may have improved test-wisness and external tutoring, received by three participants (17.6%), constitutes an additional confound. Beyond outcome interpretation, the process and acceptability data were collected through a post-program survey, so fidelity was verified only through self-report, which is subject to recall and social desirability bias (Miller, 2011). In addition, internal consistency was not computed.

Conclusion and Recommendation

This study documented a four-week SPMP for repeating DBMS students conducted from week 10 to week 13 of the 14-week teaching period at a public university in Malaysia. The program was deliverable under routine resource constraints, although the planned participation threshold was approached rather than fully met. Eight senior-student mentors served voluntarily, and a post-program survey with 17 responses indicated broadly positive self-reported attendance and delivery fidelity with 76.5% of mentees attending all four sessions, all 17 reported full coverage of the three core topics, and 76.5% reported average session durations of one to two hours. Acceptability was consistently high, with the overall satisfaction item rated highest at a mean

of 4.94 (SD = 0.24) on a five-point scale and item means ranging from 4.71 to 4.94. Descriptively, the cohort's mean examination score rose from 43.47 in the prior failed attempt to 63.24 in the repeating semester, a mean increase of 19.77 marks. All 17 mentees passed, three with Grade A and 14 with Grades B or C. Because the design was single-group and lacked a control group, these score shifts are reported descriptively and cannot be attributed causally to the program. The contribution therefore stands as a practical implementation blueprint with a low-resource, mentor-heavy model using senior-student mentors compensated with certificates and a nominal honorarium, a one-to-two mentor–mentee ratio, and archived past-year examination modules, rather than a claim of efficacy.

Future work should address the current limitations through randomized or matched-control designs, equated or standardized assessments, validated survey instruments, concurrent fidelity logs, systematic documentation of external tutoring, longitudinal follow-up, and mentor-level outcomes. For practitioners, this low-cost, feasible structure offers a viable support mechanism for repeating students within existing institutional resources.

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APPENDIX A: Post-Program Survey Instrument

Instruction: Please answer the following questions regarding your experience in the Structured Peer Mentoring Program (SPMP).

Part 1: Program Implementation & Dosage

1. Out of the 4 planned mentoring sessions, how many did you attend? [4 / 3 / 2 / 1 / 0]
2. On average, how long did each of your group mentoring sessions last? [<1 hour / 1 to 2 hours / >2 hours]
3. Did your mentor cover all three core topics (ERD, Normalization, SQL)? [Yes / No]
4. Did you receive any outside academic tutoring for this DBMS course other than this SPMP? [Yes / No]

Part 2: Acceptability & Comfort (1 = Strongly Disagree to 5 = Strongly Agree)

5. The mentoring program helped me understand database concepts (ERD, Normalization, SQL) better than studying alone.
6. The past-year examination modules were highly relevant and useful for my revision.
7. Learning in a small peer group provided a low-anxiety environment and made me comfortable asking questions.
8. My mentor was knowledgeable and effectively corrected my misconceptions about DBMS concepts.
9. Overall, I am satisfied with this peer mentoring program and find it practical for repeating students.

Part 3: Open-Ended Feedback

10. What did you like most about this peer mentoring program?
11. What suggestions do you have to improve this program in the future?

Note: Responses to the two open-ended items were reviewed for formative feedback and were not coded or analysed quantitatively.