

# Decomartmentalization of TVET Curriculum: Cross-Curricular Integration in Final Year Projects to Address the Language Needs in TVET Programs

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**To Link this Article:** <http://dx.doi.org/10.6007/IJARBSS/v14-i10/23108> DOI:10.6007/IJARBSS/v14-i10/23108

**Published Date:** 02 October 2024

## Abstract

Malaysian Technical and Vocational Education and Training (TVET) programs have been associated with disparate curriculum for several years. Participating in a compartmentalised curriculum may allow a student to develop deep knowledge in a single field; yet, it frequently secludes students from other disciplines and vital soft skills important for modern jobs, especially those requiring linguistic proficiency. This study investigates the gap between the domain-specific skills of TVET students and their language requirements at Institutes of Higher Learning (IHLs), particularly regarding Final Year Projects (FYPs). The study, including five faculties and guided by an examination of relevant academic handbooks, presents methods for incorporating language skills into FYP activities to enhance both technical expertise and communication ability. The findings revealing a bias from FYPs are expected, as most of them neglect to develop skills in report writing, presentation, and collaboration, favouring technical expertise instead. Combining language training with technical education will provide TVET graduates with technical expertise and the ability to communicate and collaborate effectively, which are crucial skills in the employment market. The document proposes curriculum modifications to promote cross-curricular integration, allowing universities and colleges to adopt a modular pedagogical model rather than a fragmented one, so aligning more effectively with the requisite skill sets of specific fields. Additional study is required to investigate the impact of integration models on student outcomes and employment in diverse academic disciplines.

**Keywords:** Cross-Curricular Integration, Technical And Vocational Education and Training (Tvet), Decompartmentalization, Language Competences, Technical Education.

**Introduction**

In today's fast-evolving world economy, there is an increasing demand for graduates possessing other than purely technical skills: interdisciplinarity, communication skills of the highest quality, and effective collaboration. Precisely because work is becoming increasingly complex and more interconnected across traditional boundaries, the development of an ability to synthesize information coming from many areas and to apply technical and interpersonal skills has become an imperative in workforce preparation. It is a transformation that begs many questions about traditional higher education systems, especially those with rigid subject divisions and fragmented curricula.

Malaysia's higher education system, including the structure of TVET, has traditionally adopted a compartmentalised approach in which courses are largely taught in isolation. While this method has resulted in a steady supply of engineering and technology specialists; however, it often leaves graduates ill-prepared for the many challenges they will face in today's workplace. Most Malaysian companies are complaining that fresh university graduates lack sufficient skills in terms of clear communication, effective teamwork, and critical thinking across dynamic and interdisciplinary settings (Hassan & Rashid, 2018).

This paper attempts to deconstruct the segments in the Malaysian Curriculum, particularly those in the TVET programs, into one where language skills, especially in English, are integrated into the Final Year Projects. This may help narrow the gap between technical education and the linguistic needs of students. The focus is on how integrating language skills, especially English, into Final Year Projects (FYPs) may bridge the gap between technical education and students' linguistic needs. Final Year Projects (FYPs) serve as crucial capstone endeavours that allow students to showcase their technical skills; however, insufficient focus on language and communication may impede their capacity to articulate ideas, present their work, and collaborate effectively with peers. Through the promotion of cross-curricular integration, FYPs might evolve into comprehensive learning experiences in which students demonstrate their technical proficiency alongside their abilities in communication and problem-solving within collaborative settings.

This study contributes to the discussion on curriculum reform in Malaysian higher education by analysing how cross-curricular integration may improve student readiness for the modern workforce. By developing both technical and interpersonal skills, TVET programs can more effectively align with the Malaysia Education Blueprint 2015-2025, which emphasises a balanced and comprehensive educational framework (Ministry of Education Malaysia, 2015). This is important research that will break the critical deficiency in the curriculum and provide recommendations for future enhancement in order to enable students to enhance their employability and performance in an increasingly interrelated world. Specifically, this research focusses on the gap between technical training and development of language and communication competencies of Malaysian TVET programs. Although TVET curricula seem to structure students with technical skills, they often lack the development of soft skills, especially in language proficiency. Consequently, students may have difficulties in tasks like report writing, oral presentations, and collaboration. In particular, these are expected during their FYPs, where such skills are needed to be explicitly expressed in order to demonstrate technical proficiency effectively.

A deficiency in cross-curricular integration also implies that students will be educated only in their technical disciplines, while there will be no place for communication, cooperation, or critical thinking abilities. This shortcoming leaves students ill-prepared for the multifaceted demands of the workforce, where professionals must cooperate across disciplines, tackle complex difficulties, and communicate effectively with diverse audiences. Thus, this study seeks to tackle the ensuing research questions:

1. How can language proficiency be effectively integrated into Final Year Projects (FYPs) within Malaysian TVET programs to enhance both technical and communication skills?
2. What are the key challenges and opportunities in implementing cross-curricular integration in Malaysian TVET programs, particularly for developing students' communication and interdisciplinary competencies?
3. To what extent does the current compartmentalized curriculum structure in Malaysian TVET programs impact graduates' preparedness for the interdisciplinary demands of the modern workforce?

## **Literature Review**

### *Rigorous Subject Specialisation and Its Benefits*

Curriculum compartmentalisation has been prevalent for a considerable duration, and despite opposition, it is valued for cultivating significant expertise, especially in specific fields such as engineering, medicine, and law. This technique seeks to facilitate students' understanding of essential concepts, preparing them to meet the professional and regulatory standards required by their particular fields. In Malaysia's engineering institutions, students experience a rigorous training program that complies with the exacting requirements set by the Board of Engineers Malaysia (BEM) (Husbands, 2010). This signifies that graduates get a solid foundation in technical knowledge while concurrently developing the practical skills necessary for professional success.

In these specialist domains, educational programs are frequently focused on cultivating specific abilities. This emphasis is crucial in professions where precision and safety are of utmost importance. Engineers and medics must comply with rigorous restrictions, as little errors might lead to substantial consequences. Concentrating on specialisation allows students to cultivate the essential expertise necessary for high-stakes professions (Eraut, 1994). Compartmentalised education facilitates the transition from basic knowledge to advanced application, ensuring students are prepared for professional certification upon graduation.

In addition, expertise plays a critical role in those fields that are controlled by the regulatory bodies. The educational trajectory is hence aligned with professional licensing that guides the student in the right direction of career achievement. Students have focus on education and guidance while enabling them to develop the skill and knowledge that would be needed in their respective fields. This ultimately ensures that the graduates can achieve the industrial standards and be adequately prepared to make significant impacts in the companies upon employment.

### **Problems of Curriculum Compartmentalization**

An education based on compartmentalization offers many advantages but, at the same time, creates serious problems, especially with regard to interdisciplinary learning and the acquisition of important soft skills. One strong critique is that it leads to "academic silos" and can restrict students within their own disciplines, all too often causing them to overlook other avenues of education (Barrie, 2006). This could make it difficult for them to perceive a greater perspective in which to engage in complex, multifaceted problems associated with the real world.

This issue is especially evident in Technical and Vocational Education and Training (TVET) programs. Students receive intensive training in technical abilities but frequently overlook the importance of soft skills, like communication, teamwork, and critical thinking. The specialist framework of TVET courses sometimes limits the cultivation of competencies vital for the contemporary diverse and collaborative workforce (Carmichael, 2017). Without the incorporation of soft skills in their training, TVET graduates may be inadequately prepared for the job market, where effective communication and collaboration are vital for success.

The rigid structure of a compartmentalised curriculum may restrict opportunities for integrative projects and learning experiences. Such projects allow students to apply information from other professions, enhancing their understanding of how several disciplines intersect to address real-world challenges. Without these opportunities, students may struggle to apply their particular knowledge to broader contexts, hence limiting their employability and career flexibility (Froyd & Ohland, 2005). As industries become increasingly interconnected and globalised, the ability to integrate information from several disciplines is essential. The compartmentalized curriculum might be effective in developing specialist skills but could shortchange students of the versatile skill sets necessary to be successful in the ever-changing workplaces.

### **The Importance of Linguistic Proficiency in Technical Fields**

In recent years, there has been a growing recognition of the importance of language and communication skills in technology fields. The engineering, computer technology, and applied sciences disciplines are areas that demand skills beyond those in mere technical skills. Employers are progressively pursuing graduates that can use their specific knowledge, communicate their ideas clearly, work collaboratively in teams, and adapt to various transdisciplinary environments (Andrews & Higson, 2008).

Proficient communication skills are vital in technical roles, since specialists frequently need to draft detailed reports, convey their findings, and collaborate with colleagues from varied backgrounds. Engineers often need to clarify complex concepts to non-technical stakeholders, such as clients or project managers. Similarly, technology professionals frequently collaborate with persons from business, design, or marketing to develop innovative solutions. These roles need adept communication—both written and verbal—and the ability to communicate efficiently within teams. Linguistic proficiency is an important complement to technological skill (Hassan & Rashid, 2018).

There is an increasing demand for proficiency in languages within Malaysian TVET curricula. Many graduates are involved in or deal with diverse industries that need them to

communicate with supervisory personnel, colleagues, and clients from diverse cultures and languages. The piece-meal approach adopted within the training curriculum of many TVET programs leaves out vital areas of communication. Consequently, students may be challenged with composing reports, executing presentations, or even involving themselves in group projects where good communication is necessary (Mansor, 2017). It would be important for Malaysian TVET to bridge the gap in these areas to make graduates better prepared for modern workforce requirements.

### **Global Trends in Curriculum Reform**

The deficiency of rigid and compartmentalized education is an emerging realization among many countries, which are renovating their higher education curricula to incorporate interdisciplinary learning and the development of soft skills. Universities in Europe and the United States are adopting more flexible, integrated curricula that enable students to pursue courses across several fields and engage in interdisciplinary projects. The aim is to develop comprehensive graduates who exhibit expertise in respective disciplines and demonstrate proficiency in critical thinking, problem-solving, and teamwork skills (Froyd & Ohland, 2005). A common method is problem-based learning (PBL), wherein students tackle real-world issues that need the synthesis of knowledge from several disciplines to formulate solutions. This approach promotes critical thinking, collaboration, and the application of information in practical situations. Project-based learning fosters interdisciplinary collaboration by involving students from several academic fields in projects that mirror the challenges they will face in their careers (Shakir, 2009). Efforts are being made to cut down the silos and make learning more active, effectively preparing students for what they may face in the modern professional world.

There is a growing recognition in Malaysia of the need for such changes at the national level. The Malaysia Education Blueprint 2015-2025 emphasizes the need for holistic education, and it calls for an integrated curriculum to provide technical training together with the development of soft skills (Ministry of Education Malaysia, 2015). Despite the initiation of interdisciplinary techniques, such as problem-based learning, by several Malaysian institutions, the application of these innovations in TVET programs has faced limitations. Many TVET institutions primarily emphasise technical training, sometimes overlooking the essential soft skills necessary for success in modern industries. To sustain competitiveness in the global economy, Malaysia must expand these reforms and offer more flexible, integrated learning environments across all levels of higher education.

### **Methodology**

This study closely looks into the academic handbooks from five different faculties of one Malaysian higher education institution in order to identify opportunities for blending different areas of study within the FYP courses. The focus was on how language skills could be integrated into the curriculum alongside technical training. It looked into the learning outcomes of these FYP courses to determine exactly where language proficiency-particularly in the areas of report writing, presentation, and effective communication-could be inserted into the existing technical competencies.

Of these, five faculties were targeted for this analysis that included programs in engineering, technology, applied sciences, and other technical and vocational education areas. These had



been selected because they are basically technical training institutions and as such are ideal candidates for discussing issues of cross-curricular integration. More precisely, the study looked at those areas in the curriculum where language skills were required but were apparently not supplied, especially in the areas of technical reporting and oral presentations.

**Findings**

FYPs have a vital role in preparing students for real-world challenges by requiring students to combine technical expertise with effective communication. Based on the learning outcomes of five different programs in UTeM, it is very noticeable that written and oral communication play dominant roles in the proposals of the projects and necessitate an inter-curricular inclusion of the English language in those programs. The rationale for this integration is highlighted in Table 1 below, based on the learning outcomes of Final Year Project I from five different faculties.

**Table 1**  
*Learning Outcomes of Final Year Project I from Five Different Faculties*

FACULTY 1	FACULTY 2	FACULTY 3	FACULTY 4	FACULTY 5
XXXX 4792 FINAL YEAR PROJECT 1	XXXX 4912 FINAL YEAR PROJECT I	XXXX 3234 FINAL YEAR PROJECT I	XXXX 4912 FINAL YEAR PROJECT I	XXXX 3973 FINAL YEAR PROJECT I
<p><b>Learning Outcomes:</b> Upon completion of this course, the student should be able to:</p> <ol style="list-style-type: none"> <li>conduct proper literature survey and identify the problems, objectives and scope of project clearly.</li> <li>select, plan and execute a proper methodology in problem solving.</li> <li>present the project proposal in written and in oral format effectively.</li> <li>work systematically and commit to professional ethics.</li> </ol>	<p><b>Course Learning Outcomes:</b> Upon completion of this course, student should be able to:</p> <ol style="list-style-type: none"> <li>identify the problem statement, objectives and scope of project.</li> <li>choose appropriate methodology to solve complex engineering problem based on relevant literature review.</li> <li>demonstrate ethical principles, responsibilities and norms of engineering practice.</li> <li>demonstrate knowledge and principles of finance and project management.</li> <li>communicate effectively on complex engineering activities and write effective reports.</li> </ol>	<p><b>Learning Outcomes:</b> Upon completion of this course, student should be able to:</p> <ol style="list-style-type: none"> <li>identify issues or problems in industrial technology and propose solutions.</li> <li>provides proposal for the implementation of Final Year Project.</li> <li>presents ideas related to research to panel evaluators in more systematic.</li> </ol>	<p><b>Learning Outcomes:</b> Upon completion of this subject, student should be able to:</p> <ol style="list-style-type: none"> <li>applying knowledge and skills they acquired from other courses.</li> <li>identify a problem, gather relevant information to the problem and propose solutions to problems.</li> <li>understand the nature of the problem and investigate work done by other researchers in line with their work.</li> <li>propose a methodology on how to solve the problems.</li> <li>submit and present their research proposal</li> </ol>	<p><b>Learning Outcomes:</b> Upon completion of this subject, student should be able to:</p> <ol style="list-style-type: none"> <li>identify the problems associated with the needs of industry in the ict domain with literature review</li> <li>develop project using an appropriate method</li> <li>defend the results to elaborate the significance of the project</li> <li>organize information to produce a formal report</li> </ol>

Based on Table 1, the learning goals for Final Year Project 1 across all five faculties specifically stipulate that students must effectively convey their project proposals in both written and oral forms. Integrating English language support into these programs is vital for students to effectively communicate difficult technical concepts and ensure their unique solutions and contributions are recognised and valued. This integration will equip students with the communication ability required for their professional endeavours, addressing the language needs of their technical fields at both national and international levels.

Next, Final Year Project II can be considered as a critical stage in the students' academic journey, where they showcase the culmination of their technical knowledge and research skills. Beyond technical competencies, however, lie important elements of communicating findings in both written and oral form that are integral to a successful project. The learning outcomes from five different programs at UTeM strongly indicated in Table 2 shows the necessity of integrating English language instruction into the FYP curriculum. Below, the importance of cross-curricular integration of English is discussed based on learning outcomes of FYP II from various faculties.

Table 2

Learning Outcomes of Final Year Project II from Five Different Faculties

FACULTY 1	FACULTY 2	FACULTY 3	FACULTY 4	FACULTY 5
XXXX 4894 FINAL YEAR PROJECT II  Learning Outcomes: Upon completion of this course, the student should be able to: <ol style="list-style-type: none"> <li>1. identify, formulate, research literature and analyze problem.</li> <li>2. conduct investigation using research-based knowledge and methods.</li> <li>3. apply ethical principles in project implementation.</li> <li>4. present the results in written and in oral format effectively.</li> <li>5. identify basic entrepreneurship skills in project management.</li> <li>6. apply reasoning informed by contextual knowledge.</li> <li>7. engage in independent and lifelong learning.</li> </ol>	XXXX 4924 FINAL YEAR PROJECT II  Course Learning Outcomes: <ol style="list-style-type: none"> <li>1. design solutions, systems, components or processes for complex engineering problems that are sustainable and meet specified requirements.</li> <li>2. investigate complex problems using research-based knowledge, analysis and interpretation of data, and synthesis of information to provide valid conclusions.</li> <li>3. demonstrate ethical principles, responsibilities and norms of engineering practice.</li> <li>4. engage in life-long learning activities and acquire basic knowledge on entrepreneurship.</li> <li>5. communicate effectively on complex engineering activities and write effective reports.</li> </ol>	XXXX 3316 FINAL YEAR PROJECT II  Learning Outcomes: Upon completion of this course, student should be able to: <ol style="list-style-type: none"> <li>1. identify issues or problems in industrial technology and propose solutions.</li> <li>2. provides proposal for the implementation of final year project.</li> <li>3. presents ideas related to research to panel evaluators in more systematic.</li> </ol>	XXXX 4924 FINAL YEAR PROJECT II  Learning Outcomes: Upon completion of this subject, student should be able to: <ol style="list-style-type: none"> <li>1. identify and solve problems through academic research.</li> <li>2. carry out research with minimum supervision</li> <li>3. plan and manage their work effectively.</li> <li>4. present, discuss and analyse results of the research clearly, effectively and confidently in both oral presentation and in dissertation.</li> </ol>	XXXX 3983 FINAL YEAR PROJECT II  Learning Outcomes: Upon completion of this subject, student should be able to: <ol style="list-style-type: none"> <li>1. verify the project based on the project timeline</li> <li>2. complete the project output that has potential commercial value</li> <li>3. defend the results to elaborate the significance of the project</li> <li>4. organize information to produce a formal report</li> </ol>

As shown in the Table 2 above, in all five programs at UTeM, the learning outcomes agree on the importance of effective communication: written and oral, in Final Year Project II. The inclusion of English language learning within these programs is imperative to guarantee students cope with the demands of presenting sophisticated ideas, research work, and writing formal reports. Cross-curricular English training will give students the necessary proficiency to present their technical results in clear, confident, and professional terms, while ensuring that the novelty in their solutions and academic merit thereof are fully valued.

**Conclusion**

Upon reflection of the Final Year Projects (FYPs) across many faculties at UTeM, it is evident that technical proficiency alone is insufficient for student success. The capacity to articulate ideas, convey research results, and explain intricate concepts proficiently—both in written and spoken form—is essential. These talents are not only academic prerequisites; they reflect the exigencies of the professional realm. Students without excellent English language skills may be constrained not by their technical knowledge, but by their inability to articulate it clearly, systematically, and professionally.

The incorporation of English language instruction into these technical programs is not intended to diminish their emphasis on specialised topics, but to augment students' ability to communicate their knowledge more effectively. It involves equipping pupils with the means to address intricate issues while ensuring their answers are comprehended, valued, and influential. In a context where cooperation, presentation, and communication are as vital as technical proficiency, the cross-curricular integration of English is imperative. The objective extends beyond merely completing the FYP; it aims to equip students for job success, where effective communication may distinguish a decent idea from a transformational one. By integrating English language proficiency into final year projects, UTeM can cultivate a cohort of graduates who are not only technically adept but also able to articulate their ideas with clarity and assurance—both in Malaysia and internationally.

**Recommendations for Future Research**

This study investigates the embeddedness of language skills in FYP courses; some fair prospects of further research into cross-curricular integration in both technical and

nontechnical streams were also indicated. As an example, research into curricula inclusion of critical thinking, project management, and digital literacy in both TVET institutions might better prepare the students for entering the job market.

Moreover, conducting longitudinal studies that assess the effects of cross-curricular integration on student performance, communication skills, and employability would provide valuable insights into the effectiveness of these modifications. This research may aid policymakers and educators in understanding the lasting benefits of deconstructing traditional higher education structures and fostering the development of more well-rounded graduates.

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