Enhancing Authentic Assessment in Large-Class Design Education Through Authentic Project-Based Learning

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Abstract. As global economies advance, the cultivation of critical thinking and creativity in higher education is increasingly important for societal and economic progress. Adopting traditional educational methods to larger class sizes where personalized attention is scarce is crucial. This research delves into the fusion of blended and authentic project-based learning by integrating online and face-to-face instruction to immerse students in practical scenarios. The study examines how these integrated methods can improve student engagement, critical thinking, creativity, and proposes an effective assessment system for large-class design education. Drawing from Herrington's principles of authentic learning and utilizing a mixed-method approach, which includes a Likert scale survey of Design Management students, the research indicates a notable impact of blended and authentic learning on assessment outcomes. The study, presented within the ANABLE (Assessment strategy iN Authentic Blended Learning Environment) framework, emphasizes the enhancements in assessment practices. These improvements enable educators to track learning progress, identify areas needing enhancement, and gauge proficiency levels. The results imply that these pedagogical methods boost learning outcomes by involving students in complex, relevant problems, encouraging deep cognitive engagement, and offering personalized feedback. The findings suggest that these integrated strategies provide practical solutions for large classes, effectively equipping students for contemporary workforce requirements. Enhancing assessment techniques and promoting active learning enhance comprehension and memory retention, develop pertinent skills, foster deeper learning, facilitate fruitful collaboration, and enhance both assessment results and overall student contentment.

Keywords: authentic assessment; authentic learning; critical thinking; large classes; project based learning

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1. Introduction

As global economies progress, fostering critical thinking and creativity in higher education is crucial for societal and economic advancement (Xing & Marwala, 2017). However, traditional educational techniques face challenges meeting these requirements, especially in large-class environments where individual attention and involvement are restricted (Nickerson, 2010). The rise in large class sizes has become more prevalent due to the widespread growth of higher education, leading to increased student numbers (Hornsby & Osman, 2014; Nyagope, 2023). This trend poses significant obstacles for educators, including difficulties in maintaining effective communication, delivering personalized feedback, and keeping students engaged (Mbanga, 2023).

Research indicates that larger class sizes can impact student performance and learning outcomes, particularly in subjects that demand interactive and practical teaching methods (Matta et al., 2015; Okpamen, 2024). Students in large classes often experience lower engagement levels and reduced participation in discussions, potentially affecting their academic success (Roshan et al., 2022). To bridge this educational divide, educators are embracing innovative teaching strategies like blended and authentic project-based learning (Bostock, 1998; Deeb, 2007; Samuel, 2023; Vaughan, 2014). In large classes, there is often a heavy reliance on traditional summative assessment approaches that may not fully resonate with authentic learning principles. Students in such settings commonly express feeling a lack of interaction with instructors, which can detrimentally affect their satisfaction and engagement (Wang & Calvano, 2022). Limited interaction is particularly concerning as authentic learning environments hinge on meaningful teacher-student engagement to foster deeper understanding and practical application of knowledge (Wang & Calvano, 2022).

Blended learning, which combines online and face-to-face instruction, offers flexibility and scalability for large classes (Hussein, 2015). The integration of technology is also valuable for providing prompt feedback, decreasing educators' workload, and maintaining student engagement in large classes (Pishchukhina & Allen, 2021). These tools facilitate continuous assessment, crucial for determining mastery of competencies, guiding improvement, and enhancing the learning process (Xian, 2021).

Nonetheless, a critical aspect of successful implementation involves developing effective assessment strategies that align with these teaching methodologies (Dziuban et al., 2018; Haftador et al., 2023; Vaughan, 2014). While blended and authentic learning exhibit promise, research on their impact on assessment practices in large-class design education, especially within established frameworks like Herrington's authentic learning principles in design education, is limited. This study, guided by Herrington's authentic learning principles (Herrington et al., 2014) and incorporating blended learning methods, explores the influence of assessment practices in large-class design education. Hence, this study investigates the following research question: *How do blended and authentic project-based learning approaches shape assessment practices and outcomes in large-class design management courses?*

2. Literature Review

2.1 Large Class

The definition of "large classes" in education lacks a universal standard and can vary according to educational level, subject area, and institutional policies. Nonetheless, a prevailing benchmark in the literature is that a class with more than 30 students is often considered large. For instance, many educators and parents advocate for smaller class sizes, recognizing that classes exceeding this number can harm educational quality (Roshan et al., 2022). In South African universities, large classes are generally defined as those with around 120 students, illustrating the challenges posed by the expansion of higher education (Matoti & Lenong, 2018).

2.2 Authentic Learning

Authentic learning is a powerful pedagogical approach that effectively equips learners to handle the intricacies of the 21st century by emphasizing real-world contexts, engagement, collaboration, and authentic assessments (Herrington, 1998). These components collectively contribute to the creation of engaging and meaningful learning experiences that foster profound, transferable knowledge. Despite facing certain challenges, the transformative potential of authentic learning underscores its value for educators committed to nurturing impactful educational outcomes. Authentic learning entails learners engaging in creative and practical activities that support intricate collaborative endeavors. This approach revolves around students undertaking genuine tasks within real-life scenarios. This educational framework urges students to explore diverse perspectives and resources, interact with expert viewpoints, and collaborate with peers. Students are not just participants in tasks but are also encouraged to express and ponder upon their evolving comprehension, thus internalizing and applying their learning in meaningful ways.

The dimensions of Authentic Learning are as follows:
1. Provide authentic contexts that reflect the way that knowledge will be used in real life.
2. Provide authentic tasks and activities.
3. Provide access to expert performances and the modelling of processes.
4. Provide multiple roles and perspectives.
5. Support collaborative construction of knowledge.
6. Promote reflection to enable abstractions to be formed.
7. Promote articulation to enable tacit knowledge to be made explicit.
8. Provide coaching and scaffolding by teachers at critical times.
9. Provide authentic assessment of learning within tasks.

2.3 Blended Learning

Blended learning is an educational approach that combines traditional classroom teaching with online learning activities. This model aims to optimize both methods to improve the learning process, increasing its flexibility and accessibility for students. There are various blended learning models, including:
1. Face-to-Face Driven Model: This model primarily uses traditional classroom teaching complemented by online resources and activities to

enhance learning by providing extra study materials and assessments online (Nida et al., 2020).

2. Rotation Model: Students in this model switch between different learning formats, such as online and face-to-face sessions, enabling personalized learning experiences tailored to meet individual student requirements (Fariani et al., 2023).

3. Flex Model: The flex model offers a customizable schedule where students can select when and how to engage with online and in-person components. This model promotes autonomous learning and is particularly advantageous for students seeking more independence in their studies (Nida et al., 2020).

4. Enriched Virtual Model: This model integrates online learning with occasional in-person sessions, catering to students who primarily study online but benefit from face-to-face interactions for specific activities or assessments (Nida et al., 2020).

5. Self-Blended Model: In this model, students can opt to take online courses alongside their traditional classes, allowing them to tailor their educational paths based on their interests and requirements (Nida et al., 2020).

2.4 Engagement and Active Learning

Engagement and active learning are essential elements in effective educational methods, especially in blended learning settings. Numerous studies suggest that active learning strategies can greatly improve student engagement, motivation, and overall learning outcomes.

1. Active Learning Strategies: Active learning involves students actively participating in their educational journey through discussions, problem-solving, case studies, and collaborative projects. According to Yuliyana et al. (2021), blended learning promotes independent learning and critical thinking skills, vital for continuous learning. These strategies empower students to take responsibility for their learning, leading to a deeper comprehension and retention of knowledge.

2. Impact on Student Motivation: Research demonstrates that blended learning models can positively impact student motivation. Oktaria et al. (2021) discovered that incorporating formative and summative feedback in blended learning environments enhances student motivation and academic performance. This feedback loop is crucial for sustaining student engagement and steering learning progress.

3. Enhancing Learning Outcomes: A study by Amin and Bintang (2020) show that blended learning significantly improves student learning outcomes, especially in vocational education contexts. By combining online resources

with face-to-face interactions, students engage more deeply with the material, resulting in better understanding and application of concepts.

4. Technology Integration: The integration of technology in blended learning environments supports active learning by offering a variety of resources and interactive platforms. Nida et al. (2020) point out that blended learning combines direct, cooperative, and online learning methods, boosting student engagement and learning efficiency. This technological integration not only facilitates information access but also fosters collaboration among students.

5. 21st Century Skills: Blended learning environments are highly effective in nurturing 21st-century skills like critical thinking, creativity, and collaboration. Krismadinata et al. (2020) emphasize that by reducing the number of traditional class meetings, blended learning allows educators to focus on activities that enhance students' competencies. This transition towards more interactive and student-centered learning experiences is crucial for preparing students for upcoming challenges.

2.5 Traditional Assessment and Authentic Assessment

Authentic assessment has become a prominent trend in education, moving away from conventional standardized testing to more meaningful evaluations of student learning. This review delves into the fundamental principles, advantages, and challenges related to authentic assessment, drawing insights from various scholars and practitioners. Authentic assessment places importance on evaluating students' capacity to apply their knowledge and skills in real-life, contextualized situations (Hu & Liu, 2023), distinct from traditional assessments often centered on rote memorization or decontextualized test-taking skills. Designed to replicate the complexities and uncertainties encountered in professional settings, authentic assessments entail students showcasing their understanding through performance-based tasks, projects, portfolios, or other demonstrations of learning. Such assessments should prompt students to utilize their knowledge and skills to tackle real-world problems, develop products, or execute tasks pertinent to their lives and future careers (Herrington & Herrington, 1998).

Various studies corroborate the distinctions presented in Table 1. For example, authentic tasks emulating real-world challenges are vital for promoting deeper engagement and learning (Herrington et al., 2006). Furthermore, assessments mirroring the intricacies of real-life tasks are advocated, advocating for a shift from traditional to authentic assessment approaches (Wiggins, 1990). Moreover, alternative and authentic assessments are generally better received by students, underscoring the necessity for alignment between assessment strategies and teaching practices (Fook & Sidhu, 2010).

Table 1: Distinctions between traditional assessment and authentic assessment

Authentic learning principles	Traditional assessment	Authentic assessment
Definition	Standardized tests that measure knowledge and skills through objective formats like multiple-choice and essays.	Assessments that reflect real-world tasks and contexts, focusing on application and integration of knowledge.
Purpose	To evaluate student knowledge and skills in a controlled environment.	To measure students' ability to apply knowledge in practical, real-world situations.
Format	Often uses closed-ended questions (e.g., multiple-choice, true/false).	Utilizes open-ended tasks, projects, portfolios, and performances that require critical thinking and problem-solving.
Feedback	Typically provides limited feedback, often focusing on right or wrong answers.	Offers detailed, formative feedback that guides students in their learning process.
Engagement	May lead to passive learning as students prepare for tests.	Encourages active engagement and collaboration among students, fostering deeper learning.
Assessment of skills	Primarily assesses recall and basic understanding of content.	Evaluates higher-order thinking skills, creativity, and the ability to synthesize information.
Contextual relevance	Lacks real-world relevance; often disconnected from students' lives.	Emphasizes real-world relevance, making learning meaningful and applicable to students' future careers.
Example	Standardized tests, quizzes, and final exams.	Projects, presentations, simulations, and portfolios that demonstrate learning in context.
Educational philosophy	Aligns with behaviorist approaches focusing on knowledge acquisition.	Aligns with constructivist approaches that emphasize experiential learning and personal meaning-making.

3. Methodology

3.1 Research Design

The curriculum design for the Design Management blended course has been structured to align with the nine elements of Authentic Learning as outlined by Herrington et al. (2006). This alignment was purposely implemented to investigate the effects of blended and authentic project-based learning methodologies on assessment practices and results in large-class scenarios. By incorporating these principles, the course sought to establish a learning setting that reflects authentic real-world challenges, thereby equipping students with theoretical knowledge and practical, relevant skills. The table presented below illustrates how the authentic learning principles have been integrated into particular class activities:

Table 2: Authentic project based learning activities

Authentic learning principles	Class activities	Tasks
Authentic contexts	Students work on projects simulating real-world design challenges. Briefs of tasks are available on eLearn via explanatory videos.	Develop a design brief that solves a specific problem identified by the client
Authentic tasks and activities	Students conduct onsite research, observations, and benchmarking to develop solutions. Lectures are delivered in class with direct interaction and Q&A sessions between students and instructors.	Design and execute a market analysis for the alternatives solutions
Expert performance	Guest lectures from industry professionals and case studies are offered, either online or onsite, depending on the speaker's location.	Analyze and discuss the processes used by experts in tackling similar design challenges.
Multiple roles and perspectives	Group projects assign students different roles within the team.	Each student takes on a specific role (e.g., project manager, lead designer, marketer) in a project.
Collaborative construction of knowledge	Teamwork and peer-review sessions involve independent team learning and filling out peer-review forms on eLearn.	Work in teams to create a comprehensive design proposal, incorporating feedback from peers.
Reflection	Regular reflective journaling on project progress is done via eLearn forums.	Write reflective essays on the learning process and key takeaways from the project.
Articulation	Students present and discuss their project findings in class.	Present the design process and rationale behind design decisions to the class.
Coaching & scaffolding	Milestone reviews with instructors, conducted either in person or via online meetings, offer timely guidance.	Receive targeted feedback during critical project phases to refine strategies and outputs.
Authentic assessment	Assessments are integrated into the project to reflect real-world standards.	Evaluate the final project based on industry standards, including design quality and innovation.

Figure 1: Classroom collaborative activities and students working in groups

Figure 2: eLearn content

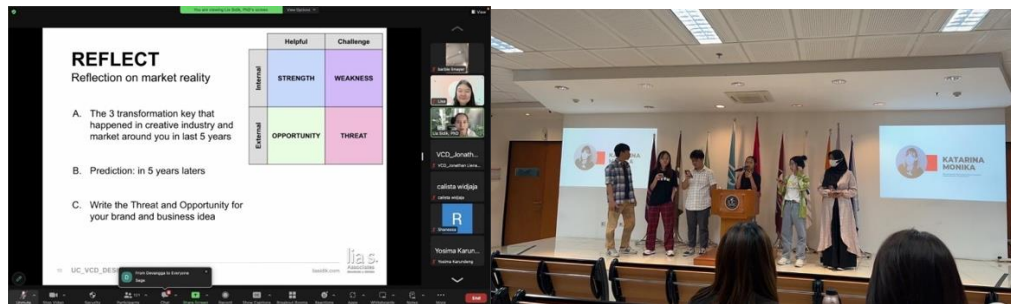**Figure 3: Videos and teaching materials on eLearn**

Figure 4: Guest lecturer and student presentation

3.2 Participants

Eighty-two undergraduate design students from an Indonesian university engaged in a design management course actively participated in the research. A convenience sampling approach was utilized by selecting a specific class for the study for its accessibility and alignment with the research goals. This method is commonly employed in educational research due to practical considerations such as time limitations and resource availability, enabling swift and effective data collection (Tunaz, 2023).

In order to uphold the credibility of the data collection process, the students were approached transparently, and their participation was entirely voluntary, with their informed consent being obtained. Through their participation, they provided sincere and eager feedback on the genuine learning initiatives implemented during the course.

3.3 Research Instrument

The data in this study was collected over a 16-week semester within an Authentic Learning Environment using a mixed-method research methodology. The modules and assessments were meticulously designed to correspond with the authentic learning approach described in Table 2. Established principles of authentic learning and existing research in the field guided the survey instrument creation. The survey aimed to gather both quantitative and qualitative data on students' perceptions and experiences in a blended and authentic project-based learning setting. A thorough review of the literature guided the development of 20 survey statements, ensuring they aligned with crucial factors like student engagement, satisfaction, and learning outcomes, which previous studies consistently emphasized.

The survey comprised 20 statements and comments evaluating the impact of the authentic learning environment through a 5-point Likert scale questionnaire. The scale ranged from 5 (Strongly Agree) to 1 (Strongly Disagree), facilitating a descriptive analysis of students' responses. Descriptive statistics like means and standard deviations were employed to summarize the general trends in students' perceptions and experiences. In addition, open-ended questions were included to delve deeper into students' thoughts and opinions, providing qualitative insights into their engagement and learning outcomes. This blend of quantitative and qualitative data presented a comprehensive view of students' reactions to the

authentic learning environment and enabled a more nuanced interpretation of its effect on their learning experience.

4. Analysis and Results

This study aimed to investigate how blended and authentic project-based learning methods influence assessment practices and outcomes in a large-class design management course. The comprehensive findings of this study are presented in table 3. The quantitative data underwent analysis using descriptive statistics in SPSS software. The survey instrument's reliability was assessed through Cronbach's Alpha coefficient, yielding a value of 0.979 (n=82), signifying excellent internal consistency. Reliability indicates how consistently the survey measures the intended variables, with a Cronbach's Alpha exceeding 0.9 suggesting a high level of uniformity among the survey items.

Table 3: Survey results (ranked)

Items (N=40) Cronbach alpha 0.979 (n=82)	Mean (M)	Std. dev. (SD)	Percent (%)
1. "I like it when the lecturer uses various media to explain the topics (videos, games, pictures, etc.)"	4.68	0.47	100
2. "I try to relate what I'm learning to my own experiences"	4.68	0.52	97.6
3. "I feel informed the learning objectives and the deadline of every assignment"	4.66	0.53	97.6
4. "I enjoyed the way my course was set up with real-world scenarios"	4.66	0.69	87.8
5. "I am eager to learn about the applications of my knowledge once I learn something new"	4.65	0.57	95.1
6. "I get feedback for lecturer when needed"	4.63	0.58	95.1
7. "I feel engage and participate in the learning process"	4.62	0.70	92.7
8. "I actively participate in class activities"	4.54	0.80	90.2
9. "I feel that the activities in class support my understanding of the material"	4.54	0.77	87.8
10. "I am satisfied with group assignments"	4.52	0.72	91.5
11. "I am able to implement what I've learned to a similar project"	4.52	0.74	90.2
12. "I find that watching internet tutorials before performing a task is beneficial"	4.52	0.71	87.8
13. "I can learn things from my peers"	4.50	0.84	90.2
14. "Working with my peers was fun and insightful"	4.50	0.77	87.8
15. "The learning activities allowed me to think critically about the tasks"	4.51	0.72	91.5
16. "The assignment instructions given on the eLearn (LMS) are clear and comprehensive"	4.44	0.86	85.4

17. "I find that the video provided by the lecturer makes me able to refer back to the learning materials whenever I needed to"	4.43	0.74	90.2
18. "I prefer dynamic roles in collaborative work"	4.28	1.13	79.3
19. "I prefer to learn with friends/groups rather than by myself"	4.23	1.02	69.5
20. "I watch the videos posted on eLearn (LMS) before the lectures"	3.74	1.24	63.4

4.1 Enhanced Understanding and Retention

When multimedia tools are effectively integrated, enhanced comprehension and improved memory retention are crucial outcomes of blended learning. The professional incorporation of videos and tutorials enables students to engage with content multiple times at their own pace, reinforcing complex concepts. High mean multimedia usage and speed scores indicate the enhancement of intricate concepts. The high average scores related to multimedia engagement and the ability to revisit content reflect that students perceived these resources as significantly improving their grasp and retention. The repeated access to lectures (mean score of 4.43) enhances understanding and contributes to a deeper comprehension, bridging any gaps from the initial exposure. Furthermore, feedback from students underscores how authentic learning projects enhance real-world applicability, making it easier to retain and apply knowledge, thereby facilitating the retention and practical application of knowledge in professional settings.

Table 4: Blended learning environment

Item	Mean (M)	Std. dev. (SD)	Percent (%)
"I like it when the lecturer uses various media to explain the topics (videos, games, pictures, etc.)"	4.68	0.47	100
"The assignment instructions given on the eLearn (LMS) are clear and comprehensive"	4.44	0.86	85.4
"I watch the videos posted on eLearn (LMS) before the lectures"	3.74	1.24	63.4
"I find that watching internet tutorials before performing a task is beneficial"	4.52	0.71	87.8
"I find that the video provided by the lecturer makes me able to refer back to the learning materials whenever I needed to"	4.43	0.74	90.2
Students' Comments: *"The classes and projects are engaging and enjoyable, especially as they are completed with friends who are also eager to collaborate."* *"This project and class are beneficial for me as they align with what I aim to pursue in the future, providing me with new insights."* *"The class is quite effective at guiding students through the design world and providing clear direction on what to do in real-world scenarios."* *"The class activities taught me many things that I can apply in the workplace."* *"I learned a lot, especially about how to create an effective working organization."*			

4.2 Development of Relevant Skills and Deeper Learning

The integration of authentic learning approaches in design management courses promotes the development of relevant skills and deeper understanding, which is crucial for students. By incorporating real-world applications into class projects and activities, students actively apply their knowledge in practical contexts, enhancing critical skills such as problem-solving, collaboration, and creative thinking. The data presented in Table 5 demonstrates high mean scores and positive feedback, indicating students' confidence in applying their knowledge outside the classroom. These activities enhance students' grasp of design management principles and prepare them for professional settings by providing simulations of real-world challenges. Students' feedback highlights that these projects foster creativity and provide them with the necessary tools for future career success. This hands-on approach facilitates deeper learning by connecting theoretical concepts with practical experience, ensuring that students acquire the skills essential for success in authentic design environments.

Table 5: Authentic learning and real-world application

Item	Mean (M)	Std. dev. (SD)	Percent (%)
"I feel that the activities in class support my understanding of the material"	4.54	0.77	87.8
"The learning activities allowed me to think critically about the tasks"	4.51	0.72	91.5
"I enjoyed the way my course was set up with real-world scenarios"	4.66	0.69	87.8
"I am able to implement what I've learned to a similar project"	4.52	0.74	90.2
"I try to relate what I'm learning to my own experiences"	4.68	0.52	97.6
Students' Comments: *"Projects can be implemented in the real world, so I feel challenged and want to explore creativity further." "Using experiences in groups and learning to apply in real-world situations." "I think I will implement the projects in a real-world situation in a big company where there must be some kind of contract with Terms of Service and a good portfolio for the company." "This lesson can help performance in the world as a designer."*			

4.3 Fostering Effective Collaborative Learning

The development of relevant skills and deeper learning is further enhanced by fostering effective collaborative learning environments. As shown in Table 6, students have responded positively to group work, indicating that collaboration not only aids in comprehending course content more effectively but also contributes to the acquisition of essential interpersonal and professional skills. Engaging in teamwork allows students to undertake various roles, tackle challenges collectively, and benefit from diverse perspectives offered by their peers, which are crucial for real-world design projects. The substantial mean scores depicting satisfaction with group assignments (mean of 4.52) suggest that students perceived value in shared objectives and teamwork, notwithstanding occasional challenges related to team member commitment. Collaborative

learning enriches deeper learning by stimulating students to analyze the material critically and interact with one another, thus fostering the development of communication, leadership, and problem-solving abilities. These collaborative experiences equip students for professional settings where collaboration is pivotal and enhance their grasp of the course content through active participation and peer engagement.

Table 6: Peer learning and collaboration

Item	Mean (M)	Std. dev. (SD)	Percent (%)
"I prefer to learn with friends/groups rather than by myself"	4.23	1.02	69.5
"I prefer dynamic roles in collaborative work"	4.28	1.13	79.3
"I can learn things from my peers"	4.50	0.84	90.2
"Working with my peers was fun and insightful"	4.50	0.77	87.8
"I am satisfied with group assignments"	4.52	0.72	91.5
Students' Comments: *"I feel happy and no stress because the deadline is weeks away, and there is so much time for us to finish it. But I don't feel happy when my teammates don't fully commit to their tasks (just doing them half-heartedly)." "It's very enjoyable because the whole team has the same goal." "The experience of working on a project in a group is unforgettable. I've learned how to work in a team and also make new connections."*			

4.4 Enhanced Assessment Outcomes and Student Satisfaction

Enhanced assessment outcomes and increased student satisfaction serve as crucial benchmarks for the success of blended and authentic project-based learning environments. Table 7 presents high average scores for active participation, application of knowledge, and awareness of learning objectives, indicating that students are engaged and deeply committed to their learning process. The considerable satisfaction levels with feedback from instructors (Mean=4.63, 95.1%) further underscore the efficacy of formative assessments in steering students towards meeting learning objectives. The capacity to use feedback productively enables students to refine their work, nurturing critical thinking and creativity, as evidenced in student feedback. The strong correlation between assessment results and student contentment implies that integrating authentic and ongoing assessment techniques advances learning achievements and encourages students to interact more meaningfully with course content, fostering a positive and enriching educational journey.

Table 7: Student engagement and satisfaction

Item	Mean (M)	Std. dev. (SD)	Percent (%)
"I actively participate in class activities"	4.54	0.80	90.2
"I am eager to learn about the applications of my knowledge once I learn something new"	4.65	0.57	95.1

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"I feel informed the learning objectives and the deadline of every assignment"	4.66	0.53	97.6
"I feel engage and participate in the learning process"	4.62	0.70	92.7
"I get feedback for lecturer when needed"	4.63	0.58	95.1
Students' Comments: *"By thinking about the brand type that fits and a product that looks creative but also useful at the same time."* *"I am now able to think from various perspectives."* *"By seeking different ways of solutions."* *"This project made me improvise in terms of creative thinking."* *"This project helped me to build creative constructs in teamwork."*			

6. Discussion

The study explores the impact of blended and authentic project-based learning methods on assessment practices and outcomes in large-class design management courses. The findings reveal a significant improvement in assessment practices and outcomes with the use of these approaches. Previous research consistently highlights the positive effects of blended and authentic learning methods on student engagement, satisfaction, and overall learning outcomes. Data from tables 4 to 7 shows that blended and authentic project-based learning techniques have significantly increased student engagement and satisfaction in design management courses. These methods also facilitate deeper learning by applying theoretical knowledge to practical situations, emphasizing the value of incorporating real-world tasks into educational practices.

1. Blended Learning Environment (Table 4): Students provided high ratings for the use of various media in instruction and found assignment guidelines on digital platforms to be clear, illustrating the effectiveness of multimedia and digital resources in blended learning settings. The integration of online and traditional teaching methods enhances comprehension and retention, in line with the findings by Adi et al. (2021), which suggest that multimedia resources can greatly enhance learning in practical contexts.

2. Authentic Learning and Real-world Application (Table 5): The incorporation of real-world scenarios proved to be highly effective, as evidenced by the high scores in relevance and engagement. This approach increased student interest and motivation and significantly enhanced their ability to apply theoretical knowledge in practice. The positive feedback on real-world project implementation emphasizes that such methods improve the development of relevant skills and support deeper learning, consistent with research by Ornellas et al. (2019) suggesting that real-world experiences contribute substantially to skill development and deep learning.

3. Peer Learning and Collaboration (Table 6): There is strong evidence supporting the advantages of collaborative learning. Students found peer interactions enriching and expressed high satisfaction with group tasks,

indicating that collaborative learning within blended and authentic contexts promotes deeper understanding and enhances skills. This finding is supported by Laal and Ghodsi (2012), who observed that collaborative learning generally leads to higher achievement, more committed relationships, and improved psychological well-being compared to competitive or individualistic approaches.

4. Student Engagement and Satisfaction (Table 7): Student engagement levels were notably high, with active participation and a clear understanding of learning objectives and deadlines. This high level of engagement indicates that clear communication and interactive environments are crucial for sustaining engagement and facilitating effective learning. This is supported by Brooks (2022), who suggests that clear communication regarding objectives, deadlines, and expectations helps structure the learning experience and enhances student engagement.

To tackle the complexities and possibilities associated with merging blended learning with authentic assessment in large class settings, this study presents the ANABLE (Assessment strategy in Authentic Blended Learning Environment) Framework as shown in Figure 5. This systematic method assists educators in creating and implementing efficient assessment techniques specifically designed for a blended learning environment. The ANABLE Framework emphasizes harmonizing authentic learning experiences with appropriate assessment methodologies. Fundamental aspects of the framework involve enhancing comprehension and memory retention, cultivating pertinent skills and promoting profound learning, facilitating successful collaborative learning, and enhancing assessment results as well as student contentment. These elements collectively strive to maximize educational efficiency and student progress in various learning contexts.
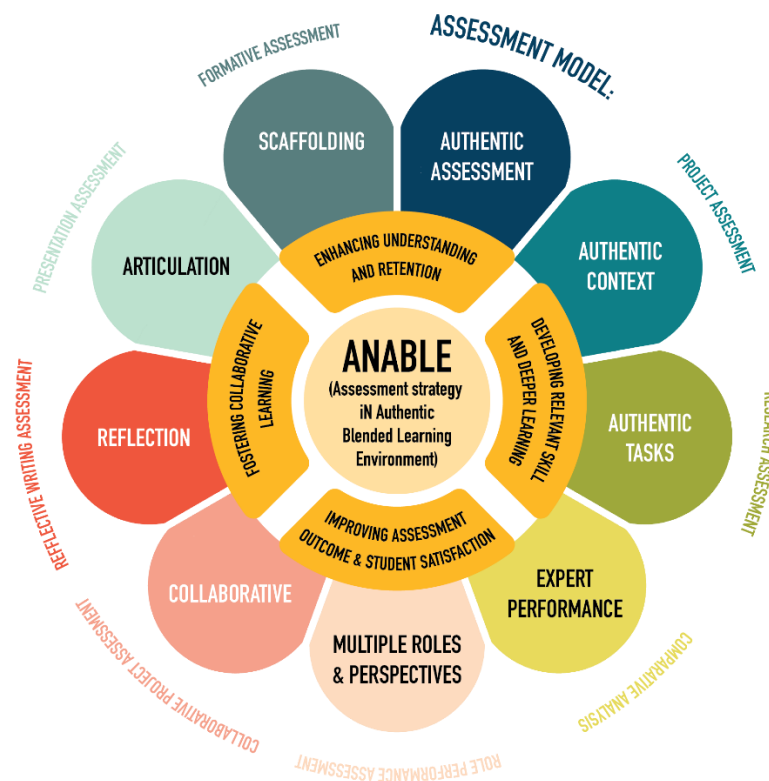
Figure 5: Framework ANABLE
(Assessment strategy iN Authentic Blended Learning Environment)

The ANABLE Framework is a strategic initiative devised to incorporate authentic learning principles into assessment methodologies tailored for large classroom environments, with the aim of promoting a comprehensive learning atmosphere characterized by deep student engagement with the curriculum through the lens of real-world applications and collaborative endeavors. This framework aligns with educational objectives aimed at enriching comprehension and knowledge retention and emphasizes the cultivation of pertinent skills for in-depth learning, the facilitation of effective collaborative interactions, and the notable enhancement of assessment outcomes and student satisfaction levels. The integration of the ANABLE framework in the design management course markedly improves assessment practices, which is expounded upon in detail below:

1. Authentic Contexts: By integrating real-life scenarios into the curriculum, students gain practical insights into the application of their studies, thereby augmenting their understanding and involvement in the subject matter.

2. Authentic Tasks: Tasks are structured to simulate real-world challenges, compelling students to apply their theoretical knowledge in practical contexts.

3. Expert Performances: Exposure to industry experts through guest lectures and case studies allows students to model their approaches on real-world

successes, thereby improving the quality of their work and understanding of professional benchmarks.

4. Multiple Roles and Perspectives: Students assume various roles in team projects, enhancing their adaptability and versatility. Authentic learning environments encourage the exploration of issues from diverse perspectives, necessitating a critical evaluation of information.

5. Collaborative Construction of Knowledge: Group projects and discussions create a dynamic learning environment where students exchange insights and cultivate teamwork skills, fostering reflective practices and transforming them into actionable processes.

6. Reflection: Regular opportunities for reflection aid students in internalizing and processing acquired knowledge, thus enhancing retention and personal growth, leading to a deeper understanding and progression.

7. Articulation: Through presenting and defending their ideas, students refine their thoughts, enhance communication competencies, and learn to receive and incorporate feedback. The articulation process promotes self-awareness and thought development.

8. Scaffolding: Targeted guidance from instructors assists students in effectively surmounting learning obstacles.

9. Authentic Assessment: Assessment strategies aligned with real-world applications ensure that evaluations are purposeful and directly relevant to professional standards.

Table 8 presents ANABLE and its contribution to the assessment practices in the design management course. It outlines the crucial role of each authentic learning component, highlighting significant improvements in both the learning process and assessment strategies within the course.

Table 8: ANABLE and their contributions to assessment practices in the design management course

Authentic learning principles	Assessment	Impact on large class assessments
Authentic contexts	**Project Assessment:** Evaluate the relevance and creativity of the design brief in addressing the client's problem	Makes learning relatable and applicable, enhancing engagement and motivation.
Authentic tasks and activities	**Research Assessment:** Assess the thoroughness and accuracy of the market analysis and the feasibility of the proposed solutions.	Encourages application of theoretical knowledge to real-world problems, improving skill development.

Expert performance	**Comparative Analysis:** Grade based on the depth of analysis and understanding of expert methodologies.	Provides benchmarks and professional standards that guide student performance.
Multiple roles and perspectives	**Role Performance Assessment:** Evaluate each student based on their effectiveness and contribution in their specific roles.	Develops adaptability and teamwork skills, which are essential for modern workplaces.
Collaborative construction of knowledge	**Collaborative Project Assessment:** Assess the team's ability to integrate feedback and work cohesively to produce a well-rounded design proposal.	Enhances problem-solving abilities and interpersonal skills through teamwork.
Reflection	**Reflective Writing Assessment:** Grade based on the essays' insightfulness, depth of reflection, and clarity.	Promotes deeper understanding and self-awareness, which are crucial for personal and academic growth.
Articulation	**Presentation Assessment:** Evaluate the presentation's clarity, persuasiveness, and technical correctness.	Improves communication skills and helps students refine their ideas.
Coaching & scaffolding	**Formative Assessment:** Provide ongoing feedback to guide improvements and adjustments in project development.	It offers necessary support and guidance, creating a worksheet that helps students monitor their progress and optimise student learning paths.

7. Conclusion

In conclusion, research demonstrates that the integration of blended and authentic project-based learning approaches significantly enhances assessment practices and academic outcomes in design management courses with a large class size. These strategies promote student engagement, deepen comprehension through practical application, and encourage collaborative learning, resulting in a more dynamic and effective educational setting. The study supports the efficacy of the ANABLE framework in expansive educational environments by blending real-world tasks with a balanced mix of online and face-to-face interactions. These methods help achieve educational objectives and equip students with essential skills for the contemporary workforce.

Authentic assessments within the ANABLE framework play a crucial role in creating a comprehensive learning experience. The framework ensures that learning goes beyond passive content absorption by aligning assessments with real-world contexts and actively engaging students in applying their knowledge. This approach prepares students for professional challenges, increases their motivation, and enhances satisfaction with the learning process.

Nevertheless, it is important to recognize some limitations of the study. The use of convenience sampling with a single class may restrict the generalizability of the

findings to broader student populations. Furthermore, focusing solely on design management may not fully capture the potential implications in other academic fields. Future research should explore the implementation of blended and authentic project-based learning across different disciplines and larger sample sizes to validate these findings. Additionally, investigating the long-term effects on student performance and career readiness would provide deeper insights into the impact of these strategies.

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9. References

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