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Narrative Synthesis of FYP Report Evaluations: Bridging Technical Competence and Academic Communication in Malaysian TVET

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Abstract

Final Year Projects (FYPs) are critical indicators of undergraduate readiness for professional practice, requiring students to demonstrate both technical competence and academic communication. In the Malaysian TVET context, however, graduates often exhibit strong technical performance alongside persistent weaknesses in written and spoken English. This study synthesizes evaluations of 22 undergraduate FYP reports from engineering and applied science programmes at Universiti Teknikal Malaysia Melaka (UTeM) to examine the balance between technical execution and CEFR-aligned academic communication. Findings show solid technical achievement (mean score: 15.28/20, ~76%) but recurring deficiencies in academic writing, critical analysis, and linguistic accuracy at the CEFR B2 level. The study argues for cross-curricular integration of language within technical assessment and discusses implications for supervision practices, rubric design, graduate employability, and institutional policy, with reference to the Cross-Curricular Instructional Model of English Writing and Speaking (C-IMEWS).

Keywords: Final Year Project (FYP), CEFR, Cross-Curricular Integration, Academic Writing, Technical Communication, Employability

Introduction

Final Year Projects (FYPs) are capstone assessments that signal undergraduates' readiness for professional practice, requiring not only technical competence but also the ability to communicate complex ideas through structured academic writing and oral defence. In engineering and applied science programmes, effective communication is increasingly recognised as a core employability skill alongside technical expertise.

Within the Malaysian Technical and Vocational Education and Training (TVET) context, this demand remains unevenly addressed. While students frequently demonstrate strong mastery of technical methodologies and tools, persistent weaknesses in academic writing, critical analysis, and linguistic accuracy are evident in FYP outputs. These weaknesses are particularly

concerning given that FYPs represent the most authentic academic and professional communication task students undertake prior to graduation.

The Common European Framework of Reference for Languages (CEFR), particularly at the B2 level, provides clear benchmarks for academic and professional communication, including clarity, coherence, argumentation, and critical engagement with sources. However, despite its widespread adoption in language courses, CEFR remains insufficiently integrated into disciplinary assessments such as FYPs.

This study examines evaluation patterns across 22 undergraduate FYP reports to identify the alignment between technical performance and CEFR-aligned academic communication expectations. By foregrounding the need for cross-curricular integration, the study demonstrates how embedding language outcomes within technical assessment can enhance academic quality, supervision practices, and graduate employability.

This study addresses this gap by examining how well current FYP outcomes align with CEFR-aligned academic communication expectations. Through a narrative synthesis of evaluations from 22 undergraduate FYP reports, the study identifies patterns of strength and weakness across technical and linguistic dimensions. More importantly, it highlights the need for a cross-curricular approach in which language development is integrated within technical learning, rather than treated as a parallel or peripheral concern. By situating FYP evaluation within a CEFR-informed framework, the study highlights the practical utility of integrating language and content to enhance academic quality, supervision practices, and graduate employability.

This study is significant in several ways. First, it contributes to the growing body of research on cross-curricular integration by providing empirical evidence from authentic academic artefacts—Final Year Project reports—rather than classroom-based language assessments. The study offers a realistic picture of how technical competence and academic communication intersect at the point of graduation by analysing actual student outputs.

Second, the study is beneficial to students, as it highlights the specific linguistic and critical writing competencies required to meet CEFR B2 expectations in technical disciplines. Making these expectations explicit helps students understand that language proficiency is not separate from technical success, but integral to producing high-quality academic and professional work.

Third, the findings are highly relevant to supervisors and lecturers, particularly those in engineering and applied science faculties who may not have formal training in language assessment. By mapping recurring writing weaknesses to CEFR descriptors, the study provides a shared reference point that can guide supervision feedback, rubric design, and formative support without overburdening content specialists.

Fourth, at the institutional level, this study informs curriculum design and assessment policy within TVET universities. The evidence underscores the need to recalibrate FYP rubrics so that communication skills are assessed systematically alongside technical criteria. This has direct implications for quality assurance, accreditation, and alignment with international standards.

Finally, the study holds practical significance for industry and employability, as it addresses one of the most frequently cited gaps among technical graduates: the ability to communicate complex ideas clearly and professionally. By advocating for models such as the Cross-Curricular Instructional Model of English Writing and Speaking (C-IMEWS), the study offers a scalable and context-sensitive approach to producing graduates who are not only technically competent but also communicatively effective in real-world engineering environments.

Literature Review

Final Year Projects as Capstone Assessments

Final Year Projects (FYPs) occupy a central role in undergraduate engineering and applied sciences curricula, functioning as integrative capstone assessments that require students to apply theoretical knowledge, conduct research, and present findings in both written and oral formats. Globally, FYPs are recognised as a measure of students' readiness for the professional environment, as they assess not only technical expertise but also problem-solving, documentation, and communication skills (Biggs & Tang, 2011). In the Malaysian context, the Malaysia Education Blueprint 2015–2025 (Higher Education) emphasises the importance of producing graduates who are not only technically competent but also communicatively proficient and employable at a global level (Ministry of Education, 2015).

CEFR as a Benchmark for Academic Communication

The Common European Framework of Reference for Languages (CEFR) has emerged as a global standard for defining and measuring language proficiency across levels (Council of Europe, 2018). At the B2 level, learners are expected to: write clear, detailed texts on subjects related to their field; present structured arguments with appropriate use of connectors and cohesive devices; and demonstrate an ability to compare, evaluate, and synthesise information from multiple sources. These descriptors align closely with the demands of FYPs, where students are required to write extended technical reports and deliver oral defences. However, while CEFR adoption in Malaysia has gained momentum in language courses (Ali, 2019), its integration into disciplinary assessments such as FYPs remains underexplored. Mapping CEFR descriptors to FYP rubrics provides a systematic way of aligning language outcomes with disciplinary tasks, ensuring international comparability.

Table 1
Mapping CEFR B2 Descriptors to FYP Tasks

CEFR B2 Descriptor (Council of Europe, 2018)	FYP Writing Task	FYP Speaking Task (Viva)	Expected Competency
Can write clear, detailed texts on subjects related to their field	Literature Review, Methodology, and Results chapters	Oral defence of methodology	Clear explanations of technical processes
Can develop an argument systematically, highlighting significant points	Discussion and Conclusion chapters	Justification during Q&A	Structured, logical reasoning
Can compare and evaluate different ideas, integrating information from sources	Literature Review, Findings discussion	Responding to examiners' prompts	Critical analysis and synthesis

CEFR B2 Descriptor (Council of Europe, 2018)	FYP Writing Task	FYP Speaking Task (Viva)	Expected Competency
Can interact with a degree of fluency and spontaneity in academic/professional settings	Report writing with minimal grammar errors	Defending findings under pressure	Academic style and professional register

CEFR B2 descriptors mapped to FYP writing and speaking demonstrate how language expectations can be embedded directly into technical tasks.

Cross-Curricular Integration and CLIL Frameworks

One approach to embedding language into subject teaching is Content and Language Integrated Learning (CLIL), which combines content mastery with language development. CLIL is built on the 4Cs framework—Content, Communication, Cognition, and Culture (Coyle, Hood, & Marsh, 2010). In technical subjects, this means students not only learn engineering concepts but also practise communicating them critically in English. In engineering education, CLIL-based approaches have been shown to enhance students' ability to process technical texts, discuss professional concepts, and apply discipline-specific language (Bovtenko, 2020).

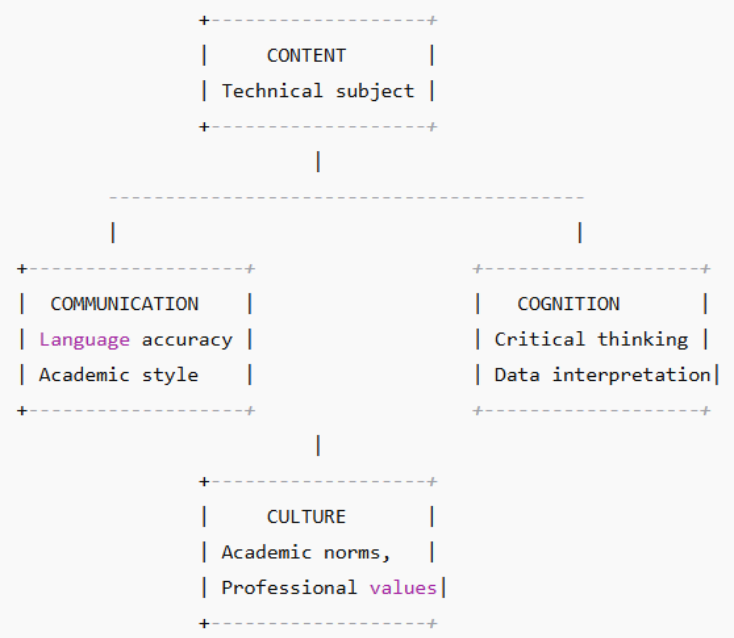

Figure 1. CLIL 4Cs Framework Adapted for FYP Context

The CLIL 4Cs (Content, Communication, Cognition, Culture) applied to FYPs highlight the dual development of technical expertise and academic communication skills.

English for Specific Purposes (ESP) and Technical Communication

English for Specific Purposes (ESP) frameworks emphasise tailoring language instruction to discipline-specific needs (Hutchinson & Waters, 1987). In the context of engineering and technology, ESP requires students to master technical vocabulary, disciplinary genres, and rhetorical structures that are distinct from general academic writing. Reports, feasibility studies, proposals, and presentations demand precision and adherence to professional norms, reflecting the communication practices of engineers in the workplace.

In Malaysian higher education, ESP has long been a key support mechanism for engineering undergraduates, offering targeted modules on technical writing, presentation skills, and professional communication (Hashim & Wan, 2019). However, these courses are often taught in isolation from core engineering subjects, limiting opportunities for authentic application. Students may acquire vocabulary and genre knowledge in ESP classrooms, yet struggle to transfer these skills when writing complex FYP reports.

Recent research on ESP-CLIL adaptations has highlighted the potential of merging ESP and content instruction, particularly in engineering education. For instance, studies in Russia and Southeast Asia demonstrate how integrating technical content with targeted language scaffolds not only enhances comprehension of subject matter but also supports the development of critical, discipline-specific discourse (Brahmawong & Vate-U-Lan, 2009; Bovtenko, 2020). In the Malaysian TVET context, such hybrid approaches could ensure that FYPs are assessed not only for technical rigour but also for how effectively students communicate their work in English. This integration is particularly relevant given the global emphasis on "soft skills" and workplace readiness.

Academic Writing Challenges in Malaysian Higher Education

A persistent challenge in Malaysian universities is the gap between students' technical knowledge and their ability to articulate ideas in clear, critical English. While engineering undergraduates often excel in experimental design and analysis, they face recurring difficulties in written communication. Common problems include grammatical inaccuracy, lack of syntactic variety, descriptive rather than analytical writing, weak argumentation, and inconsistent referencing practices (Hussein, Sedek, & Abdullah, 2023). Such weaknesses are compounded by over-reliance on descriptive narration in literature reviews and findings chapters, resulting in technically sound but academically limited reports.

This imbalance reflects broader structural issues: English language instruction is frequently compartmentalised, and students may not perceive its relevance to technical courses. As a result, language is seen as ancillary rather than integral to disciplinary success. Embedding CEFR-aligned descriptors such as clarity, organisation, academic style, and criticality into FYP rubrics could help reframe language as an explicit, assessable outcome. At the B2 level, for example, students are expected to synthesise multiple sources, develop structured arguments, and communicate ideas with clarity—competencies directly aligned with FYP requirements. By making these expectations transparent, institutions can raise the overall academic standard of student work and prepare graduates for the communicative demands of their professions.

Towards Cross-Curricular Models in TVET

Within the Malaysian TVET landscape, employability remains a national priority, with graduates expected to demonstrate not only technical problem-solving but also effective communication across professional contexts (Mustapha, 2021). Employers in engineering, IT, and applied science sectors consistently highlight weaknesses in report writing, documentation, and oral presentation as barriers to workplace readiness. Thus, the challenge is not merely producing technically competent graduates, but producing communicatively agile engineers who can document processes, write proposals, and defend findings convincingly.

Cross-curricular instructional models provide a strategic response to this demand. The Cross-Curricular Instructional Model of English Writing and Speaking (C-IMEWS) offers one such framework, embedding language and communication outcomes directly into technical subjects. Rather than treating English as a parallel course, C-IMEWS integrates CEFR B2 descriptors into FYP rubrics and supervision practices, thereby aligning assessment with both academic and industry standards. This approach echoes international best practices such as CLIL and ESP-CLIL hybrids, but situates them within the specific needs of Malaysian TVET.

By reframing FYPs as dual sites of learning—technical and linguistic—C-IMEWS not only raises academic quality but also enhances employability. Graduates trained under such models are more likely to thrive in globalised industries where documentation, collaboration, and critical communication are as highly valued as technical innovation.

This study is among the first to examine Final Year Project outcomes through a CEFR-aligned evaluative lens, using authentic technical reports to demonstrate how academic communication gaps persist despite strong technical performance in Malaysian TVET contexts. Accordingly, this study investigates patterns of technical and linguistic performance in undergraduate FYP reports and explores the implications for cross-curricular assessment and supervision practices.

Methodology

Research Design

This study employed a document analysis design to evaluate the academic quality of undergraduate Final Year Project (FYP) reports. Document analysis was chosen because it allows systematic examination of written artefacts, providing insights into both technical and linguistic performance (Bowen, 2009). A narrative synthesis approach was subsequently applied to integrate quantitative scores with qualitative observations across evaluation criteria.

Corpus of Reports

The corpus consisted of 22 FYP reports submitted between 2022 and 2024 from five technology and engineering faculties at Universiti Teknikal Malaysia Melaka (UTeM). The selection represented a cross-section of applied science and engineering disciplines, ensuring coverage of diverse technical domains while maintaining consistency in report format. All reports adhered to UTeM's academic guidelines for FYP submission.

Evaluation Rubric

The Writing Rubric for FYP Reports (Figure 1) was employed as the main evaluation instrument. The rubric contained **f**our dimensions:

1. **Clarity** – precision and comprehensibility of writing.
2. **Organisation** – coherence, sequencing, and structural flow of chapters.
3. **Technical Accuracy** – precision in describing methods, results, and use of technical terminology.
4. **Academic Style** – adherence to formal register, referencing conventions (APA/IEEE), and critical synthesis.

Criteria	Excellent (5)	Good (4)	Satisfactory (3)	Limited (2)	Weak (1)
Clarity	Writing is consistently clear and precise; ideas expressed without ambiguity; sentences well-constructed	Mostly clear writing; minor lapses in precision but meaning always understandable	Adequate clarity; occasional awkward phrasing or unclear expression	Frequent lack of clarity; meaning sometimes obscured	Very unclear writing; ideas fragmented, difficult to understand
Organisation	Report is logically structured (Intro, Methodology, Findings, Conclusion); smooth transitions ensure excellent flow	Mostly logical structure; minor issues with sequencing or transitions	Adequate organisation; some lapses in coherence; transitions occasionally weak	Weak organisation; frequent lapses in flow and structure	Disorganised; little or no logical sequencing of sections
Technical Accuracy	Uses technical terms accurately and appropriately; findings and methods described with precision	Mostly accurate use of technical terms; minor inaccuracies present	Adequate but sometimes inconsistent use of technical language	Frequent inaccuracies in technical terms; weak explanation of methods/results	Major inaccuracies; technical descriptions unclear or incorrect
Academic Style	Consistently academic tone; formal register; accurate referencing (APA/IEEE etc.); excellent paraphrasing and synthesis	Mostly academic tone; minor lapses in style or referencing	Adequate attempt at academic style; occasional inappropriate register; referencing incomplete	Weak academic style; frequent lapses in tone; referencing often incorrect	No academic style; inappropriate tone; little or no referencing

Figure 1: Writing Rubric for FYP Reports

Each criterion was rated on a five-point Likert scale (1 = Weak, 5 = Excellent). This provided a maximum of 20 points per report. The rubric was adapted from UTeM's FYP guidelines and aligned with CEFR B2 descriptors, particularly in the areas of clarity, organisation, and critical academic writing.

Data Analysis

Data analysis involved both **quantitative scoring** and **qualitative synthesis**:

- **Quantitative analysis:** Scores were averaged across reports for each rubric dimension, with mean values calculated to identify trends (e.g., highest and lowest scoring areas). The overall mean score (15.28/20, ~76%) was then interpreted in relation to university grading standards.
- **Qualitative analysis:** Narrative synthesis was used to interpret patterns in student performance, with emphasis on recurring strengths (e.g., methodological precision, structured organisation) and weaknesses (e.g., grammatical errors, limited critical analysis).

This dual analysis provided a comprehensive picture of the reports' academic quality, highlighting the intersection between technical competence and communication skills.

Results & Discussions

The evaluation of 22 FYP reports revealed an average total score of 15.28/20 (~76%), equivalent to a Good/Upper Second-Class standard. Technical execution consistently scored higher than language-related aspects. Strengths included strong technical accuracy and adherence to structure, while weaknesses were found in language use, academic style, and critical analysis.

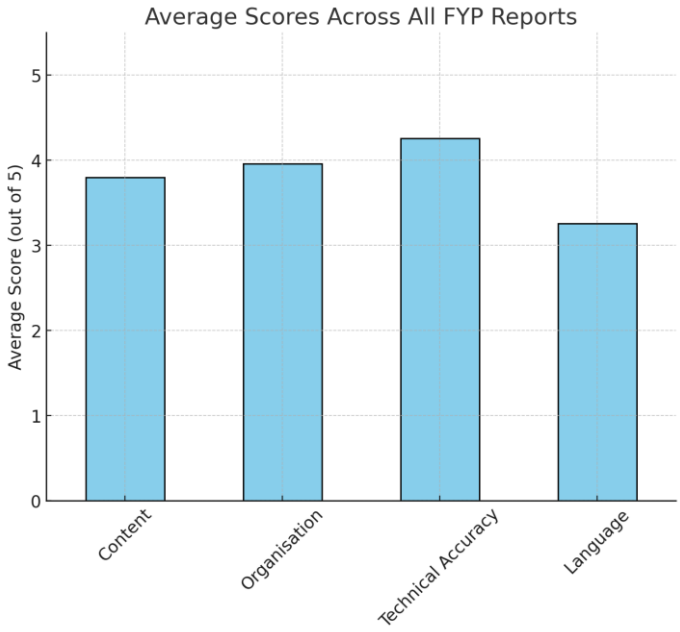

Figure 2: Average Scores Across All FYP Reports

Overall Performance

Across the 22 Final Year Project (FYP) reports evaluated, the average total score was **15.28/20 (~76%)**, indicating that most reports met the threshold of *Good / Upper Second-Class standard*. While technical execution was consistently strong, linguistic and stylistic limitations weakened overall academic quality. The findings reflect a recurring pattern: students demonstrate competence in engineering and applied science methodologies but struggle to convey their work with the level of academic clarity and criticality expected at the degree level.

Strengths

1. Technical Accuracy (Highest-scoring criterion) - Students excelled in technical execution and methodology. Reports frequently included correct applications of:
   - Experimental testing and simulations (e.g., vibration analysis, SLAM mapping, composites fabrication).
   - Use of appropriate tools/software (SPSS, Arduino IDE, Taguchi method, CAD, IoT platforms).
   - Validation procedures such as surveys, reliability tests, and experimental data comparisons.

The strength in technical accuracy demonstrates that students can apply engineering knowledge effectively, aligning with programme learning outcomes for technical competence.

2. Organisation and Structure - Nearly all reports followed the expected academic structure: Abstract → Introduction → Literature Review → Methodology → Results → Conclusion. Chapters were logically ordered, and most included figures, tables, and appendices to support clarity. This indicates that students are familiar with academic reporting conventions, even if the *quality of writing within sections varied*.

Weaknesses

1. Language and Academic Style (Lowest-scoring criterion)
   The weakest area was language use and adherence to academic style. Common problems included:

- Grammar errors (tense inconsistency, article misuse, awkward phrasing).
- Repetitiveness in problem statements, literature reviews, and findings.
- Descriptive tone instead of critical or analytical discussion.
- Referencing inconsistencies in APA formatting (missing details, informal citations, mix of citation styles).

This indicates that, although content knowledge is strong, students frequently struggle to convey ideas effectively in academic English, particularly at the CEFR B2 level.

2. **Critical Analysis** - Many reports presented data and results descriptively without deeper interpretation. For example, while graphs, tables, and test results were included, the implications, comparisons with existing studies, and limitations were often underdeveloped. This limited the demonstration of higher-order thinking skills (analysis, evaluation, synthesis).

The findings highlight a persistent duality in Malaysian FYPs: while students demonstrate strong technical competence, they are less prepared in academic communication. By situating these findings within CEFR, it is clear that many students fall short of B2-level expectations in clarity, organisation, and criticality. The lack of deeper interpretation and synthesis mirrors gaps in higher-order CEFR competencies. From a CLIL perspective, this indicates that communication and cognition are underdeveloped in FYP supervision. An ESP-CLIL hybrid approach could strengthen the alignment between technical communication and professional requirements.

Implications

Teaching & Supervision

- Stronger integration of English communication skills into technical courses (cross-curricular approach) is essential.
- Supervisors should emphasise not only technical rigour but also academic writing practices, including critical discussion and proper referencing.
- Workshops on APA style, paraphrasing, and critical writing could help address recurring issues.

Students' Employability

- While students display competence in technical design and experimentation, their reporting skills may hinder employability, particularly in industries where documentation, proposals, and technical reports are required.
- Bridging technical and language skills is therefore crucial to producing graduates who are both technically capable and communicatively effective.

Institutional Policy

- The evaluation highlights the need for language-focused interventions within FYP rubrics, ensuring balanced assessment between technical and linguistic competencies.
- Incorporating CEFR-aligned descriptors (e.g., clarity, organisation, criticality at B2 level) would better align UTeM's assessment with international academic standards.

Conclusion

In technical disciplines, the ability to communicate complex ideas with clarity and critical depth has become as consequential as technical accuracy itself. These collective evaluations demonstrate that UTeM students are technically competent but linguistically underprepared in academic writing. This imbalance underscores the importance of the Cross-Curricular Instructional Model of English Writing and Speaking (C-IMEWS), which aims to embed CEFR-aligned language support into technical subjects. Addressing weaknesses in language and critical writing will not only enhance academic outcomes but also contribute to producing globally competitive and employable graduates. In the end, embedding academic communication within FYP assessment reframes language proficiency from a peripheral skill to a measurable graduate outcome aligned with employability and international standards.

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