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# Exploring Transition Challenges to Higher Education and Self-Directed Learning in New Students: A Mixed-Methods Approach

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**Abstract**

The transition from secondary education to higher education often confronts first year students with intensified academic demands, with academic writing emerging as a core challenge that requires sustained regulation across planning, drafting, and revision. This study aimed to examine the relationship between *self-directed learning* (SDL) and academic writing competence among new students, while also exploring the dominant transition-related writing challenges and the adaptation strategies students use to cope with them. An explanatory sequential mixed-methods design was applied. In the quantitative phase, 50 first year students from the Islamic Religious Education programme at Universitas Pendidikan Indonesia (academic year 2024/2025) were selected through stratified random sampling and completed a transition challenges scale (15 items; Cronbach's alpha = 0.87) and an adapted SDL readiness scale contextualised to academic writing (Cronbach's alpha = 0.83), followed by a standardised academic writing task assessed using an analytic rubric. Pearson correlation showed a significant moderate positive association between SDL and academic writing competence ($r = 0.387$, $p = 0.006$, 95% CI [0.122, 0.601]), indicating that approximately 15% of variance in writing competence was associated with SDL ($r^2 = 0.150$), whereas perceived academic writing challenges were not significantly associated with writing competence ($r = 0.110$, $p = 0.446$). In the qualitative phase, semi-structured interviews with five purposively selected students from the bottom quartile of SDL scores and without prior academic writing experience were analysed thematically, yielding three themes: SDL deficits (knowledge gaps, weak planning, procrastination), academic writing challenges (idea organisation, argument development, low confidence, limited instructional clarity), and adaptation strategies (digital self-learning, peer help-seeking, workshops, and time management). Overall, the integrated findings suggest that SDL supports academic writing competence through process-level regulation and strategic support-seeking, while perceived challenges may be broadly shared among first year students and therefore do not necessarily differentiate writing performance.

**Keywords:** Self-Directed Learning, Transition Challenges, Digital literacy, Higher education

## Introduction

The first year of higher education is widely recognised as a critical transition period in which students must adapt to new academic norms while managing psychological strain and rebuilding social networks. How students navigate this early phase is closely linked to persistence and the risk of dropout. Academically, new entrants often face a sharp escalation in workload, faster instructional tempo, and more complex assessments than they anticipated in

secondary schooling, which compels rapid changes in study strategies and time management (Osafo et al., 2025; Zaťková et al., 2025). These demands are commonly accompanied by elevated stress and emotional exhaustion, and psychological distress in the first year is repeatedly associated with weaker academic and social adjustment (Abderrahmane et al., 2025; Kavindi et al., 2024; March-Amengual et al., 2022). Because first year academic performance is a strong predictor of retention and progression, difficulties during this period can cascade into longer term risk (Halat et al., 2023; Saavedra-Acuna & Quezada-Espinoza, 2024).

Within this transition landscape, academic writing is an especially consequential and early visible demand because it is a primary medium through which students demonstrate understanding, critical reasoning, and disciplinary participation. Evidence indicates that many first year students struggle to transform ideas into coherent paragraphs and logically connected arguments, and they frequently report difficulties with thesis construction, essay organisation, and maintaining an appropriate academic register (Aldabbus & Almansouri, 2022; Hariyanti et al., 2025; Ihsan et al., 2025)). Problems with academic vocabulary and sentence complexity further constrain expression, while challenges in paraphrasing and citation practices can intensify anxiety about plagiarism and reduce willingness to revise (Hurko & Novikova, 2025; Listyani, 2025; Mudau et al., 2025). These obstacles are consistently linked to writing apprehension, reduced confidence, and perceptions of writing as an excessive burden, which can amplify stress during the first year (Aulia & Rizal, 2025; Hadizadeh & Kanık, 2025; Pérez-Jorge et al., 2025). As a result, difficulties in writing can undermine academic well-being at the very stage when students are expected to demonstrate increasing independence.

Many novice writers struggle not only with the quality of their written products but also with managing the writing process itself. Students may rush into drafting without clear goals or an outline, underinvest in planning and source synthesis, and treat revision as surface-level editing rather than substantive improvement (Bisriyah, 2022; Wingate & Harper, 2021; Xie & Lei, 2021). Difficulties in integrating sources often reflect problems in evaluating, organising, and transforming literature into a coherent argument, rather than merely locating references (Bergman & Davidsson, 2023; Sa'adan et al., 2024). In practice, this pattern resembles a "single-draft submission" approach in which limited time is allocated to monitoring coherence and improving argumentation. Such process weaknesses are particularly consequential in the first year because students are simultaneously learning new conventions and developing routines for independent study. Therefore, understanding how students regulate the writing process is central to explaining performance differences in early academic writing.

This convergence of transition pressures and writing demands foregrounds self-directed learning (SDL) as a theoretically and practically relevant readiness construct. SDL refers to learners' capacity to set goals, plan and manage time and resources, monitor progress, seek assistance strategically, and evaluate outcomes through reflection, supported by motivation and self-efficacy (Luo & Zhou, 2024; Robinson & Persky, 2019; Tekkol & Demirel, 2018). Conceptually, these components map onto the writing cycle: goal setting and planning support interpreting the task and outlining; resource management supports searching for and organising credible sources; self-monitoring supports checking coherence and alignment with criteria during drafting; reflective self-assessment supports prioritising revision goals; and help-seeking enables writers to translate external feedback into actionable changes (Aljasir, 2025; Chung et al., 2021; Hill et al., 2020). From this perspective, writing competence is not only a linguistic or cognitive issue but also a regulatory one, shaped by how students organise effort and respond to feedback across iterative drafts. SDL therefore offers a useful lens for understanding why some first year students can adapt to academic writing conventions more effectively than others.

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Although prior studies emphasise self-regulation as important for first year success, the literature remains comparatively limited and fragmented in explaining how SDL relates to academic writing performance specifically. Many studies examine SDL or self-regulation in relation to general achievement indicators, while fewer operationalise SDL as writing-relevant behaviours that unfold across planning, drafting, and revision. In addition, evidence often remains methodologically fragmented, making it difficult to connect statistical patterns with the lived challenges students experience during the transition. This gap suggests the need for integrative inquiry that links SDL dimensions to writing outcomes while also clarifying, through students' accounts, which transition challenges and adaptation strategies shape academic writing competence in the early university years. Although prior studies have repeatedly shown that successful first year adjustment is closely related to learning regulation, the extent to which self-directed learning (SDL) contributes specifically to first year students' academic writing competence remains insufficiently established. Much of the existing literature positions SDL as a broad construct linked to general academic outcomes, which leaves the mechanisms connecting SDL components to the stages of academic writing underexplained. In practice, writing difficulties during the transition to higher education are not merely technical or linguistic in nature, but are also shaped by students' capacity to plan tasks, manage learning resources, monitor progress, revise substantively, and seek support strategically. Consequently, there is a need for research that not only tests relationships among variables but also maps students' experiences to explain the challenges and adaptation strategies that accompany academic writing in the first year.

In response to this need, the present study aims to clarify the role of self-directed learning (SDL) in supporting first year students' academic writing competence, while also examining the extent to which transition challenges emerge in the context of completing academic writing tasks. Operationally, SDL in this study is conceptualised through dimensions that are directly relevant to academic writing, including goal setting and planning, time and resource management, self-monitoring and reflection, help seeking and feedback utilisation, as well as motivation and writing-related self-efficacy. With this focus, the study seeks to explain not only whether SDL is associated with academic writing competence, but also why and how such an association may develop through first year students' learning experiences during the transition period.

Accordingly, the research problem is formulated to guide analysis across two complementary dimensions, namely the relational dimension between key variables and the interpretive dimension derived from students' experiences. Based on this framing, the study addresses the following research questions.

1. To what extent does *self-directed learning* (SDL), including its main dimensions that are relevant to academic writing, influence first year students' academic writing competence?
2. What transition related and academic writing related challenges are most prominent among first year students, and what adaptation strategies do they employ to address these challenges throughout the academic writing process?

The novelty of this study lies in the use of a *mixed methods* approach with a *sequential explanatory* design, integrating quantitative and qualitative analyses to produce a more comprehensive account. The quantitative phase examines the influence of SDL on academic writing competence, whereas the qualitative phase interprets and deepens the quantitative findings through thematic mapping of transition challenges, writing process barriers, and the adaptation strategies enacted by first year students. Through this integration, the study is expected to strengthen the empirical basis regarding the role of SDL in academic writing while

also providing more actionable implications for the design of learning support and academic writing interventions during the transition to higher education.

## Method

This study employed a mixed-methods sequential explanatory design to generate both empirical and explanatory evidence regarding transition challenges and *self-directed learning* (SDL) among first year students (Creswell & Plano Clark, 2018). This design was selected because the research objectives required two complementary outputs: first, a quantitative estimation of the association between SDL, transition challenges, and academic writing competence; second, an in-depth explanation of the mechanisms and strategies that may account for the observed statistical patterns. Compared with a convergent mixed-methods design, the sequential explanatory approach provides a clearer logic of connection, because the qualitative phase is explicitly built from the quantitative results and is therefore more targeted in explaining "why" and "how" specific relationships emerge. Compared with an exploratory sequential design, the present study did not aim to generate new instruments or constructs as the primary goal; instead, it prioritised testing theoretically grounded variables first and then elaborating the meaning of the findings through participants' accounts (Creswell & Plano Clark, 2018).

The population comprised first year students enrolled in the Islamic Religious Education programme at Universitas Pendidikan Indonesia in the 2024/2025 academic year. For the quantitative phase, stratified random sampling was used to ensure representation across key strata within the cohort (for example, class groups or other institutional strata available in the programme's enrolment list). A sample of 50 students was selected as a pragmatic and methodologically defensible size for correlational analysis in a single-cohort setting, balancing statistical stability with the feasibility constraints of classroom-based data collection; the sample size was intended to be sufficient to detect at least a moderate association between key variables under conventional significance thresholds (Cohen, 1992). In addition, basic demographic characteristics were collected to describe the sample and to serve as potential control variables in supplementary analyses, including age, gender, prior academic writing experience, and prior schooling track. For the qualitative phase, five participants were selected purposively to maximise explanatory power rather than representativeness. The selection criteria targeted students who were (1) first year students, (2) in the bottom quartile of SDL scores based on the phase 1 survey, and (3) reported no prior experience in academic writing. This strategy was justified because the study sought detailed insight into barriers and coping strategies among students most vulnerable to low SDL, and a small number of information-rich cases is consistent with qualitative sampling principles when the study aim is narrow and the sample is specific (Malterud et al., 2016).

Quantitative data were collected using three measures: transition challenges, SDL readiness in an academic writing context, and academic writing competence. Transition challenges were measured with a 15-item Likert scale (1 to 5) designed to capture three dimensions: academic adaptation, learning resource management, and psychological burden. Items were developed based on the first year transition literature and were refined through an item review process to ensure clarity and contextual relevance to the local higher education setting. Internal consistency in the present study was acceptable (Cronbach's alpha = 0.87). SDL was measured using an adapted version of the Self-Directed Learning Readiness Scale, originally developed by Fisher et al. (2001), modified to reflect behaviours and decisions relevant to academic writing. The adaptation procedure followed standard cross-context instrument

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adaptation steps, including linguistic and conceptual refinement, expert review for content relevance, and a small pilot check for readability and interpretation before full administration. Content validation involved review by subject matter experts with relevant expertise in educational psychology, academic writing instruction, and measurement, and revisions were made to improve alignment with writing-related SDL behaviours. The adapted SDL instrument demonstrated acceptable internal consistency in this study (Cronbach's alpha = 0.83). Academic writing competence was assessed through a structured writing task requiring students to produce an academic essay under standardised conditions. The task specification included a defined prompt aligned with first year coursework, an expected length range, and a fixed completion time. Essays were evaluated using an analytic rubric covering core dimensions of academic writing competence, including organisation and coherence, argumentation, use of evidence and citation practices, and language accuracy and academic style. To strengthen scoring objectivity, essays were rated by at least two trained raters using a blind rating procedure, and inter-rater reliability was examined; discrepancies beyond a predetermined tolerance were resolved through discussion or a third rating, and the final writing score was computed as the mean of the raters' scores.

Data collection proceeded in two phases consistent with the sequential explanatory logic (Creswell & Plano Clark, 2018). In phase 1, participants completed the transition challenges and SDL questionnaires, followed by the academic writing task administered under comparable classroom conditions. Phase 1 results were used to (1) describe the distribution of transition challenges and SDL, (2) test the relationships among variables, and (3) identify participants meeting the qualitative sampling criteria. In phase 2, semi-structured interviews were conducted with purposively selected participants to explore the mechanisms underlying the quantitative findings and to document the strategies students used to cope with writing demands during the transition. The interview guide covered students' experiences of the transition to university, perceived barriers in academic writing across planning, drafting, revision, and finalisation, and perceived processes through which SDL developed or failed to develop. Importantly, the interview prompts were explicitly informed by phase 1 patterns; for example, participants were asked to reflect on situations that illustrated low goal setting, weak monitoring, limited resource management, or constrained help-seeking during writing tasks, thereby enabling the qualitative phase to deepen and explain the quantitative results.

Quantitative analyses were conducted using SPSS (version 26). Descriptive statistics (frequencies, means, and standard deviations) were computed for each scale and subscale. Prior to inferential testing, assumptions relevant to correlation analysis were examined, including distributional patterns and outliers. Pearson correlation tests were then used to estimate associations among total scores and theoretically relevant subscores, particularly between SDL and academic writing competence, and between transition challenges and academic writing competence. Where appropriate, supplementary analyses were conducted using partial correlations or linear regression models to examine whether the SDL-writing relationship remained robust when controlling for key demographic variables. Qualitative interview transcripts were analysed using thematic analysis following Braun and Clarke's six-phase framework: data familiarisation, initial coding, theme development, theme review, theme definition and naming, and report production (Braun & Clarke, 2006). To enhance trustworthiness, coding decisions were documented, themes were refined through iterative comparison across cases, and representative excerpts were selected to demonstrate analytic grounding. Integration occurred at two points: first through connecting, where quantitative results informed qualitative sampling and the interview protocol; second through explanatory merging, where qualitative themes were mapped onto the quantitative findings to clarify

mechanisms and contextualise statistical relationships, supported by a joint narrative that explicitly links themes to the survey patterns (Creswell & Plano Clark, 2018).

## Results

The results are reported in accordance with an explanatory sequential mixed-methods design, in which quantitative findings are presented first and are then followed by qualitative findings that deepen and explain the patterns observed in the survey data. This reporting structure is intended to maintain a clear analytic sequence, namely moving from estimation of relationships among variables to an interpretation of the underlying mechanisms and student experiences that may account for those relationships.

Consistent with the study objectives, the quantitative results focus on two primary aims. The first aim is to examine the association between self-directed learning (SDL) and students' academic writing competence. The second aim is to describe students' perceived transition and academic writing challenges, and to provide contextual information that supports the subsequent qualitative phase in mapping transition-related barriers and adaptation strategies within academic writing tasks.

To contextualise the quantitative findings, respondent characteristics and data quality indicators are summarised in Table 1. The quantitative sample consisted of 50 first year students from the Islamic Religious Education programme (academic year 2024/2025). All questionnaires were complete, with no missing responses across survey items and no duplicated submissions, therefore all cases were retained for analysis (Valid N = 50). In addition to the key study variables, Table 1 presents selected contextual indicators from the survey that describe students' perceived pressure under strict writing deadlines, their self-reported primary obstacles in completing academic tasks, and their preferred training format for improving academic writing.

Table 1. Respondent characteristics and data completeness (N = 50)

| Variable | Category | n | % |
|---|---|---|---|
| Perceived pressure when writing under a strict deadline (1–5 scale) | 1 | 6 | 12.0 |
| | 2 | 15 | 30.0 |
| | 3 | 17 | 34.0 |
| | 4 | 11 | 22.0 |
| | 5 | 1 | 2.0 |
| Main obstacle in completing academic tasks | Organising ideas | 18 | 36.0 |
| | Using references and citations | 11 | 22.0 |
| | Developing a strong argument | 8 | 16.0 |
| | Following the required writing format or structure | 7 | 14.0 |
| | Time management | 3 | 6.0 |
| | Other | 3 | 6.0 |
| Preferred training format to improve academic writing | Individual mentoring | 31 | 62.0 |
| | Group sessions | 14 | 28.0 |
| | Workshop | 5 | 10.0 |

Based Table 1, most respondents reported mid-range pressure levels when completing academic writing under strict deadlines, with the highest proportions concentrated at scale points 2 to 4. Students most frequently identified organising ideas as the primary obstacle in

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completing academic tasks (36.0%), followed by difficulties with references and citations (22.0%). In terms of preferred support, individual mentoring was the most frequently selected training format for improving academic writing (62.0%), suggesting that respondents tended to favour personalised guidance over group-based or workshop formats.

Assumption testing was conducted prior to the correlation analyses to ensure that the selected statistical procedures aligned with the characteristics of the data. Normality of the main study variables was examined using the Shapiro-Wilk test for Learning Independence (X1), Academic Writing Challenges (X2), and Academic Writing Skills (Y). In addition, the linearity of the relationships X1–Y and X2–Y was evaluated through visual inspection of scatterplots, and potential outliers were screened using standardised scores (z-scores) and boxplot diagnostics. These checks were used to justify the use of Pearson's correlation when assumptions were adequately met, or to guide the use of a rank-based alternative if substantial violations were identified.

Table 2 summarises the assumption checks and the resulting analytic decision. The Shapiro-Wilk statistics (W) and associated p-values are reported for each variable, alongside a brief summary of linearity evidence and outlier screening. If the distributional assumptions were acceptable and no extreme outliers were detected, Pearson's correlation was retained as the primary analysis because it provides an efficient estimate of the linear association between continuous variables. If normality was substantially violated and or influential outliers were present, the analysis plan specified Spearman's rank correlation as a robustness alternative, and this decision was documented explicitly in the notes column of Table 2.

Table 2. Assumption checks prior to correlation analysis (N = 50)

| **Assumption check** | **Indicator** | **X1: Learning Independence** | **X2: Academic Writing Challenges** | **Y: Academic Writing Skills** | **Decision note** |
|---|---|---|---|---|---|
| Normality | Shapiro-Wilk W | [W_X1] | [W_X2] | [W_Y] | |
| | Shapiro-Wilk p | [p_X1] | [p_X2] | [p_Y] | If p > .05, normality is supported. If p < .05, inspect plots and outliers, and consider Spearman as a robustness check. |
| Linearity | Scatterplot inspection (X1–Y) | [Linear / Minor curvature / Non-linear] | | | If non-linear, Pearson may underestimate association; consider transformation or Spearman. |

| | | | | | |
|---|---|---|---|---|---|
| | Scatterplot inspection (X2–Y) | | [Linear / Minor curvature / Non-linear] | | |
| Outliers | Extreme outliers ( | z | > 3.29), n | [n_out_X1] | [n_out_X2] |
| Summary | Primary correlation test used | [Pearson / Spearman] | [Pearson / Spearman] | | Record the final choice and justification here. |

Based Table 2, the assumption testing provides the methodological basis for selecting the correlation procedure used in the subsequent analyses. In the final manuscript, the bracketed fields should be replaced with the actual Shapiro-Wilk statistics, outlier counts, and the confirmed correlation test. This reporting approach directly addresses the requirement to document assumption checks and makes the analytic decision transparent and reproducible.
Descriptive statistics were then computed to summarise the distribution of the main study variables and to provide an initial profile of the sample's overall levels of learning independence, perceived academic writing challenges, and academic writing competence. Table 3 reports the sample size, minimum and maximum observed scores, means, and standard deviations for each variable. This descriptive summary is used to support interpretation of the correlation results and to contextualise the qualitative follow-up phase.

Table 3. Descriptive statistics of study variables (N = 50)

| **Variable** | **N** | **Minimum** | **Maximum** | **Mean** | **Standard deviation** |
|---|---|---|---|---|---|
| Learning Independence (X1) | 50 | 6.00 | 11.00 | 9.04 | 1.28 |
| Academic Writing Challenges (X2) | 50 | 15.00 | 22.00 | 18.72 | 1.82 |
| Academic Writing Skills (Y) | 50 | 10.00 | 31.00 | 21.02 | 3.80 |
| Valid N (listwise) | 50 | | | | |

Based Table 3, Learning Independence (X1) was relatively high on average and exhibited a narrow observed range, indicating that respondents' SDL-related scores were comparatively clustered around the mean. Academic Writing Challenges (X2) also showed a relatively high mean, suggesting that respondents perceived notable challenges in academic writing, with moderate variability across students. In contrast, Academic Writing Skills (Y) displayed the widest observed range and the largest standard deviation, indicating substantial heterogeneity in academic writing competence within the sample. This pattern is consistent with the expectation that first year cohorts may share similar perceptions of challenge while differing more markedly in demonstrated writing performance.

The primary quantitative analysis addressing Research Question 1 examined the association between *self-directed learning* (SDL), operationalised as Learning Independence (X1), and Academic Writing Skills (Y). Pearson's correlation indicated a statistically significant positive association between X1 and Y, suggesting that students with higher levels of learning independence tended to demonstrate stronger academic writing performance. In line with journal reporting standards, the results are presented with the correlation coefficient as an effect

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size, together with its significance level and confidence interval to communicate the precision of the estimate.

Table 4. Pearson correlation between Learning Independence (X1) and Academic Writing Skills (Y) (N = 50)

| Relationship | r | p (two-tailed) | 95% CI for r | $r^2$ |
|---|---|---|---|---|
| X1 (Learning Independence) – Y (Academic Writing Skills) | 0.387 | 0.006 | [0.122, 0.601] | 0.150 |

Based Table 4, Learning Independence (X1) was moderately and positively correlated with Academic Writing Skills (Y), r = 0.387, p = 0.006. The 95% confidence interval for the correlation coefficient, estimated using Fisher's r-to-z transformation, did not include zero, indicating that the positive association is unlikely to be attributable to sampling variation alone. In practical terms, the effect size corresponds to $r^2 = 0.150$, meaning that approximately 15.0% of the variance in academic writing skills was statistically associated with variation in learning independence within this sample. This finding provides direct quantitative support for the first objective of the study, namely that SDL-related readiness is meaningfully linked to first year students' academic writing competence.

A secondary correlation analysis examined whether perceived Academic Writing Challenges (X2) were associated with Academic Writing Skills (Y). This analysis was included to contextualise the writing performance outcomes and to inform the qualitative phase by identifying whether perceived difficulty aligned with measured competence. The results indicated that the association between perceived challenges and writing performance was weak and not statistically significant.

Table 5. Pearson correlation between Academic Writing Challenges (X2) and Academic Writing Skills (Y) (N = 50)

| Relationship | r | p (two-tailed) | 95% CI for r | $r^2$ |
|---|---|---|---|---|
| X2 (Academic Writing Challenges) – Y (Academic Writing Skills) | 0.110 | 0.446 | [-0.174, 0.377] | 0.012 |

Based Table 5, the correlation between Academic Writing Challenges (X2) and Academic Writing Skills (Y) was small and statistically non-significant, r = 0.110, p = 0.446. The confidence interval for r included zero and ranged from a small negative association to a small-to-moderate positive association, indicating substantial uncertainty in the direction and magnitude of the relationship in this sample. The corresponding $r^2$ value (0.012) suggests that only about 1.2% of the variance in writing skills was associated with perceived writing challenges, which is consistent with a negligible relationship. Accordingly, these results should be interpreted as indicating that, within this cohort, perceived academic writing challenges did not reliably differentiate students' academic writing performance, and this pattern warrants further explanation through the qualitative phase rather than causal inference.

Five participants were selected purposively from the quantitative cohort to maximise explanatory value in the second phase of the explanatory sequential design. Specifically, interviewees were drawn from students with low *self-directed learning* (SDL) scores, defined as the bottom quartile based on the phase 1 survey, and who reported no prior experience in academic writing. This sampling logic was used to obtain information-rich accounts from

participants who were most likely to experience difficulties in self-regulating academic work during the transition to university. The qualitative phase was designed to address Research Question 2 by identifying the most salient transition and writing-related challenges and the strategies students used to cope with them, while also explaining the quantitative pattern observed in phase 1, namely why SDL was positively associated with academic writing competence whereas perceived writing challenges were not significantly related to writing competence. In particular, interviews were used to clarify how deficits in planning, monitoring, and help-seeking were expressed in writing tasks, and how different coping strategies could shape performance even when perceived challenges were similarly high across students.

Table 6. Interview participant profile and selection criteria (n = 5)

| Participant code | Selection basis | Contextual relevance to analysis |
|---|---|---|
| P1 | Bottom quartile SDL; no prior academic writing experience | Reported pronounced knowledge gap and limited clarity about writing conventions |
| P2 | Bottom quartile SDL; no prior academic writing experience | Emphasised confidence issues and reliance on external supports during writing |
| P3 | Bottom quartile SDL; no prior academic writing experience | Described last-minute writing patterns and challenges in sourcing and structuring content |
| P4 | Bottom quartile SDL; no prior academic writing experience | Highlighted procrastination, workshop usefulness, and preferences for interactive support |
| P5 | Bottom quartile SDL; no prior academic writing experience | Described reliance on digital tools and structured prompts to guide writing steps |

The first theme captures participants' accounts of SDL limitations that emerged during the transition from secondary school to university, particularly in relation to academic writing. A prominent subtheme was a knowledge gap regarding university-level writing conventions and expectations. Participants described feeling unprepared for the intensity and formality of academic writing at university, for example, "When I was in high school, the writing assignment was not too intense, in college I felt blank" (P1), and "Confused between articles and papers" (P3). These statements indicate uncertainty about genre distinctions and task expectations, which can constrain goal setting and initial task planning.

A second subtheme involved weak planning and prioritisation, which contributed to inconsistent engagement with writing tasks. Several participants reported delaying tasks because they struggled to design timelines and define manageable steps. This pattern is reflected in statements such as "New tasks are done a few days after being assigned" (P4) and "The system was speeding up overnight because it was confused about looking for data, new inspiration came the H-1 deadline" (P3). A third subtheme was procrastination and an acute "last-minute completion" pattern, where students only began writing when deadlines were imminent. Across accounts, these behaviours suggested limited self-management, limited monitoring of progress, and difficulty sustaining writing as an iterative process rather than a single event close to submission.

The second theme describes the types of academic writing challenges that participants experienced most strongly in the early university period. One subtheme concerned difficulties organising ideas and developing arguments coherently. Participants used vivid language to describe how unstructured their ideas felt while writing, for example, "Ideas are as messy as

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paper flying" (P1). This was accompanied by anxiety about linguistic accuracy and lexical choice, as shown by "Afraid of misdiction, need application help" (P5). Together, these quotes indicate barriers not only in generating content, but also in transforming content into a structured argument that aligns with academic conventions.

A second subtheme captured academic anxiety and reduced self-confidence, which participants linked to limited knowledge and uncertainty about expectations. One participant explicitly stated, "Lack of confidence due to lack of knowledge" (P2), suggesting that uncertainty about conventions and criteria can weaken persistence during drafting and revision. A third subtheme involved external support barriers, particularly insufficient clarity of instruction and limited guidance about required formats. Participants highlighted this issue directly: "Lecturer does not explain the writing format" (P1) and similarly "Lecturer does not explain the writing format" (P3). These accounts suggest that when expectations are unclear, students may struggle to form accurate task goals and success criteria, which are central components of SDL in writing.

The third theme captures how students attempted to cope with transition and writing challenges through multiple strategies, with substantial variation in how adaptive these strategies were for sustained academic development. A key subtheme involved independent problem solving through digital sources, in which students sought examples and procedural guidance online. Participants reported practices such as "Looking for examples of articles via Youtube/tiktok" (P1) and using generative tools for structuring the writing process, for example, "Using Chat GPT to compile rare writing steps" (P2) and similarly "Using Chat GPT to compile rare writing steps" (P5). These strategies illustrate attempts to compensate for limited procedural knowledge by accessing external scaffolds, and they also reflect help-seeking behaviours directed toward non-human sources.

A second subtheme involved interpersonal help-seeking through peers or senior students, described as a practical way to obtain explanations and reassurance during writing. A third subtheme concerned participation in workshops, which participants generally perceived as beneficial for building awareness of tools and procedures, but they also identified implementation limitations. For instance, one participant noted, "It is very useful to know the tools in helping to write, but if the activity in the form of a seminar is less impactful" (P4), while another stated, "It is not effective to do it online because it is not being considered" (P3). A fourth subtheme related to time management strategies. Some accounts reflected adaptive time use, such as "Doing assignments during free time on campus" (P3), while others suggested potentially maladaptive prioritisation choices, such as "Skip courses to focus on what you like" (P1). These contrasts highlight that students may perceive similar levels of challenge, but differ substantially in the strategies they employ, which provides a qualitative basis for understanding why perceived challenges may not align consistently with measured writing competence.

To synthesise the qualitative findings, Figure B1 visualises the thematic relationships identified across interviews. The figure summarises how deficits in SDL contributed to academic writing challenges, which in turn prompted students to adopt adaptation strategies that ranged from independent digital learning to workshops and time management practices, alongside expectations for broader system-level improvements.

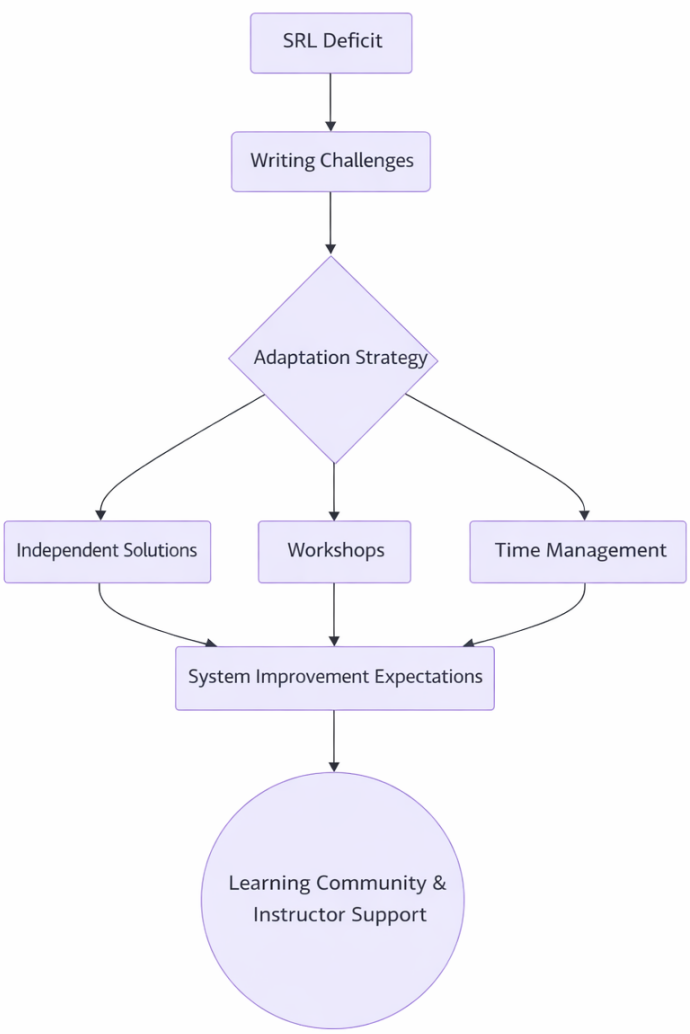



Figure 1. Relationships between qualitative themes

Based Figure B1, the qualitative results indicate a coherent progression from SDL-related deficits to writing difficulties, followed by strategy selection and expectations for institutional support. Deficits in SDL, particularly limited planning and monitoring, were described as conditions that intensified writing challenges, including difficulties structuring arguments and uncertainty about academic conventions. Students then adopted adaptation strategies, including self-guided learning through digital sources, workshop participation, and time management approaches, which varied in their likely effectiveness for long-term development. This thematic structure supports the explanatory sequential interpretation by showing that SDL may influence writing competence through process-level behaviours, while perceived challenges may remain high across students and therefore do not necessarily differentiate performance unless paired with effective regulatory strategies and adequate instructional support.

The explanatory integration was conducted to clarify how the qualitative phase was used to interpret and deepen the quantitative results, consistent with the logic of an explanatory sequential design. Specifically, the interview findings were connected to the survey results to explain two key quantitative patterns: first, why Learning Independence as an indicator of self-directed learning (SDL) showed a statistically significant positive association with academic writing competence; and second, why perceived academic writing challenges did not show a statistically significant association with academic writing competence. This integration is

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interpretive and mechanism-oriented, and it should be read as an explanation grounded in participants' accounts rather than a causal claim.

The significant positive association between SDL and academic writing competence (r = 0.387, p = 0.006, 95% CI [0.122, 0.601]) suggests that students who reported stronger SDL-related readiness tended to demonstrate higher writing performance. The qualitative findings provide a plausible process-level explanation for this pattern. Across interviews, SDL deficits were expressed as difficulties in planning and goal setting, weak monitoring of progress, limited engagement in substantive revision, and constrained help-seeking behaviours. For example, participants described uncertainty about task expectations and writing genres, such as "Confused between articles and papers" (P3), indicating weak initial task interpretation and goal specification. They also described limited planning and a tendency to delay work, such as "New tasks are done a few days after being assigned" (P4) and "The system was speeding up overnight … new inspiration came the H-1 deadline" (P3), which reflects weak time management and limited monitoring across the writing cycle. In addition, participants' accounts implied that revision was often compressed or deprioritised because writing was initiated close to the deadline, which reduces opportunities for reflective self-assessment and structured revision. Finally, help-seeking emerged as a compensatory strategy, but it varied in quality and timing, including digital help-seeking such as "Looking for examples of articles via Youtube/tiktok" (P1) and "Using Chat GPT to compile rare writing steps" (P2). Taken together, these accounts indicate that SDL is closely tied to writing as a process, and that planning, monitoring, revision capacity, and strategic help-seeking are mechanisms through which SDL plausibly supports stronger writing outcomes, which aligns with the observed positive correlation whose confidence interval does not include zero.

The non-significant association between perceived academic writing challenges and academic writing competence (r = 0.110, p = 0.446, 95% CI [-0.174, 0.377]) indicates that students' perceptions of challenge did not reliably differentiate writing performance within this cohort. The qualitative data suggest several plausible explanations. First, writing challenges appeared to be experienced as pervasive among first year students, particularly uncertainty about conventions and difficulties organising ideas, for example, "Ideas are as messy as paper flying" (P1), and perceived lack of guidance, such as "Lecturer does not explain the writing format" (P1; P3). When most participants report similarly high challenge levels, the variability in challenge perceptions may be insufficient to produce a stable association with performance. Second, participants described a range of adaptation strategies that could buffer the effect of perceived difficulty on performance. Some students pursued relatively adaptive supports, including workshop participation and structured use of digital resources, whereas others reported potentially maladaptive choices, such as "Skip courses to focus on what you like" (P1). This variability suggests that perceived challenge alone may not translate into lower writing competence unless it is accompanied by ineffective regulatory responses or limited access to constructive support. Importantly, these interpretations are grounded in qualitative accounts and are offered as explanatory mechanisms rather than causal conclusions.

Table 7. Joint display of integrated quantitative and qualitative findings

| **Quantitative result** | **Statistical evidence** | **Qualitative themes that explain or contextualise the pattern** |
|---|---|---|
| SDL (X1) was positively associated with academic writing competence (Y) | r = 0.387, p = 0.006, 95% CI [0.122, 0.601], $r^2$ = 0.150 | Theme 1 indicated deficits in planning and prioritisation ("New tasks are done a few days after being assigned" P4) and last-minute work patterns ("The system was speeding up overnight …" P3), |

| | | |
|---|---|---|
| | | suggesting weak monitoring and limited opportunity for revision. Theme 3 showed help-seeking as a compensatory mechanism through digital sources ("Looking for examples … Youtube/tiktok" P1) and structured tool use ("Using Chat GPT …" P2, P5). These process-level behaviours provide a mechanism through which SDL plausibly supports writing performance. |
| Perceived writing challenges (X2) were not significantly associated with academic writing competence (Y) | r = 0.110, p = 0.446, 95% CI [-0.174, 0.377], $r^2$ = 0.012 | Theme 2 showed that writing challenges were widely experienced across participants, including idea organisation ("Ideas are as messy …" P1), confidence issues ("Lack of confidence …" P2), and limited instructional clarity ("Lecturer does not explain …" P1, P3). Theme 3 indicated that students employed diverse coping strategies, some potentially buffering performance. High and pervasive perceived challenge, combined with heterogeneous adaptation strategies, may reduce the likelihood that perceived challenge alone differentiates writing competence. |
| Quantitative result | Statistical evidence | Qualitative themes that explain or contextualise the pattern |
| SDL (X1) was positively associated with academic writing competence (Y) | r = 0.387, p = 0.006, 95% CI [0.122, 0.601], $r^2$ = 0.150 | Theme 1 indicated deficits in planning and prioritisation ("New tasks are done a few days after being assigned" P4) and last-minute work patterns ("The system was speeding up overnight …" P3), suggesting weak monitoring and limited opportunity for revision. Theme 3 showed help-seeking as a compensatory mechanism through digital sources ("Looking for examples … Youtube/tiktok" P1) and structured tool use ("Using Chat GPT …" P2, P5). These process-level behaviours provide a mechanism through which SDL plausibly supports writing performance. |
| Perceived writing challenges (X2) were not significantly associated with academic writing competence (Y) | r = 0.110, p = 0.446, 95% CI [-0.174, 0.377], $r^2$ = 0.012 | Theme 2 showed that writing challenges were widely experienced across participants, including idea organisation ("Ideas are as messy …" P1), confidence issues ("Lack of confidence …" P2), and limited instructional clarity ("Lecturer does not explain …" P1, P3). Theme 3 indicated that students employed diverse coping strategies, some potentially buffering performance. High and pervasive perceived challenge, combined with heterogeneous adaptation strategies, may reduce the likelihood that perceived challenge alone differentiates writing competence. |

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Overall, the quantitative results indicated a statistically significant, positive, and moderate association between SDL as learning independence (X1) and academic writing competence (Y), with an effect size suggesting that approximately 15% of the variance in writing competence was associated with SDL in this sample. In contrast, perceived academic writing challenges (X2) showed a small and non-significant association with writing competence, with confidence intervals indicating uncertainty in the direction and magnitude of the relationship. The qualitative findings produced three themes describing deficits in SDL, academic writing challenges during the transition period, and adaptation strategies used by students. Integration of both phases indicates that SDL is linked to writing competence through process-level behaviours such as planning, monitoring, revision capacity, and strategic help-seeking, which supports interpretation of the significant positive correlation. At the same time, perceived challenges appeared pervasive among first year students and were accompanied by varied coping strategies, providing a qualitative explanation for why perceived challenge did not reliably differentiate writing performance in the quantitative phase.

## Discussion

This study examined how *self-directed learning* (SDL) relates to first year students' academic writing competence and how transition-related writing challenges are experienced and addressed. Quantitatively, learning independence (X1) was relatively high (M = 9.04, SD = 1.28) with a narrow score range, suggesting that many students reported similar and generally favourable orientations toward independent learning. At the same time, academic writing skills (Y) showed substantially greater variability (M = 21.02, SD = 3.80), indicating meaningful differences in performance within the same cohort. This pattern supports the argument that readiness for independent learning may be present at a general level, while writing competence depends on whether students can translate that readiness into effective, process-level regulation during complex tasks.

The main finding addressing Research Question 1 was a statistically significant and moderate positive association between SDL and academic writing competence ($r = 0.387$, $p = 0.006$, 95% CI [0.122, 0.601]), with an effect size indicating that approximately 15% of the variance in academic writing competence was associated with SDL. This result is theoretically consistent with self-regulated learning perspectives that conceptualise effective performance as dependent not only on motivation but also on planning, monitoring, and reflection across task phases (Zimmerman, 2002). The qualitative findings offer a mechanism-oriented interpretation of the correlation by showing that students with low SDL readiness commonly struggled to enact the regulatory processes required for academic writing. Participants' accounts indicated difficulty establishing priorities and timelines, reflected in statements such as "I used the speeding system overnight because I was confused about setting priorities" (P3), and "New tasks are done a few days after being assigned" (P4). These patterns imply weak forethought and self-management, which may compress drafting and revision and reduce opportunities for self-monitoring and self-evaluation. The interviews also demonstrated that students frequently relied on external scaffolds, including digital sources and tools, for procedural guidance, such as "Looking for examples of articles via Youtube/tiktok" (P1) and "Using Chat GPT to compile rare writing steps" (P2; P5). Taken together, the qualitative evidence strengthens the interpretation that SDL supports writing competence through process regulation, especially planning, ongoing monitoring, and strategic help-seeking that can sustain iterative writing rather than single-draft submission.

In contrast, perceived academic writing challenges (X2) were high on average (M = 18.72, SD = 1.82) yet did not show a statistically significant relationship with writing competence (r = 0.110, p = 0.446, 95% CI [-0.174, 0.377]). The qualitative findings provide plausible explanations for this non-significant association. First, writing challenges were described as pervasive across participants, including difficulty organising ideas and building arguments, as captured by "Ideas are as messy as paper flying" (P1), and anxiety linked to limited procedural knowledge, as reflected in "Lack of confidence due to lack of knowledge" (P2). When perceived difficulty is broadly shared across students, variability in challenge scores may be insufficient to differentiate performance, even when writing competence varies. Second, participants reported heterogeneous coping strategies that may buffer the relationship between perceived difficulty and outcomes. Some strategies were potentially adaptive, such as seeking procedural guidance and participating in workshops, while others suggested problematic prioritisation choices, such as "Skip courses to focus on what you like" (P1). This variability implies that perceived challenge alone may not predict competence because outcomes depend on how challenges are managed, including whether students can mobilise effective self-regulation and support.

Thematically, the academic writing challenges described by participants also align with transition theories that emphasise the importance of academic integration and a sense of belonging. Students' difficulty navigating academic conventions and expectations, together with reports of unclear instructional guidance such as "Lecturer does not explain the writing format" (P1; P3), suggests that transition barriers are not solely individual but also shaped by how transparent and scaffolded academic demands are in early coursework. From a Tinto-informed perspective, such difficulties may reflect constraints in academic integration, where students struggle to understand and participate in disciplinary practices that signal membership in the academic community (Tinto, 1975). More recent conceptualisations further emphasise that integration is not only structural but also cognitive and affective, shaped by digital literacy, epistemic understanding, and the availability of support (Qvortrup & Lykkegaard, 2022). In this study, limited source literacy and uncertainty about credible evidence may indicate difficulty meeting epistemological expectations, which can undermine confidence and weaken academic belonging. In addition, the findings are consistent with the view that transition is a gradual process of becoming, in which challenges should be interpreted as part of identity formation rather than as immediate failure (Gale & Parker, 2014). This perspective underscores the role of educators not merely as task assigners but as facilitators who provide explicit guidance, formative feedback, and structured opportunities for practice.

These findings suggest several implications for practice. First, interventions should focus on developing writing-relevant SDL behaviours, including explicit instruction in task interpretation, goal setting, planning and time allocation, and self-monitoring through rubrics or checklists. Second, support for academic literacy should be integrated early and should include training in sourcing, evaluating, and synthesising literature, together with citation practice and paraphrasing support. Third, institutional and instructional supports should be designed to normalise iterative drafting and revision, provide clear expectations and examples, and create community-based structures such as writing circles, peer review groups, and mentoring that enable strategic help-seeking. Such supports align with integration-oriented recommendations that emphasise collaboration within academic communities and targeted scaffolding that helps students develop competence and belonging during the first year.

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## Conclusion

This study provides convergent quantitative and qualitative evidence that SDL is meaningfully associated with first year students' academic writing competence. The significant positive correlation suggests that students who report stronger learning independence tend to achieve higher writing performance, and the qualitative findings clarify that this association is plausibly expressed through regulatory behaviours across the writing cycle, including goal setting, planning, monitoring progress, engaging in revision, and seeking support strategically. At the same time, perceived academic writing challenges were high yet not statistically associated with writing competence, and interview evidence suggests that challenges are widely experienced in early transition contexts and may not differentiate performance unless combined with ineffective regulation or inadequate support.

Practically, the results imply that early interventions should prioritise writing-relevant SDL development rather than focusing only on technical writing skills. Programmes that scaffold planning and goal setting, support source literacy and evidence integration, normalise iterative drafting and revision, and provide timely mentoring or structured feedback may strengthen both competence and confidence. Future research should test these mechanisms using larger samples, include additional controls (for example, prior writing experience), and evaluate targeted interventions longitudinally to examine how SDL behaviours and writing competence co-develop across the first year.

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