

Academic Underpreparedness and the Articulation Gap in Higher Education: Implications for First-Year Student Success in South Africa

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Abstract

This paper investigates the critical challenge of academic underpreparedness and the articulation gap among first-year students entering higher education in South Africa. Focusing on the interdisciplinary landscape of the built environment, specifically the building measurement module in quantity surveying, the study explores how deficiencies in secondary schooling impact student readiness, adjustment, and, ultimately, student success. A mixed-methods research design was adopted, incorporating a baseline survey and focus group discussions for first-year students and semi-structured interviews with first-year lecturers across multiple accredited South African universities. The novelty of this study lies in its integrated, multi-institutional examination of first-year student preparedness within a discipline-specific context, linking student experiences with lecturer perspectives to provide a holistic understanding of the articulation gap in built environment education. The research highlights a significant discrepancy between students' perceived readiness and the rigorous cognitive, technical, and personal demands of university-level study. Key findings indicate that students frequently lack foundational literacy, numeracy, and critical thinking skills, while also struggling with spatial visualisation and the integration of knowledge across different modules. Furthermore, personal challenges, such as poor time management and the sudden requirement for independence, intensify the transitional challenges experienced by many entering the university environment. The study concludes that the articulation gap is a systemic issue requiring urgent attention from basic and higher education systems, as well as industry stakeholders. It calls for the development of targeted pedagogical interventions, structured support mechanisms, and alignment between education and the world of work through innovative curriculum design to bridge this gap. By addressing these shared challenges, the research seeks to enhance first-year student success and ensure the long-term sustainability and competency of graduates within built environment professions.

Keywords: academic underpreparedness, articulation gap, first-year student success, built environment, quantity surveying.

1. Introduction

This paper examines the academic preparedness of first-year students entering higher education within the context of the building measurement module in quantity surveying education. It argues that a significant articulation gap exists between secondary schooling and higher education, which contributes to student underpreparedness and negatively affects learning, progression, and success in built environment programmes. While the articulation gap has been widely explored in other disciplines, there remains a notable lack of focused research in quantity surveying education, particularly in relation to the cognitively demanding building measurement module in the South African context. Addressing this gap is critical, as student underpreparedness has implications not only for academic success but also for the development of competent professionals in the construction industry.

The study is situated within the broader interdisciplinary context of the built environment, recognising that building measurement requires the integration of spatial reasoning, numerical competence, technical knowledge, and conceptual understanding. These competencies are not unique to quantity surveying but are shared across disciplines such as architecture, engineering, and construction management. As such, challenges related to student preparedness and transition into higher education extend beyond a single discipline and reflect broader systemic and pedagogical concerns.

The paper begins by conceptualising learning within higher education and examining the expectations placed on students in interdisciplinary built environment programmes. It then explores the concept of academic preparedness, highlighting the structural and systemic challenges within the South African schooling system that contribute to student underpreparedness. Thereafter, the discussion focuses on the articulation gap and the complex transitional challenges faced by first-year students, including academic, social, and emotional dimensions.

By analysing these interconnected issues, the paper highlights how underpreparedness constrains students' learning and limits their ability to engage with the integrative and cognitively demanding nature of built environment education. The paper concludes by proposing recommendations aimed at strengthening first-year support, improving curriculum responsiveness, and fostering greater alignment between secondary and higher education. In doing so, the study contributes to a deeper understanding of shared pedagogical challenges in the built environment and underscores the need for coordinated, interdisciplinary approaches to enhancing student success.

Learning in Higher Education and Student Preparedness

Learning, particularly in higher education, extends beyond the acquisition of factual knowledge or rote memorisation. It involves engaging with abstract principles, interpreting and applying theoretical concepts, analysing and synthesising information, solving complex problems, and adapting behaviour to diverse professional contexts. Within built environment disciplines such as architecture,

engineering, quantity surveying, and construction management, learning is inherently interdisciplinary, requiring students to integrate technical, spatial, numerical, and conceptual knowledge across disciplinary boundaries.

Instead of assuming that learning occurs automatically through teaching, educators should consider that effective learning requires sustained engagement, opportunities for practice and reflection, and meaningful interaction with peers and educators. Students must therefore enter higher education not only motivated but sufficiently prepared to engage in complex learning processes (Abdelhamid, 2003; Fink, 2013; Fry, et al., 2009).

Ambrose et al. (2010) conceptualised learning as a transformative process that depends on active participation, accountability, and cognitive engagement. Within interdisciplinary built environment programmes, this transformation is shaped by the need for students to navigate multiple ways of thinking, including design-oriented, analytical, quantitative, and managerial approaches. Effective learning in such contexts relies heavily on educators who foster critical thinking, promote conceptual integration, and encourage inquiry across disciplinary boundaries (Russell et al., 2007).

Despite these expectations, higher education systems often struggle to meet societal and industry demands regarding graduate readiness. Students may encounter fragmented or outdated learning experiences that fail to adequately prepare them for professional practice (Diamond, 2008). These challenges are particularly evident in construction-related programmes due to the interdisciplinary nature of the field. Scholars have highlighted the persistent mismatch between industry expectations and higher education outcomes in the built environment (Haupt, 2009; Kibwami et al., 2021; Leung & Chen, 2008). This misalignment affects not only disciplinary competence but also students' ability to integrate knowledge across architecture, engineering, and construction management, a skill fundamental to professional effectiveness.

Higher education institutions therefore play a crucial role in preparing students for complex professional environments. This responsibility includes developing critical thinking, conceptual understanding, and innovative capacity to respond to rapidly changing industry demands (Ayarkwa et al., 2011; Haupt & Harinarain, 2015; Suhaida et al., 2019). Lange (2011) argued that universities must equip students with the intellectual tools necessary to address future challenges. Within the built environment, this involves cultivating graduates who can synthesise technical, managerial, and design-oriented knowledge while collaborating across disciplinary boundaries. Consequently, higher education must challenge students intellectually while simultaneously providing structured support that promotes independent and integrative thinking (Fry et al., 2009).

Professional education in universities is widely regarded as central to the development of competent and ethical practitioners. According to Lange (2011),

universities have a responsibility to instil professional values, ethical integrity, and competency-based knowledge. In disciplines such as quantity surveying, architecture, engineering, and construction management, students must develop not only discipline-specific skills but also the ability to engage with interconnected knowledge systems. Curriculum design must therefore intentionally facilitate interdisciplinary learning and integration, while remaining responsive to industry needs and expectations (Lange, 2011).

Collaboration between higher education institutions and industry stakeholders is increasingly recognised as essential for producing graduates capable of meeting professional demands. Academic staff—including lecturers, mentors, and advisors—play a pivotal role in preparing students for interdisciplinary professional practice (Russell et al., 2007). Contemporary built environment professionals are expected to demonstrate more than technical competence; they must also possess strong communication skills, collaborative abilities, creativity, and problem-solving capacity (Ayarkwa et al., 2011). These attributes are inherently interdisciplinary and must be embedded deliberately within curricula and teaching strategies.

However, the effectiveness of these educational efforts is significantly constrained when students enter higher education underprepared. First-year students in built environment programmes are required to engage with cognitively demanding content that assumes foundational academic, numerical, and conceptual competencies. When these competencies are lacking, students struggle not only in individual modules but also with integrating knowledge across architecture, engineering, and construction-related subjects. Academic underpreparedness, therefore, presents a critical challenge to interdisciplinary learning and student success.

Academic Preparedness and Challenges Facing First-Year Students

First-year students entering higher education are often enthusiastic and eager to explore new academic and social opportunities while navigating increased independence and responsibility. However, the South African schooling system frequently fails to adequately prepare students for the academic demands of higher education (Mouton et al., 2013; Mudhovozi, 2012; Thomas & Maree, 2021). Undergraduate success is often compromised when students struggle to adapt to the higher education environment, particularly when they originate from poorly resourced schools. Haupt (2009) similarly identified the generally inadequate standard of secondary education in South Africa as a contributing factor to the admission of academically underprepared students into construction-related programmes.

Academic preparedness is a multidimensional concept encompassing skills such as reading, writing, note-taking, and examination-taking abilities (Matoti, 2010; Wollscheid et al., 2021). These competencies are essential for academic development and student success. Research indicates that many first-year students enter higher education lacking fundamental literacy and numeracy skills. English language

proficiency is often limited, as English may be a student's second or third language. Numeracy skills are also frequently underdeveloped due to weaknesses in the teaching and learning of mathematics and English at school level (Lemmens et al., 2011; Prince & Frith, 2020).

Mavunga (2014) supported the view that inadequate literacy and numeracy skills contribute significantly to student underpreparedness. Reddy et al. (2014) similarly found that many first-year students demonstrate low competency levels in mathematics, affecting their ability to engage in analytical thinking and abstract reasoning. Importantly, academic underpreparedness is not unique to South Africa. Studies conducted in Norway, the United Kingdom, and Australia show that students often enter higher education lacking sufficient writing and reading skills (Lowe & Cook, 2003; Nallaya et al., 2022; Wollscheid et al., 2021).

Several factors contribute to the underpreparedness of first-year students, and it is commonly observed that some students are sensitive to new learning environments. These include insufficient subject knowledge among science and mathematics teachers, limited communication skills among educators and learners, and the absence of adequate instructional materials. The pressure placed on educators to complete examination-driven curricula further constrains effective teaching. Additional challenges, such as overcrowded classrooms and inadequate facilities, including libraries and sanitation services, exacerbate the difficulties experienced by students transitioning into higher education (Abdelshiheed et al., 2023; Matoti, 2010; Mavunga, 2014).

Educational inequalities and generally poor performance in the South African basic education system continue to contribute to the prevalence of underprepared students entering higher education institutions. Limited access to textbooks, inadequate infrastructure, and shortages of qualified teachers further deepen systemic educational disparities (Roman et al., 2016).

When underprepared students enter higher education institutions, they often encounter what is referred to as the articulation gap. This gap reflects the disparity between students' prior academic experiences and the expectations of higher education (Mayet, 2016). A key characteristic of the articulation gap relates to the mismatch between students' existing numeracy practices and the more advanced numeracy requirements within higher education. Malatji and Singh (2018) found that this gap significantly impedes first-year students' ability to cope with academic demands and adjust to the university environment.

The Articulation Gap and Transitional Challenges in Higher Education

The articulation gap forms a central component of the underpreparedness experienced by many first-year students. Matoti (2010) identified three dimensions of underpreparedness: academic, cultural, and emotional. The basic education system is often identified as a major contributor to these challenges. Mavunga (2014) argued that the poor quality of basic education creates a cascading effect that negatively

influences higher education institutions. As students transition from school to university, institutions must therefore implement academic support and learning development initiatives to bridge the articulation gap (Mayet, 2016; Pather & Dorasamy, 2018).

Jansen and Van der Meer (2012) defined transition as the process of adapting to a subsequent stage of development. They identified several reasons why students struggle during this transition, including inadequate prior educational experiences, difficulty coping with academic demands, incorrect programme selection, and personal challenges such as financial difficulties, illness, or family responsibilities. These factors contribute significantly to high dropout rates during the first year of study. Strydom et al. (2017) similarly emphasised that first-year students encounter numerous academic and non-academic transitional challenges.

International research confirms the widespread nature of these challenges. Mills et al. (2012) found that approximately 60% of incoming first-year students in the United States lacked essential learning and study strategies, particularly regarding attitudes toward learning and time management. Similarly, research conducted in Australia by Brooker et al. (2017) indicates that first-year students frequently experience difficulties related to academic workload, time management, family responsibilities, health concerns, and financial pressures. Entering higher education exposes students to a new environment requiring increased independence, which can be difficult for many students to manage effectively (Wollscheid et al., 2021).

The transition from school to university is therefore widely recognised as complex and demanding. Many students experience this transition as stressful and overwhelming, facing challenges related to academic performance, adaptation to campus life, financial pressures, and time management (Engelbrecht et al., 2020). McGhie (2017) also identified heavy academic workloads, reduced motivation, and insufficient foundational knowledge as common challenges encountered by first-year students.

Mudhovozi (2012) highlighted additional social and academic adjustment difficulties experienced by students entering higher education. These include cultural adjustment challenges, anxiety related to separation from family, adaptation to new social norms, difficulties distancing themselves from established school networks, and coping with unfamiliar learning environments. Students may also experience low self-esteem, fear of failure, limited access to study resources, and difficulty adapting to diverse teaching and learning approaches.

The evidence demonstrates that first-year students face a wide range of challenges when entering higher education. The articulation gap, together with transitional difficulties, confirms that many students begin university insufficiently prepared for its academic and social demands.

Students experiencing underpreparedness often face negative academic and psychological consequences. These include inadequate study skills, reliance on

surface-level learning strategies, reduced intrinsic motivation, and diminished self-efficacy (Malatji & Singh, 2018). Such students frequently depend heavily on lecturer support and struggle with managing academic workloads, allocating time effectively, and functioning within large class environments. These challenges often result in increased anxiety and dissatisfaction with academic programmes (Matoti, 2010).

Dissatisfaction with academic programmes is a significant consequence of underpreparedness and frequently contributes to delayed programme completion or student attrition. The quantity surveying profession cannot afford the loss of potential graduates, particularly given the continued demand for qualified professionals both internationally and in South Africa. It is therefore imperative for industry stakeholders, academics, and higher education institutions to prioritise the support of incoming students, many of whom enter higher education underprepared due to systemic challenges within the school education system.

Summary

The literature demonstrates that learning in higher education requires more than the transmission of knowledge; it demands active engagement, critical thinking, and independent learning capabilities. However, many first-year students enter higher education lacking the academic, cultural, and emotional preparedness necessary to meet these expectations. Structural challenges within the basic education system – including inequalities in resources, teaching quality, and curriculum delivery – contribute significantly to student underpreparedness. These deficiencies manifest in poor literacy, numeracy, and study skills, limiting students' ability to adapt to university learning environments.

The articulation gap highlights the misalignment between school-level learning experiences and higher education expectations, intensifying transitional difficulties and contributing to reduced academic performance, decreased motivation, and increased attrition. Within professional programmes such as quantity surveying, these challenges have broader implications for workforce development and industry sustainability. Consequently, higher education institutions, academics, and industry stakeholders must develop targeted support mechanisms and curriculum interventions that address underpreparedness and facilitate successful student transition into higher education. Understanding the nature and extent of first-year student underpreparedness is therefore essential for improving student success, strengthening professional education, and ensuring the development of competent graduates within the built environment.

2. Method

This study adopted a mixed-methods research design with a strong qualitative orientation, enabling a comprehensive exploration of first-year students' preparedness for higher education. Data were collected using three complementary instruments: a baseline survey, focus group discussions, and semi-structured interviews. This multi-instrument approach facilitated triangulation and enhanced the credibility and depth of the findings. The baseline survey generated both

quantitative and qualitative data. Quantitative responses were analysed using descriptive statistical techniques, including frequencies and percentages for nominal and ordinal data, an approach appropriate for mixed-methods research and contextual data interpretation. Qualitative data obtained from open-ended survey questions, focus group discussions with students, and semi-structured interviews with lecturers were analysed thematically. Audio recordings were transcribed verbatim and systematically coded to identify recurring patterns, key themes, and shared experiences relating to student preparedness and the transition into higher education. The integration of quantitative and qualitative findings allowed for a more comprehensive understanding of the challenges faced by first-year students and enabled triangulation across the different data sources.

Data Collection Instrument 1: Baseline Survey

The target population for the baseline survey consisted of first-year students registered for the building measurement module in 2023 at South African universities offering accredited quantity surveying programmes. Among these institutions, four present the module during the first semester of the first year, while one offers it in the second semester. The online baseline survey was administered to first-year quantity surveying students enrolled in the building measurement module at the four institutions where the module is presented in the first semester. The survey instrument was developed using QuestBack software and distributed electronically. To maximise accessibility and encourage participation, students were provided with both a direct survey link and a quick response (QR) code. Participation was voluntary, and a purposive sampling strategy was employed to specifically target students registered for the module. The primary purpose of the baseline survey was to collect foundational information about students' backgrounds and their perceived level of preparedness upon entering higher education. The questionnaire captured basic demographic information, including age and gender, and explored students' prior academic experiences, exposure to the construction industry, and their perceptions of their understanding of key concepts in the building measurement module. The survey consisted of 31 questions, incorporating both closed-ended and open-ended items. Selected closed-ended questions used Likert-scale responses to assess students' perceptions and self-reported preparedness.

Data Collection Instrument 2: Focus Group Discussions

Focus group discussions were conducted with first-year students enrolled in accredited quantity surveying programmes to obtain in-depth qualitative insights into their experiences of preparedness and transition into higher education. Students from four institutions were initially invited to participate; however, one institution was excluded from this phase, as the building measurement module is offered only in the second semester. Participants were recruited through purposive sampling. Invitations were distributed via module lecturers, and interested students volunteered by submitting their names to the respective lecturers. Ultimately, students from three institutions participated in the focus group discussions. At Institution 1, 31 students volunteered and were divided into three groups to facilitate meaningful interaction. Institution 2 contributed 15 participants, while 9 students from Institution 3 took part

in the discussions. All focus group discussions were audio-recorded with participants' consent and transcribed verbatim. The data were analysed thematically, with transcripts systematically coded to identify recurring patterns, shared experiences, and key themes related to student underpreparedness and transitional challenges. This approach enabled the generation of rich, contextualised insights into students' lived experiences during their first year of study.

Data Collection Instrument 3: Semi-Structured Interviews with Lecturers

Semi-structured interviews were conducted with lecturers responsible for teaching the building measurement module to first-year students at South African universities offering accredited quantity surveying programmes. Lecturers presenting the module constituted the study's target population and were selected using purposive sampling. Of the five universities offering the module, four were included in the interview sample. One institution was excluded because the researcher was a lecturer there, preventing potential bias. Lecturers were invited to participate via email, and four agreed to take part. Interviews with lecturers from institutions 1 and 2 were conducted face-to-face, while those with lecturers from institutions 4 and 5 were conducted online. Each interview lasted between 40 and 60 minutes.

All interviews were audio-recorded with participants' consent and transcribed verbatim. In line with established qualitative analysis procedures, the researcher reviewed audio recordings, transcripts, and field notes to identify recurring patterns and emerging themes (Lambert, 2019). Data were first analysed individually for each participant and subsequently integrated across participants to identify convergent and divergent perspectives. The analytical process mirrored that used for the focus group discussions. Data were audio-recorded, transcribed, and thematically analysed, with themes compared and integrated across institutions. This approach ensured methodological consistency and coherence in the qualitative analysis across all data collection instruments.

Ethical considerations were addressed at the outset of the study, and ethical clearance was obtained in accordance with institutional research protocols. Informed consent was secured from all participants prior to their involvement in the study. For the baseline survey, participants were required to provide consent on the first page of the online questionnaire before proceeding. Similarly, students participating in the focus group discussions and lecturers participating in the semi-structured interviews were informed of the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any stage without penalty. Confidentiality and anonymity were ensured throughout the research process, and all data were treated with strict confidentiality.

3. Results

Data from the Baseline Survey

Students were asked to rate on a scale of 1 to 10 how prepared they felt to enter university (1 = least prepared, 10 = most prepared). The data are presented in Figure 1.

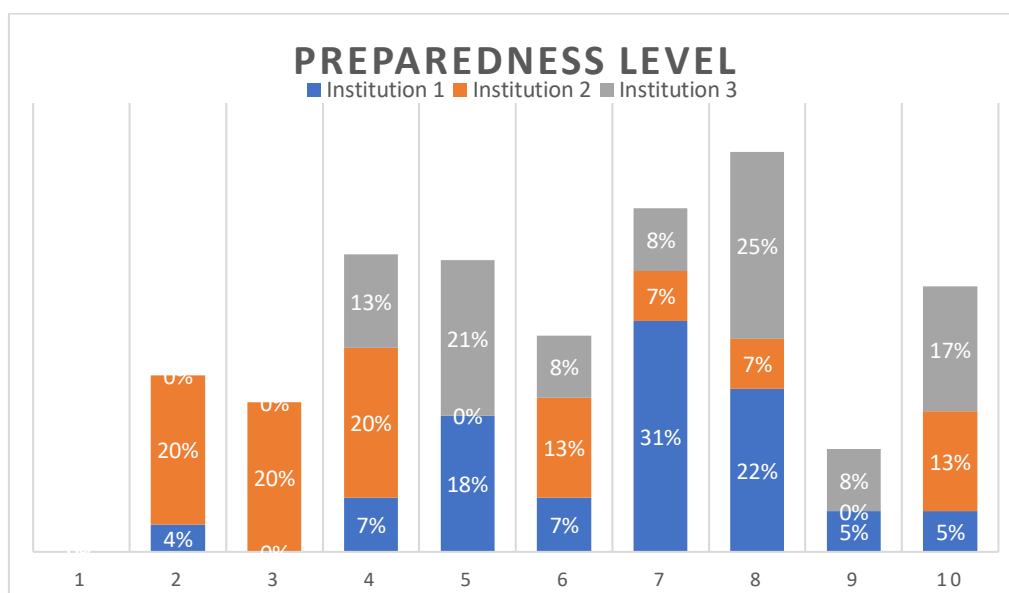


Figure 1: Preparedness level of first-year quantity surveying students

The data show that only 32% of students at Institution 1, 20% of students at Institution 2, and 50% of students at Institution 3 scored at Level 8 or higher. This suggests that a small minority of students across all three institutions perceived themselves as adequately prepared for higher education entry.

Table 1 depicts the different levels of preparedness among the different institutions.

Table 1: Preparedness levels

	Levels 1–4	Levels 5–7	Levels 8–10
Institution 1	11%	56%	32%
Institution 2	60%	20%	20%
Institution 3	13%	37%	50%

Most students at Institution 1 scored in the middle range, with an average preparedness rate of 56%, falling within the range of levels 5–7. The majority (60%) of students at Institution 2 scored at Level 4 or lower. Thus, students entering as first-year students at Institution 2 did not feel very prepared to enter higher education. Students from Institution 3 exhibited the highest level of preparedness, with 50% achieving a Level 8 or above.

In a follow-up question about the students' self-reported preparedness to enter higher education, participants had to support their answers with qualitative evidence.

Students from the various institutions who **felt prepared and confident** (scoring at Level 8 or higher) made the following comments:

"I have experience with university, so I know what to expect."

"I've been exposed to a university environment, so I feel very much prepared for the 2023 academic year."

"Since last year, I've already enrolled in university, I was equipped; and this year, I am already aware of how to deal with pressure and a lot of work."

"I believe I am disciplined enough to take responsibility for my own life and my own academics at this point in my life."

"I am 90% prepared. I have already bought most of the required stationery and have already built my schedule."

Students who have previously engaged with university education tend to feel more prepared, and those with elevated levels of self-motivation and a keen interest also exhibit a heightened sense of readiness.

Students from the various institutions who did **not feel particularly prepared** (scoring at Level 4 or lower) commented as follows:

"I have never been exposed to any construction activity or work."

"Also, trying to adjust to living alone and going to university is a big adjustment that I have to go through."

"I feel underprepared to be so independent, having no family close."

"I feel overwhelmed with where everything is; also, in high school, they still helped us a lot, but now we are on our own."

"I feel least prepared because everything is done differently from high school, and the pressure is worse."

"My course contains modules I had never done in high school."

"I have no idea of anything in the building faculty; the fact that I did not have EGD at school makes me struggle."

"It feels different and I'm not ready for the change."

The key findings of the baseline survey indicate that some students felt prepared and confident about entering higher education or university. Some students who demonstrated confidence and felt prepared to enter higher education may have had experience and prior knowledge about the environment, and some students were excited and optimistic about the new opportunities. In contrast, some students felt less

prepared when they entered university; they were stressed about the new environment and had limited or no prior experience or knowledge about the environment.

The lack of preparedness among first-year students is a widespread national and international concern. Reports from various countries echo this concern, highlighting the challenges faced by first-year students entering higher education (Green et al., 2023; Mouton et al., 2013; Mudhovozi, 2012; Thomas & Maree, 2021; Wollscheid et al., 2021).

This study further substantiates these findings, indicating that institutions where students graduated from secondary school the year before university entry exhibit the lowest levels of preparedness. Conversely, institutions with a higher proportion of mature first-year students, who did not graduate the year immediately before university entry, demonstrate higher levels of preparedness. This suggests that age may indeed influence students' preparedness levels, indicating that students may benefit from the experiences gained during the gap year(s) between secondary school graduation and enrolment in the quantity surveying programme.

Data from the Focus Group Discussions: Thematic Analysis

Focus group discussions were conducted with first-year quantity surveying students to explore their perceptions of preparedness upon entry into higher education and their early experiences within the building measurement module. The thematic analysis of the discussions revealed several interrelated themes that consistently emerged across institutions.

Theme 1: Perceived preparedness versus reality

A dominant theme across all focus groups was the discrepancy between students' perceived preparedness at the end of secondary school and the reality they encountered upon entering higher education. While some students initially believed they were adequately prepared, this confidence was quickly undermined once they were exposed to the academic demands of university study.

Students described this transition as a "shock", noting that their sense of readiness was often based on unrealistic expectations:

"I felt very prepared and then came here and got a shock ... You come in with confidence, then the first week it is broken."

"I thought I was ready ... and I felt prepared ... and then I came here and was like, no, no ..."

Across institutions, students consistently acknowledged that they only realised the extent of their underpreparedness after engaging with university-level coursework.

Theme 2: The steep transition from school to university

Students frequently described the transition from school to university as abrupt and challenging, characterised by a steep learning curve, increased academic pace, and higher cognitive demands. They noted that the tempo, volume of work, and depth of content at university far exceeded what they had experienced at school:

"The learning curve is extremely steep ... the tempo, the work and the content, the amount, it's a lot, and it's very hard to adjust for it."

"It was a huge jump that I was never prepared for ..."

Students across all three institutions agreed that no high school subject adequately prepared them for the building measurement module, compounding the difficulty of the transition:

"I don't think there are really any high school modules that can prepare us for this."

"0% prepared."

Theme 3: Lack of prior knowledge and assumed understanding

A recurring concern among students was the absence of prior knowledge related to building measurement and the perception that lecturers often assume familiarity with concepts and terminology. Students expressed frustration when content was presented as though they already had industry exposure or foundational understanding:

"They teach me like I'm supposed to know it because I don't have background."

"Sometimes, the way that the work would be explained, it would almost come, like, as if we already have experience in the field."

These findings align with Tunji-Olayeni et al. (2016), who argued that assumed prior knowledge in building measurement can hinder learning and contribute to student frustration, particularly when misconceptions arise from inadequate foundational understanding.

Theme 4: Academic and personal adjustment challenges

Beyond academic demands, students identified significant personal and contextual challenges that contributed to their sense of underpreparedness. Many students described feeling overwhelmed by increased responsibility, independence, and the absence of parental or peer support. Relocating to a new city and navigating unfamiliar environments intensified these challenges:

"You're in a new city by yourself, you barely know anyone."

"In high school ... my only focus was on school, so now ... I have to do laundry by myself, I cannot even cook."

Students also highlighted the lack of time-management skills developed at school, noting that they were “babied” and inadequately prepared for self-directed learning:
“In my high school, you were really babied ... this really is a wake-up call.”

“In high school, you are not taught any time-management skills.”

Theme 5: Uncertainty, guidance, and external influences

Students from Institution 2 emphasised the need for better career guidance at school, suggesting that clearer information about professions and programme expectations may have improved their preparedness. Some students also reflected on the impact of the COVID-19 pandemic on their schooling and readiness for university:

“They should have guided us in terms of our career choices.”

“Isn’t it kind of, like, the fact that we were affected by COVID that the school didn’t really prepare us well for university?”

Students from Institution 3 highlighted challenges related to workload management and scheduling, noting that, unlike at school, university lecturers do not coordinate assessment schedules:

“Everyone dishes out work like you’re only doing their own course.”

Theme 6: Unrealistic expectations and realisation of underpreparedness

Across all focus groups, students acknowledged that they entered higher education with unrealistic expectations regarding both their preparedness and the nature of university learning. Although they believed they were ready, their experiences quickly revealed otherwise:

“I felt very prepared and then came here and got a shock.”

This theme closely aligns with findings from the baseline survey and supports existing literature indicating that first-year students often overestimate their preparedness for higher education (Monnapula-Mapesela, 2015; Strydom et al., 2017).

Synthesis of student perspectives

Overall, the focus group data reveal a strong consensus among students that secondary schooling inadequately prepared them for the academic, cognitive, and personal demands of higher education. These findings corroborate prior research highlighting persistent concerns regarding first-year readiness (Mototi, 2010; Mouton et al., 2013; Mudhovozi, 2012; Roman et al., 2016). Students’ experiences reflect a clear gap between perceived and actual preparedness, particularly within the context of the building measurement module.

Data from Interviews with Lecturers: Thematic Analysis

Lecturers across participating institutions were asked to reflect on their experiences of first-year students’ preparedness and readiness for the building measurement module. The analysis of the semi-structured interviews revealed several recurring and interrelated themes, reflecting shared concerns across institutional contexts.

Theme 1: Academic underpreparedness and the articulation gap

A dominant theme emerging from the interviews was the pervasive underpreparedness of first-year students entering higher education, particularly within the building measurement module. Lecturers consistently identified a pronounced articulation gap between matriculation and the academic demands of the first year. This gap was attributed to deficiencies in foundational knowledge, as well as underdeveloped critical thinking, numerical, and literacy skills.

Lecturers expressed concern that little at school level adequately prepares students for the cognitive and technical demands of building measurement. One lecturer stated explicitly:

"From a quantity surveying perspective, or quantities perspective at least, I accept that there's nothing at school level that prepares them."

Several lecturers described a perceived decline in the quality of basic education, noting that students arrive at university without the necessary conceptual foundations. The school system was described as emphasising coaching rather than deep learning, which exacerbates the transition into higher education. As one lecturer explained:

"There is that gap in articulation, and unfortunately, at varsity, they don't have enough time to adapt to all of this."

These observations highlight systemic challenges that extend beyond individual institutions and point to broader structural weaknesses in the schooling-higher education interface.

Theme 2: Deficiencies in critical thinking, problem-solving, and cognitive readiness

Closely linked to underpreparedness was lecturers' concern regarding students' limited critical thinking, analytical reasoning, and problem-solving abilities. Lecturers reported that first-year students often struggle to engage conceptually with content, relying heavily on rote learning and technological aids rather than independent reasoning. One lecturer noted an increasing overreliance on technology, coupled with poor analytical engagement, while another emphasised that even when language barriers are addressed, cognitive readiness remains a key determinant of success:

"You can explain something to a student in their own language, but if their thinking capability ... that's what determines that."

These cognitive deficiencies were perceived to hinder students' ability to grasp abstract concepts, apply measurement rules, and engage meaningfully with problem-based learning tasks central to the building measurement module.

Theme 3: Challenges with visualisation and integration of knowledge across modules

Another prominent theme concerned students' difficulties with spatial visualisation and their inability to integrate knowledge across supporting modules. Lecturers across institutions reported that first-year students struggle to interpret and visualise 2D and 3D representations, a skill fundamental to success in building measurement.

Despite the presence of drawing and building technology modules intended to support conceptual understanding, students frequently failed to make connections between these modules and the building measurement content. One lecturer remarked:

"It's almost like we need to force the link ... because they don't make the link themselves."

These challenges were further compounded by students' limited tangible understanding of buildings and construction materials, which lecturers viewed as critical for meaningful engagement with measurement tasks.

Theme 4: Language barriers, attitudes, and student dispositions

Language barriers emerged as an additional challenge, particularly in multilingual classroom settings. Lecturers observed that students often struggle to articulate questions and engage academically in English, even when they understand concepts in their home language. Allowing students to express themselves in their mother tongue was sometimes found to enhance participation and collective understanding. However, lecturers cautioned against viewing language as the sole explanatory factor. Attitudinal issues – such as a lack of curiosity, heavy reliance on lecturer support, and an apparent sense of entitlement – were also frequently reported. One lecturer commented:

"First-years are not ready for the university environment ... they are always complaining ... that entitlement mentality that 'I'm supposed to get something'."

This entitlement mentality aligns with the assertion that mismatches between student expectations and institutional realities can negatively influence engagement, academic performance, and social integration.

Theme 5: Differences between first-year and senior students

Across institutions, lecturers consistently noted discernible differences between first-year students and senior or mature students. Senior students were frequently described as more mature, focused, and engaged, often demonstrating stronger academic performance and a greater willingness to ask questions. As one lecturer observed:

"They seem to be wiser ... they are there to learn, they're interested, they want to be there ... they actually often do better than the others."

Senior students – particularly those enrolled in extended programmes – were perceived to have developed stronger coping strategies and clearer academic purpose, in contrast to students entering directly from school.

Theme 6: Lecturer responses and support strategies

In response to widespread underpreparedness, lecturers described a range of adaptive teaching strategies aimed at supporting first-year students. These included slowing the pace of instruction, encouraging active participation, scheduling additional theory

classes, and implementing structured tutor systems led by high-performing senior students.

One lecturer described adopting a patient and inclusive teaching approach:

"You ask until you are comfortable, and I will explain and explain and explain, and we have a well-developed tutor system."

"Sometimes, it's a simple photo that actually solves the problem ... for difficult concepts, I'll make little videos."

These efforts reflect lecturers' ongoing attempts to bridge the articulation gap and scaffold learning despite large class sizes and diverse student capabilities.

Synthesis of lecturer perspectives

Collectively, the lecturer interviews revealed shared and persistent challenges related to first-year student preparedness within the building measurement module. Recurring themes include articulation gaps between school and university, deficits in critical thinking and foundational skills, difficulties with visualisation and module integration, and contrasts between first-year and senior students' academic engagement. The convergence between focus group findings, baseline survey results, and lecturer interviews strengthens the credibility of the study and illustrates the urgency of developing targeted institutional and pedagogical interventions to support underprepared first-year students during their transition into higher education.

Notably, limited research exists on lecturers' experiences of first-year students specifically within the building measurement module. While Haupt (2009) identified underpreparedness within construction education more broadly, this study contributes novel insights by foregrounding lecturers' perspectives on the pedagogical and cognitive challenges unique to this module. These findings therefore extend existing literature and provide an important foundation for developing targeted support strategies within built environment education.

4. Conclusion

The findings of this study indicate that many first-year students perceive their secondary schooling as inadequate preparation for the academic demands of higher education, contributing significantly to their sense of underpreparedness upon entry into university. Lecturers teaching the building measurement module across participating institutions similarly expressed concerns regarding student readiness, frequently attributing these challenges to a perceived decline in the quality of basic education.

Across all data sources—including the baseline survey, focus group discussions, and semi-structured interviews—a persistent articulation gap between matriculation (Grade 12) and the first year of higher education was evident. This gap is particularly associated with deficiencies in critical thinking, numerical competence, and literacy skills, skills that are essential for engaging with the cognitively demanding nature of

building measurement. The consistency of these findings across multiple data sets strengthens the reliability of the results and highlights the extent and complexity of the preparedness challenges faced by first-year students entering quantity surveying programmes.

The presence of underprepared students within the building measurement module reflects broader systemic challenges related to the transition from secondary to higher education. While this study does not seek to address deficiencies within the basic education system itself, it underscores the importance of recognising these preparedness gaps and understanding their impact on student learning, progression, and success within higher education.

This study makes a meaningful contribution to the growing body of research on first-year student preparedness by offering a comprehensive, cross-institutional analysis within the context of built environment education. A key strength of the study lies in its integration of student and lecturer perspectives, providing a more holistic understanding of the articulation gap and its implications for teaching and learning. Although the study is situated within quantity surveying and focuses specifically on the building measurement module, the challenges identified—particularly those related to underpreparedness, spatial visualisation, and the integration of knowledge across modules—are characteristic of the broader built environment disciplines, including engineering, architecture, and construction management.

By highlighting shared pedagogical challenges across institutions and disciplines, the study provides valuable insights that can inform curriculum design, teaching practices, and targeted support interventions aimed at improving first-year student success. Furthermore, the findings emphasise the need for more coordinated and interdisciplinary approaches to addressing student underpreparedness, thereby contributing to the development of more responsive and inclusive higher education practices within the built environment.

5. Recommendations

Given the challenges identified, higher education institutions should prioritise targeted interventions that support the successful transition of first-year students into built environment programmes. Structured academic support initiatives, such as foundational skills development in numeracy, literacy, and critical thinking, may assist students in bridging the articulation gap between secondary education and university expectations. Importantly, addressing these challenges requires greater alignment and collaboration between basic education, higher education, and industry stakeholders to ensure that curricula, skills development, and graduate expectations are coherently integrated across the educational and professional pipeline.

Curriculum design within built environment programmes should also consider integrating scaffolded learning opportunities that gradually develop students' spatial visualisation, analytical reasoning, and conceptual integration skills. Such approaches may include enhanced tutorial support, practical learning activities, and

interdisciplinary teaching strategies that encourage students to connect knowledge across modules.

Furthermore, collaboration between academic staff, academic support units, and industry stakeholders may contribute to the development of more responsive curricula and teaching approaches. Strengthening these collaborative efforts could enhance student preparedness and support the development of competencies required for professional practice within the built environment sector.

6. References

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