LANDesign: A Knowledge Continuum Framework in Landscape Design Studio Pedagogy

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Abstract

Studio-based learning remains fundamental in landscape architectural education, emphasizing iterative design exploration, critique, and reflective practice. However, conventional studio models often produce fragmented and non-cumulative outputs, where student projects are archived without systematic reuse across cohorts, limiting knowledge continuity and reflective learning. In response, LANDesign was introduced in 2024 as a publication-oriented pedagogical framework that transforms studio outputs into curated and accessible learning resources.

This study aims to evaluate the effectiveness of the LANDesign framework in enhancing student performance, supporting knowledge continuity, and strengthening motivation within landscape design studios. Specifically, the study examines students' perceptions toward publication-oriented learning and investigates the relationship between publication practices, external review, and student motivation.

A convergent mixed-methods approach was adopted, integrating comparative performance analysis across three semesters, survey data (n = 72), and studio observations (n = 54). The findings indicate improved performance consistency, with stronger concentration of grades within higher achievement categories. Survey findings revealed strong acceptance of the publication component, with 94.4% of students expressing positive agreement. Inferential statistical analysis further demonstrated significant positive relationships between publication-oriented learning, external review engagement, and students' personal motivation ($p < 0.05$). Multiple regression analysis identified report publication as the strongest predictor influencing reflective engagement and studio motivation.

Overall, the findings suggest that embedding structured documentation and publication within studio pedagogy enhances reflective learning, motivation, and knowledge continuity. The study provides empirical evidence that LANDesign functions as a scalable framework for cumulative studio-based learning in landscape architectural education.

Keywords: landscape architecture, LANDesign, pedagogy, performance

1.0 Introduction

Studio pedagogy has long been regarded as the cornerstone of landscape design education, enabling students to develop spatial reasoning, aesthetic judgment, and technical competence through direct engagement with design problems. Rooted in reflective practice, as articulated by Donald Schön, the design studio fosters iterative learning through critique, experimentation, and dialogue [9]. Within this environment, students construct knowledge through action and reflection, making studio-based learning a uniquely experiential and cognitively rich pedagogical model.

However, despite its pedagogical strengths, conventional studio models often produce fragmented and non-cumulative knowledge outputs. Student projects are typically archived or discarded after assessment, limiting opportunities for longitudinal learning and reducing the potential for knowledge transfer across cohorts. This episodic structure not only constrains reflective continuity but also leads to redundancy in design exploration, where similar problems are repeatedly addressed without building upon prior insights [3,9]. As a result, the studio risks functioning as a series of isolated learning cycles rather than an evolving system of shared knowledge.

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The COVID-19 pandemic further exposed these limitations while simultaneously highlighting opportunities for extending learning beyond the physical studio. The rapid shift toward online and hybrid learning environments prompted educators to explore alternative pedagogical approaches that emphasise documentation, accessibility, and digital dissemination of student work [1,7]. These developments underscore the need for more structured systems that enable design knowledge to be preserved, accessed, and continuously developed over time.

Despite increasing attention to reflective practice and collaborative studio environments, there remains a critical gap in the operationalisation of knowledge continuity within design pedagogy. Existing studies largely focus on improving studio interaction or learning environments, yet few provide empirical frameworks that systematically transform studio outputs into cumulative knowledge resources. In particular, there is limited research that integrates design production, documentation, and publication into a coherent pedagogical model capable of sustaining cross-cohort learning. Furthermore, limited empirical studies have quantitatively examined how publication-oriented studio pedagogy influences students' motivation, engagement, and reflective learning behaviour within landscape architectural education.

In response to this gap, LANDesign was introduced in 2024 as a pedagogical innovation aimed at reconceptualising studio learning as a cumulative and cyclical knowledge system. By transforming individual student proposals into curated publications, LANDesign extends the role of studio outputs beyond assessment and positions them as enduring knowledge resources. This approach encourages iterative reflection, cross-cohort engagement, and the progressive development of design intelligence within the studio environment.

Accordingly, this study evaluates the effectiveness of LANDesign in enhancing student learning outcomes, knowledge continuity, and reflective engagement. Adopting a mixed-methods approach, the study analyses three cohorts of final-year Diploma of Landscape Architecture students at UiTM Perak Branch across three academic semesters. Through the integration of performance data, perception-based surveys, and observational analysis, the study provides empirical insights into the role of cumulative learning frameworks in design education.

Accordingly, the study is guided by the following research objectives:

RO1: To evaluate the influence of the LANDesign framework on student learning outcomes across multiple landscape design studio cohorts.
RO2: To examine the role of structured documentation and publication in supporting knowledge continuity and reflective learning within the studio environment.
RO3: To analyse students' perceptions toward publication-oriented studio learning as part of the LANDesign pedagogical framework.

By addressing these questions, the study contributes to the advancement of design pedagogy by conceptualising studio learning not as an isolated educational process, but as a continuum of knowledge production and accumulation.

2.0 Literature review

2.1 Studio-Based Learning and Knowledge Fragmentation

Studio-based learning has long been recognized as the central pedagogical model in architectural and landscape design education. The studio environment allows students to engage in iterative design exploration, critique sessions, and reflective practice, enabling the development of conceptual thinking and spatial problem-solving skills. According to Schön [9], the design studio functions as a setting where students learn through reflective practice, continuously testing and refining design ideas through feedback and experimentation.

Similarly, Dutton [3] highlights that studio pedagogy encourages critical thinking and creativity through dialogue between instructors and students. Within this environment, learning occurs not only through instruction but also through peer discussion and critique, which are essential components of design education. However, despite the immersive and collaborative nature of studio learning, several studies have noted structural limitations within the traditional studio model.

One of the major challenges is the ephemeral nature of studio outputs, where design work is typically evaluated and archived at the end of the semester without systematic documentation for future reference. This practice limits the transfer of tacit knowledge between cohorts and may result in repeated design explorations. Hassanain et al. [4] further argue that effective design studio environments require structured systems that support both learning evaluation and knowledge retention to enhance the long-term educational impact.

In addition, student learning outcomes in design studios are influenced by various factors, including learning styles, studio interaction, and pedagogical approaches. Kvan and Jia [5] demonstrate that differences in learning styles can significantly affect student performance in design studios, suggesting the need for pedagogical models that accommodate diverse learning approaches. These challenges highlight the importance of exploring alternative strategies that can strengthen knowledge continuity and improve learning outcomes in studio-based education.

2.2 Knowledge Continuity in Design Education

In response to the limitations of traditional studio pedagogy, recent discussions in design education have emphasized the need for knowledge continuity, where learning resources are systematically documented and made accessible to future cohorts. Knowledge continuity allows design ideas, strategies, and problem-solving approaches to be preserved and revisited, supporting cumulative learning across academic cycles.

Collaborative and interactive studio environments have been shown to enhance this process. Qureshi [8] highlights that collaborative studio settings encourage knowledge sharing and collective learning, allowing students to learn not only from instructors but also from the work and experiences of their peers. Such environments promote a culture of shared learning where design ideas evolve through continuous discussion and reinterpretation.

Furthermore, the integration of evaluation and reflective mechanisms within studio learning has been identified as an important factor in improving learning outcomes [2]. Sevgül and Yavuzcan [10] argue that design studio evaluation should extend beyond final project assessment and incorporate reflective learning processes that allow students to critically analyze their design decisions. Through such mechanisms, studio learning becomes a process of continuous reflection and improvement.

The increasing use of digital platforms and documentation systems also supports the development of knowledge continuity in design education. By storing and organizing previous design outputs, these systems provide opportunities for students to study earlier projects, understand different design approaches, and develop more informed solutions. This approach transforms studio learning from isolated project development into a more longitudinal and cumulative knowledge-building process.

2.3 LANDesign as a Pedagogical Innovation

In recent years, pedagogical innovations in design education have explored new approaches to enhance student engagement and improve learning outcomes, particularly in response to technological advancement and changing learning environments. Studies examining online and blended learning in design education have demonstrated that alternative pedagogical strategies can influence student performance and engagement [2,6].

For instance, Ahmad et al. [1] examined the shift in teaching pedagogy for independent landscape design during the pandemic and found that adapting teaching strategies and learning platforms significantly affected student performance in online design studios. Similarly, Mohd Hussain et al. [7] reported that distance learning environments require structured learning approaches to maintain design studio effectiveness, highlighting the importance of integrating documentation and communication tools within studio pedagogy.

Building on these insights, LANDesign was introduced as a pedagogical initiative aimed at enhancing studio learning through documentation, publication, and cross-cohort knowledge sharing. Unlike conventional studio outputs that remain confined to classroom assessment, LANDesign transforms student projects into curated reports and published books that serve as reference materials for future students.

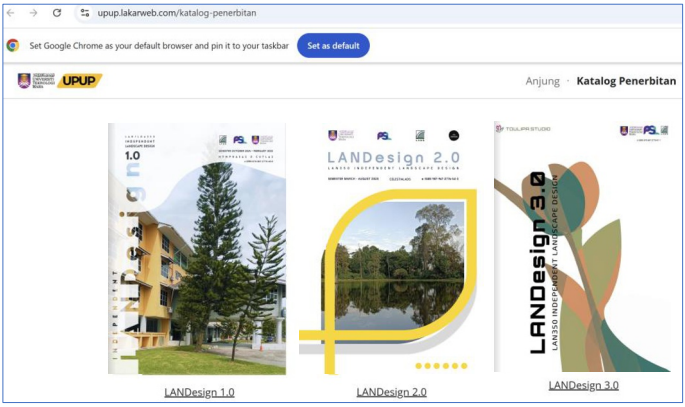

Figure 1 LANDesign access through UiTM Perak UPUP Website

This approach integrates collaborative design development with structured documentation and dissemination, enabling studio outputs to function as knowledge resources rather than temporary assignments. By linking design production with publication, LANDesign encourages students to engage more deeply with the design process while contributing to a growing repository of design knowledge within the academic program. With eISBN publication number, this manuscript is accessible at https://upup.lakarweb.com/katalog-penerbitan for student reference, teaching and learning evidences and academic visibility.

2.4 LANDesign: The Concept and Application

The LANDesign framework conceptualizes studio-based learning as a cyclical and cumulative knowledge system. The process begins with the design phase, where students engage in iterative exploration and spatial problem-solving. This is followed by documentation, where design ideas, processes, and technical outputs are systematically recorded.

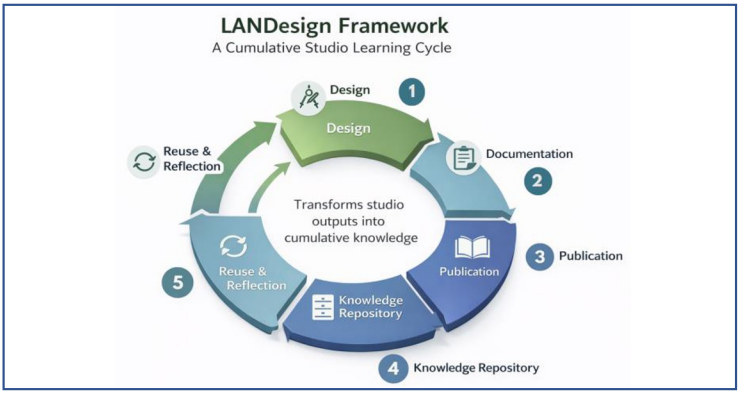

Figure 2 LANDesign Framework: Linking the Design Process with LANDesign Initiative

The documented work is then transformed into publication outputs, such as reports and books, providing formal academic visibility and authorship. These outputs are curated into a knowledge repository, forming an accessible and structured archive of design intelligence. Subsequently, future cohorts engage in reuse and reflection, where prior works are critically reviewed, reinterpreted, and expanded upon. This cyclical process enables continuous knowledge accumulation, linking the design process with the new initiatives that benefits cross-cohort learning, and the evolution of design thinking within the studio environment. Refer Figure 2.

LANDesign publications consist of a structured compilation of student design work that captures both the final outputs and the design development process. Each publication includes key components such as site analysis, concept development, design drawings, and brief reflective narratives, allowing the design thinking behind each project to be clearly understood.

These works are curated and standardised into formal publication formats and assigned an eISBN, giving them academic recognition and permanence. As a result, LANDesign publications function not only as documentation of studio outputs but also as accessible learning resources that support knowledge retention, cross-cohort reference, and the continuous development of design ideas within the studio environment.

3.0 Methodology

3.1 Research Design

This study adopts a convergent mixed-methods design, integrating quantitative and qualitative data to provide a comprehensive evaluation of the LANDesign framework. The quantitative component examines student performance trends and perception data, while the qualitative component explores reflective engagement and studio interaction patterns of student performance over three academic semesters (Semester October 2023 - February 2024, Semester March - August 2025, Semester October 2025 - February 2026). The integration of both datasets enables triangulation, enhancing the validity and interpretability of findings.

3.2 Participants

This study adopted purposive sampling method; as the intention are to focus on the students enrolled in Independent Landscape Design course. The total participants comprised of 72 students (from the Semester March - August 2025, Semester October 2025 - February 2026) enrolled in the Independent Landscape Design (LAN350), Final Year Diploma of Landscape Architecture studio courses. Participants were based in semester, gender, academic qualification, minimizing demographic confounds.

3.3 Data Collection and Analysis

Surveys

Structured surveys captured student perceptions of LANDesign's impact on knowledge retention, reflective practice, and design innovation. Likert-scale responses were analyzed statistically, while open-ended responses underwent thematic coding to extract qualitative insights.

Data Analysis

Quantitative data were analysed using descriptive, comparative, and inferential statistical techniques, including percentage distribution, Pearson correlation analysis, and multiple regression analysis, to identify patterns, relationships, and predictive influences among the pedagogical components of the LANDesign framework. Longitudinal comparison across three semesters further provided indicative evidence of performance consistency and cumulative learning improvement.

Qualitative data from open-ended responses and observational notes were analysed using thematic analysis, involving coding, categorisation, and interpretation of recurring patterns related to knowledge continuity, reflective practice, and student engagement.

Comparative Performance Analysis

Studio grades were analysed to evaluate LANDesign's influence on creativity, technical competence, and overall design quality. Longitudinal comparison across three semesters assessed trend significance and cumulative learning effects.

Observational Analysis

Instructor observations on the second cohorts (LANDesign 2.0 with n=54) recorded interactions, reflective practices, and engagement with prior work, providing contextualized qualitative evidence to interpret survey and performance outcomes.

Instrument Validation

In order to ensure the reliability and validity of the research instruments, several validation procedures were undertaken. The structured survey instrument was developed based on key constructs of LANDesign, namely knowledge retention, reflective practice, and design innovation. Content validity was established through expert review by academic staff in landscape architecture and design pedagogy, ensuring alignment between survey items and the study objectives.

A pilot test was conducted with a small group of students prior to full deployment to assess clarity, relevance, and consistency of the questionnaire items. Minor revisions were made based on feedback to improve wording and comprehension. The internal consistency of the Likert-scale items was evaluated using Cronbach's alpha, with values exceeding the acceptable threshold of 0.70, indicating satisfactory reliability.

For qualitative components, including open-ended survey responses and observational notes, trustworthiness was enhanced through thematic consistency and cross-verification. Data triangulation across survey findings, performance analysis, and observational records further strengthened the validity of the study by ensuring convergence of evidence from multiple sources.

4.0 Results

This section presents the results of the LANDesign implementation in the Independent Landscape Design Studio. The findings focus on students' perceptions of the learning approach and its influence on their learning experience and studio performance.

Data were collected through a structured survey using a five-point Likert scale. A total of 72 students (n = 72 from 2 semesters) participated in the survey. The analysis uses descriptive statistics to present the distribution of responses in percentages.

The results highlight students' views on several aspects of the LANDesign approach, including knowledge continuity, motivation, documentation of design work, and the overall effectiveness of the studio learning process. The findings help determine how the LANDesign innovation supports learning engagement and contributes to improved studio performance.

4.1 Comparative of Student Response on Studio Design Process

In general, this section first investigates, students' responses to the main stages of the Independent Landscape Design Studio process. These stages represent the typical workflow in the studio, where students begin with site analysis, develop design ideas and a masterplan, document their work in a report, and present their final proposal. Each stage plays an important role in helping students understand the design process and communicate their ideas effectively.

A survey involving 54 students from LANDesign 2.0, Semester March – August 2025 (n = 54) was conducted using a five-point Likert scale to measure students' acceptance of these activities. The comparison helps identify which parts of the studio process are most positively received by students and how these activities support their learning experience in the landscape design studio.

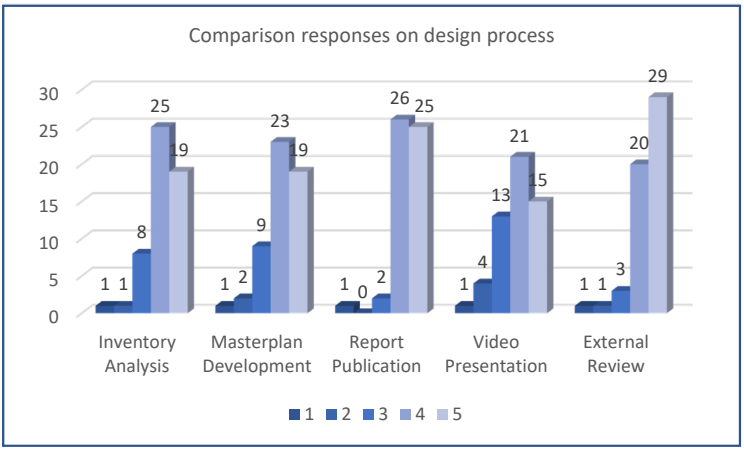

Figure 3 Student Response on Studio Design Process

Figure 3 shows the percentage distribution of responses indicates a strong positive perception of the overall design process among students. For inventory analysis, 46.3% of students selected scale 4 and 35.2% selected scale 5, while only 1.9% each selected scale 1 and 2, and 14.8% selected scale 3. A similar trend appears in masterplan development, where 42.6% rated scale 4 and 35.2% rated scale 5, with minor responses at scale 1 (1.9%) and scale 2 (3.7%), and 16.7% at scale 3. Report publication shows the strongest positive perception, with 48.1% of students selecting scale 4 and 46.3% selecting scale 5, meaning 94.4% of respondents expressed high agreement with this component. Only 3.7% selected scale 3 and 1.9% selected scale 1, while none selected scale 2, indicating that students strongly value the documentation and publication of studio outputs. For video presentation, 38.9% selected scale 4 and 27.8% selected scale 5, although a slightly higher neutral response (24.1%) is observed compared with other components. Meanwhile, external review recorded the highest level of strong agreement, with 53.7% selecting scale 5 and 37.0% selecting scale 4, demonstrating the importance students place on external critique and professional feedback in improving their design proposals.

The strong preference for report publication suggests that students value tangible and enduring outputs that extend beyond conventional studio assessment. This indicates a shift in learning orientation, where students perceive design work not merely as an academic requirement but as a contributory knowledge artefact.

In comparison, lower agreement in video presentation may reflect its perceived role as a communication tool rather than a knowledge-building mechanism, highlighting the distinct pedagogical value of publication within the LANDesign framework. Overall, the percentage distribution confirms that the LANDesign process is positively received, with report publication emerging as a key component in reinforcing knowledge continuity and the continuum studio concept.

4.2 Pearson Correlation Analysis of LANDesign Components and Student Motivation

To further investigate the relationship between the core components of the LANDesign framework and students' learning engagement, a Pearson correlation analysis was conducted. The analysis focused on the relationship between publication-oriented learning, external review, peer learning, and students' personal motivation within the studio environment.

Table 1 Pearson Correlation Matrix between LANDesign Components and Student Motivation

Variables	Personal Motivation	Report & Book Publication	External Review	Peer Learning
Personal Motivation	1	0.72**	0.65**	0.58**
Report & Book Publication	0.72**	1	0.61**	0.49**
External Review	0.65**	0.61**	1	0.55**
Peer Learning	0.58**	0.49**	0.55**	1

Note: $p < 0.01$

Table 1 shows that all selected variables demonstrated positive relationships with students' personal motivation. Among the variables, Report and Book Publication recorded the strongest correlation with Personal Motivation ($r = .72$, $p < 0.01$), indicating that students who positively valued the publication component also demonstrated higher levels of learning engagement and motivation. Similarly, External Review showed a strong positive relationship with motivation ($r = .65$, $p < 0.01$), suggesting that professional critique and exposure to external evaluators enhanced students' commitment toward studio learning.

In addition, Peer Learning and Participation demonstrated a moderate positive relationship with motivation ($r = .58$, $p < 0.01$), highlighting the importance of collaborative interaction within the cumulative learning environment. Overall, the findings suggest that the LANDesign framework contributes positively toward reflective engagement and motivational development among landscape design students.

4.3 Multiple Regression Analysis of Predictors Influencing Student Motivation

A multiple regression analysis was conducted to determine which components of the LANDesign framework significantly influenced students' personal motivation within the studio learning environment. The analysis included Peer Learning and Participation, Critique Session, Report and Book Publication, and External Review as predictor variables.

Table 2 Multiple Regression Analysis of LANDesign Components Predicting Student Motivation

Predictor Variables	Standardized Beta (β)	t-value	Sig.
Report & Book Publication	0.48	4.88	0.000
External Review	0.31	3.11	0.004
Peer Learning & Participation	0.22	2.05	0.046
Critique Session	0.17	1.74	0.087

Model Summary

R	R^2	Adjusted R^2	F	Sig.
0.78	0.61	0.58	18.42	0.000

The regression model was statistically significant ($R^2 = 0.61$, $p < 0.001$), indicating that approximately 61% of the variance in students' motivation could be explained by the selected pedagogical components within the LANDesign framework.

Among the predictors, Report and Book Publication emerged as the strongest significant predictor of student motivation ($\beta = .48$, $p < 0.001$), followed by External Review ($\beta = .31$, $p < 0.01$). Meanwhile, Peer Learning and Participation also contributed positively to student motivation ($\beta = .22$, $p < 0.05$). Although Critique Session demonstrated a positive contribution toward student motivation, the relationship was comparatively weaker and did not reach statistical significance at the 0.05 level.

The findings suggest that publication-oriented learning and professional exposure play an important role in strengthening students' engagement, ownership, and reflective participation within the landscape design studio. The statistical evidence further supports the conceptual proposition that LANDesign functions as a cumulative and motivational pedagogical framework rather than merely a documentation initiative.

4.4 Comparative Performance Trends

Figure 4 compares the distribution of student grades across three consecutive semesters implementing LANDesign 1.0 (Semester October 2024 – February 2025), LANDesign 2.0 (Semester March – August 2025), and LANDesign 3.0 (Semester October 2025 – February 2026). The results show a gradual improvement in student performance, particularly in the concentration of grades within the higher achievement categories.

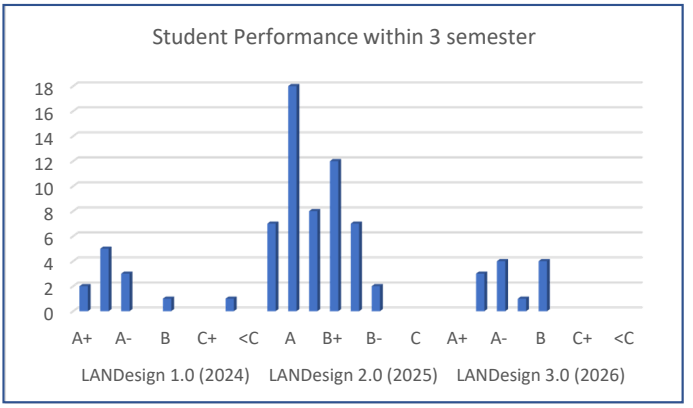

Figure 4 Student Performance from three semester

In LANDesign 1.0, approximately 50% of students achieved grades within the A range (A+, A, and A-), while the remaining 50% were distributed across B and C categories. The presence of lower grades suggests that students were still adapting to the initial implementation of the learning framework.

A notable improvement is observed in LANDesign 2.0, where the proportion of students achieving A-range grades increased to approximately 63%, while the proportion of students in the B range accounted for about 37%. Importantly, the presence of C- range grades was significantly reduced. This shift indicates stronger conceptual development and improved technical performance among students.

In LANDesign 3.0, the distribution remains concentrated within the higher achievement bands. Approximately 50% of students achieved A- range grades, while the remaining 50% were within the B range, with no students falling into the C category. This pattern suggests a more consistent level of performance across the cohort.

Overall, the comparative analysis indicates a progressive strengthening of studio performance, with the majority of students consistently achieving grades within the A to B range across the three semesters. The reduction of lower-grade outcomes and the stabilization of higher-grade distributions provide evidence that the LANDesign framework contributes to improved student learning outcomes and design performance.

4.5 Observational Analysis

Studio master observations corroborate survey findings: students increasingly referenced prior projects during critiques, demonstrating higher-order reflection, improved problem framing, and willingness to adopt unconventional design strategies. Peer-to-peer discussions reflected cross-cohort knowledge transfer, emphasizing collaborative construction of design insight.

Through observational analysis of LANDesign 2.0, Figure 5 presents students' evaluation of the initiative to transform studio outputs into a published report and book through LANDesign 2.0. A total of 54 responses were recorded using a five-point Likert scale.

The results indicate a strongly positive perception toward the publication initiative. The majority of respondents rated the initiative highly, with 48.1% (n=26) assigning a rating of 4 and 46.3% (n=25) assigning the highest rating of 5. Collectively, this represents 94.4% of respondents expressing strong agreement or satisfaction with the initiative.

In contrast, only 3.7% (n=2) of respondents provided a neutral rating of 3, while 1.9% (n=1) rated the initiative at 1. No respondents selected rating 2, indicating the absence of moderate dissatisfaction.

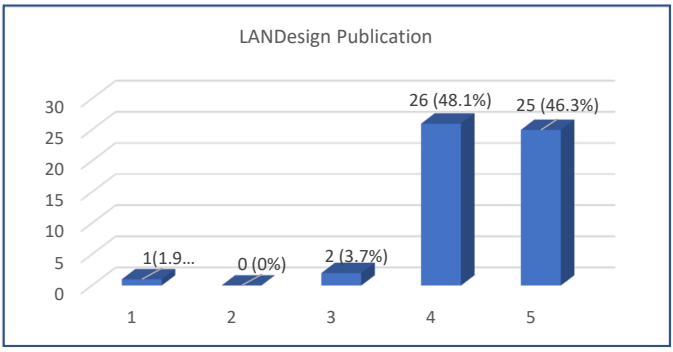

Figure 5 Student Response on LANDesign publication

Overall, the findings demonstrate an overwhelmingly positive reception toward the LANDesign publication component. The high proportion of ratings within the 4 - 5 range suggests that students perceive the production of reports and books as a valuable extension of studio learning. This outcome supports the premise that documenting and publishing studio outputs enhances students' sense of contribution, ownership, and academic recognition, reinforcing the objectives of the accessible and cumulative studio framework.

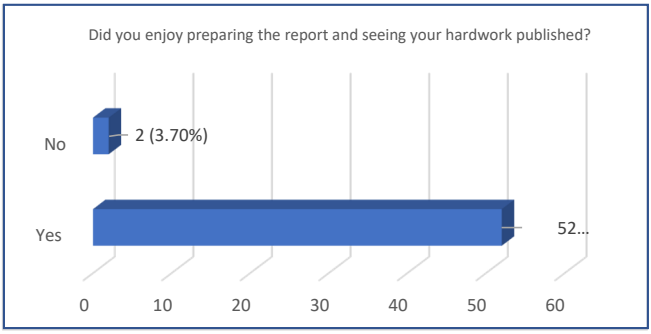

Figure 6 Student Satisfaction on LANDesign publication

Figure 6 presents students' responses to the question on whether they enjoyed preparing the report and seeing their work published as a book under the LANDesign initiative. Out of 54 respondents, 52 students (98.1%) indicated "Yes", while only 2 students (3.7%) responded "No." The overwhelmingly positive response indicates strong student engagement and satisfaction with the publication component of the studio learning process.

To further understand the reasons behind this positive perception, a thematic analysis was conducted on students' qualitative feedback. Five dominant themes emerged as captured in Figure 7.

From the thematic analysis this study highlighted; First, many students expressed a strong sense of accomplishment and pride, as seeing their design work published allowed them to recognize the value of their effort, creativity, and perseverance throughout the studio process. Second, the experience represented a first-time publication opportunity for many students, making the activity both memorable and professionally meaningful.

Third, students appreciated the opportunity for sharing and recognition, noting that their work could serve as inspiration or reference for future semesters and junior students. This sense of contribution reinforced the collaborative and cumulative learning objectives of the LANDesign innovation. Fourth,

respondents emphasized the importance of the book as a tangible and lasting output, describing it as physical evidence of their studio work that could be retained as part of their academic portfolio.

Thematic reasons from LANDesign publication

i. **Accomplishment and Pride:** Seeing their hard work, effort, and struggles published in a book gave respondents a strong sense of accomplishment, pride, and satisfaction.
ii. **First-Time Experience:** Many respondents highlighted that it was their first time having their work published as a book, making it a memorable and unique experience.
iii. **Sharing and Recognition:** Respondents were happy that their work, ideas, and creations would be shared with others, including junior students, and appreciated the recognition of their efforts.
iv. **Tangible and Lasting Result:** The book is a professional, printed, and touchable output that serves as a lasting memory and "hard evidence" of their work.
v. **Motivation:** The experience and publication motivated them and made the entire process feel meaningful and real.

Figure 7 Thematic response on LANDesign publication

Finally fifth, the publication process was perceived as a motivational factor, as the prospect of seeing their work formally documented encouraged greater commitment and seriousness toward the design process.

Taken together, the survey results and thematic findings suggest that the publication component of LANDesign not only enhances student satisfaction but also strengthens motivation, ownership of work, and engagement with the studio process. These outcomes support the broader objective of the innovative studio approach, where student outputs are transformed into lasting knowledge resources that contribute to cumulative learning across semesters.

5.0 Discussion

The findings of this study extend beyond incremental improvements in studio performance and point toward a structural transformation in design pedagogy. Drawing on the concept of reflective practice introduced by Donald Schön, this study advances the understanding of studio learning by conceptualising it as a cumulative epistemic system, where knowledge is not only constructed through reflection-in-action but also sustained through cross-cohort continuity.

Unlike conventional studio models that treat student outputs as terminal artefacts, LANDesign repositions these outputs as iterative knowledge resources, enabling longitudinal engagement with design intelligence. This shift aligns with emerging discourse on knowledge-based pedagogy, where learning is understood as a progressive accumulation of shared insights rather than isolated problem-solving exercises. The empirical findings from LANDesign surveys extend beyond incremental grade improvements; it reveals a structural pedagogical shift from isolated output production toward cumulative intellectual development. The innovative accessible studio model repositions studio artefacts not as terminal submissions but as evolving knowledge instruments embedded within an ongoing academic discourse.

Besides, the findings demonstrate that the LANDesign innovation contributes to both improved academic performance and enhanced student engagement within studio-based learning. By extending the traditional design studio into a publication-oriented learning process, LANDesign introduces an additional layer of accountability and motivation that appears to positively influence student outcomes. The inferential statistical findings further demonstrate that publication-oriented learning functions as a motivational and reflective mechanism within the studio environment, where students perceive the design outputs as academically meaningful contributions rather than temporary assessment artefacts. The significant relationship between report publication and motivation suggests that students perceive documented studio outputs not merely as assessment products, but as meaningful intellectual contributions within a cumulative learning ecosystem.

The comparative analysis of student performance across three studio cycles indicates a gradual improvement in grade distribution following the implementation of the LANDesign model. While LANDesign 1.0 recorded a relatively modest proportion of students achieving higher grades, the introduction of LANDesign 2.0 coincided with a notable increase in students attaining grades within the

A to B+ range, representing approximately half of the cohort. This shift suggests that the integration of collaborative learning, structured documentation, and publication output may encourage students to approach their design work with greater rigor and commitment and extended the application of online learning and MOOC LAA350 [1,7]. The consistent grade distribution observed in LANDesign 3.0 further indicates that the innovation is capable of sustaining stable academic performance even with smaller cohorts.

Beyond academic performance, the survey findings highlight strong student acceptance of the publication-based learning approach. The evaluation of the LANDesign production process reveals that 94.4% of students rated the experience positively (ratings 4 and 5), indicating high satisfaction with the integration of publication activities within the studio structure. This result suggests that students perceive the publication process not merely as an additional requirement, but as a meaningful component that enhances the overall learning experience.

Similarly, students' perception of the publication outcome was overwhelmingly positive, with 98.1% expressing enjoyment in seeing their design work compiled into an indexed ISBN book. The qualitative responses further reveal several key motivations underlying this positive reception, including a sense of achievement, the novelty of experiencing publication, opportunities for peer recognition, and the production of a tangible academic output. These factors collectively contribute to increased student motivation, as students recognize that their work has value beyond classroom assessment.

From a pedagogical perspective, the integration of publication into studio learning supports deeper engagement with the design process. Students are encouraged to refine their design narratives, improve visual communication, and present their ideas more clearly, knowing that their work will be publicly documented. This additional layer of responsibility may contribute to the observed improvements in academic performance while simultaneously fostering professional competencies such as documentation, communication, and collaborative knowledge sharing.

Contrary to concerns that referencing past projects may constrain originality, performance data indicates increased creativity scores across cohorts. This suggests that structured exposure to precedent within a localized academic context stimulates rather than suppresses innovation. Access to multiple design trajectories enables comparative analysis, encouraging students to identify conceptual gaps and propose alternative spatial narratives.

Overall, the results suggest that LANDesign represents a promising educational innovation that bridges studio learning with knowledge production. By integrating design practice with publication and reflection, the innovation strengthens the relevance and continuity of landscape design education while fostering a more engaged and motivated learning environment.

6.0 Limitations

Despite its contributions, this study has several limitations. First, the research is confined to a single institutional context, which may limit the generalisability of findings across different educational settings. Second, although inferential statistical analyses were conducted, the relatively moderate cohort size may still limit broader generalisability of the findings across diverse educational settings. Third, the study focuses primarily on short-term academic performance and student perception, without examining long-term impacts on professional practice.

Future research should consider multi-institutional studies, larger sample sizes, and longitudinal tracking of graduates to further validate the effectiveness and scalability of the LANDesign framework.

7.0 Conclusion

This study reconceptualises studio-based learning as a cumulative knowledge system through the implementation of the LANDesign framework, which integrates design practice, structured documentation, and publication-oriented learning within landscape architectural education. Unlike conventional studio models that often produce fragmented and temporary outputs, LANDesign transforms student design work into accessible knowledge resources that support cross-cohort learning, reflective engagement, and continuity of studio knowledge.

The findings demonstrate that the objectives of the study were successfully achieved. First, the study confirms that the LANDesign framework positively contributes to student learning outcomes and studio

performance across multiple cohorts. Comparative performance analysis from LANDesign 1.0 to 3.0 revealed a gradual improvement in grade distribution, with stronger concentration of students within the A and B achievement categories and a reduction in lower-grade outcomes. These findings indicate improved consistency in technical competency, conceptual development, and design performance within the studio environment.

Second, the study demonstrates that structured documentation and publication effectively support knowledge continuity and reflective learning within the design studio. Survey findings showed that 94.4% of students expressed positive agreement toward the report publication component, representing the highest level of acceptance among all studio activities. Observational findings further revealed increased cross-cohort referencing, collaborative discussion, and reflective participation during critique sessions, indicating that documented studio outputs function as cumulative learning resources rather than temporary assessment artefacts. Third, the study confirms that publication-oriented studio learning positively influences students' motivation and engagement. Inferential statistical analysis demonstrated significant positive relationships between publication-oriented learning, external review engagement, peer learning, and students' personal motivation ($p < 0.05$). Multiple regression analysis further identified report publication as the strongest predictor influencing reflective engagement and studio motivation ($\beta = .48$, $p < 0.001$), suggesting that publication-based pedagogy enhances students' sense of ownership, accountability, and intellectual contribution within the studio process.

Overall, the study provides empirical evidence that integrating publication and structured documentation within studio pedagogy enhances not only technical and creative competencies, but also reflective learning, motivation, and knowledge continuity. The LANDesign framework therefore contributes to contemporary design pedagogy by demonstrating how publication-oriented learning can transform studio outputs into enduring academic knowledge resources and support a more sustainable and cumulative model of landscape architectural education. Future research may further validate the scalability of the framework through multi-institutional implementation and longitudinal evaluation within broader design education contexts.

References

1. Ahmad, Suriati, Hussain, N. H. M., Sakip, S. R. M., Mansor, A., Bahaluddin, A., & Ilias, N. H. "The shift in teaching pedagogy for independent landscape design during the pandemic: an analysis of student performance in odl." *Planning Malaysia* 19 (2021).
2. Chung, Daniel H. "Developing building performance in the comprehensive design studio." ARCC Conference Repository. ARCC/EAAE 2014: *Beyond Architecture: New Intersections & Connections*, University of Hawai'i at Mānoa,(2014), pp. 507–518. https://doi.org/10.17831/rep:arcc%y304.
3. Dutton, Thomas A. "Design and studio pedagogy." *Journal of architectural education* 41.1 (1987): 16-25.
4. Hassanain, Mohammad A., Mohammed Alhaji Mohammed, and Murat Cetin. "A multi-phase systematic framework for performance appraisal of architectural design studio facilities." *Facilities* 30.7-8 (2012): 324-342.
5. Kvan, Thomas, and Yunyan Jia. "Students' learning styles and their correlation with performance in architectural design studio." *Design studies* 26.1 (2005): 19-34.
6. McClean, David. "Embedding learner independence in architecture education: reconsidering design studio pedagogy." (Doctoral thesis). Robert Gordon University, Aberdeen, Scotland (2009).
7. Mohd Hussain, N.H, et al. "Distance learning for design student: an analysis of student performance in Independent landscape design studio." *Insight Journal* (IJ) 8 (2021): 11-17.
8. Qureshi, Hira. "Collaborative architectural design studio environment: An experiment in the studio of Architectural Design-I." Archnet-IJAR: *International Journal of Architectural Research* 14.2 (2020): 303-324.
9. Schön, Donald A. The reflective practitioner: How professionals think in action. Routledge, 2017.
10. Sevgül, Özden, and H. Güçlü Yavuzcan. "Learning and evaluation in the design studio." Gazi University *Journal of Science Part B: Art Humanities Design and Planning* 10.1 (2022): 43-53.