

# Instituto Nacional de Ciências e Tecnologia de Timor – Leste



## Scientific Research Report INCT 2025

**IMPLEMENTATION OF THE  
MODULAR SYSTEM IN  
SECONDARY SCHOOLS: A CASE  
STUDY OF VOCATIONAL -  
TECHNICAL SCHOOLS**

**Prof. Dr. Augusto da Costa,SS.,  
M.Theo.,M.A., M.Pd.**

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### IMPLEMENTATION OF THE MODULAR SYSTEM IN SECONDARY SCHOOLS: A CASE STUDY OF VOCATIONAL - TECHNICAL SCHOOLS

**Area of Knowledge: Education, Human Development and Social Inclusion**

**Research Report Prepared By:**

**Principal Investigator:** Prof. Dr. Augusto da Costa, S.S.,  
M.Theo.,M.A.,M.Pd

**Investigator 1:** Agosto Olo Tomé, B.Ed.,L.Ed.,M.Pd

**Investigator 2:** Sabino da Costa Gusmão Borges, L.Ed.,M.Ed.

**Investigator 3:** Meliana Yanti Mali, S.Pd.,M.Ed.

**Investigator 4:** Jorge Belo, L.Ed.,M.Ed.

Dili, 26<sup>th</sup> November 2025

## Declaration

Name of principal investigator: Prof. Dr. Augusto da Costa, S.S., M.Theo.,  
M.A., M.Pd.

Electronic address: [acostas3bk2015@gmail.com](mailto:acostas3bk2015@gmail.com)

Telephone/mobile phone: 77447722

Identity Card Number: 06020606077101007

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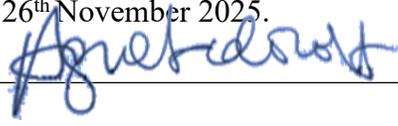
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Signature of the principal investigator: \_\_\_\_\_.

## **Implementação do Sistema Modular em Escolas Secundárias: Um Estudo de Caso em Ensino Secundário Técnicos - Vocacionais**

**Resumo:** Este estudo investiga a implementação do sistema modular nos ensino secundário técnicos - vocacionais em cinco municípios de Timor-Leste. Dados coletados com 63 participantes, incluindo professores, alunos e dirigentes nas escolas, mostram que os professores utilizam referências internacionais e adaptam os currículos para melhorar o aprendizado dos alunos. O sistema modular oferece avaliações flexíveis e integra teoria e prática no processo educativo. No entanto, desafios como conteúdos curriculares desatualizados, falta de recursos adequados e treinamento prático limitado dificultam a eficácia do sistema. A motivação e a matrícula dos estudantes diminuíram, enquanto os professores enfrentam sobrecarga de trabalho e problemas de certificação que impactam as chances de emprego dos alunos. Apesar dessas dificuldades, o sistema prevê recuperação de créditos, estágios e exames nacionais que auxiliam o progresso dos estudantes. Os resultados indicam a necessidade urgente de atualizar o currículo, melhorar os recursos e fortalecer a certificação para aprimorar a qualidade da educação profissional em Timor-Leste.

**Palavras-chave:** Sistema modular, Educação técnico-vocacional, Implementação curricular

## **Implementation of the Modular System in Secondary Schools: A Case Study of Technical - Vocational Schools**

**Abstract:** This study investigates the implementation of the modular system in technical - vocational schools in Timor-Leste's five municipalities. Data from 63 participants, including teachers, students, and school leaders, reveal that teachers utilize international references and modify curricula to improve student learning. The modular system offers flexible examinations and integrates theory with practical learning. Nevertheless, challenges such as outdated curriculum content, inadequate facilities, and limited practical training hinder effectiveness. Student motivation and enrollment rates have decreased, while teachers face heavy workloads and certification issues that affect student job prospects. Despite these challenges, credit recovery options, internships, and national exams support student progression. The findings suggest urgent needs for curriculum revision, resource enhancement, and certification improvements to strengthen vocational education quality in Timor-Leste.

**Keywords:** *Modular system, Technical-vocational education, Curriculum implementation*

## Table of contents

Cover.....	i
Title Page .....	ii
Declaração.....	iii
Resumo .....	iv
Abstract.....	v
Índice .....	vi
1. Introduction.....	1
1.1. Contextualization .....	2
1.2. Literature Review.....	3
1.3. Problematization .....	3
1.4. Hypothesis Formulation.....	4
1.5. Research Objective .....	5
1.5.1. General Objective .....	5
1.5.2. Specific Objectives .....	5
1.6. Importance of Research .....	6
1.7. Organization of research.....	7
1.8. Local Geographic.....	7
2. Methodology .....	9
2.1. Research Methodology .....	9
2.2. Definition of the Research Universe and Sample .....	9
2.3. Methods, Techniques, and Instruments of Data Collection .....	10
2.4. Data Collection, Analysis and Data Transcription.....	11
2.4.1. Data Collection .....	11
2.4.2. Data Analysis .....	11
2.4.3. Data Transcription.....	12
3. Work Development - Analysis of Results and Discussion of Results.....	13
3.1. Analysis of Results.....	13

3.1.1. Realization of Activities.....	13
3.1.2. Interview Result.....	13
4. Conclusion and Recommendation .....	62
4.1. Conclusion .....	62
4.2. Recommendation .....	63
5. Bibliographical References .....	66

## **List of tables**

Table 1: Research Sites by Municipality and School.....	8
Table 2: Details about the targets, subjects, and participants in the research ....	10
Table 3: Description of Research Participants from Schools.....	13

## List of figures

Figure 1: Components in data analysis .....	10
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## **List of Abbreviations**

- IFA : Informante Aluno (Student Informant)
- IFM : Informante Manorin (Teacher Informant)
- IFD : Informante Dirigente (School leader Informant)
- ESTV : Ensino Secundário Técnico-Vocacional (Technical-Vocational Secondary Education)
- FCT : Formação do Contexto de Trabalho (Work Context Training)
- PAP : Prova de Aptidão Profissional (Professional Aptitude Test)

## **1. Introduction**

### **1.1. Contextualization**

Technical and Vocational Education constitutes a strategic foundation for development in emerging nations, such as the Democratic Republic of Timor-Leste, primarily aiming to cultivate a highly skilled workforce and qualified technicians (Gyimah, 2020, p6). This sector is designed to equip graduates with practical competencies, enabling them to transition directly into employment within their specific fields (Maryanti et al., 2020, p56). To enhance this effectiveness, the technical-vocational education system has incorporated a modular approach. This system fundamentally emphasizes skills-based learning, structuring content into distinct, measurable units (Rohmana et al., 2021, p70). Consequently, it offers essential flexibility in managing the pace of instruction (Sumandya et al., 2021, p308), allowing students to concentrate on practical comprehension and the direct application of each skill acquired (Fahrurrozi et al., 2023, p357). Nevertheless, the internal challenge of implementation persists, as many teachers in Timor-Leste remain accustomed to traditional, theory-centric teaching methodologies.

The instructional and assessment processes within technical and vocational secondary schools are strictly governed by Decree-Law 8/2010. This regulation explicitly mandates that the primary duty of these schools (Article 3) is to provide adequate preparation for professional life and to strengthen the link between educational institutions and the world of work. Consequently, the assessment system must be progressive: internal summative assessment (Article 17) must be conducted at the conclusion of every module, with the final subject grade (Article 33) being determined by the average score of those modules. This legal mandate clearly rejects the semester-based examination model, instead requiring a staggered evaluation approach designed to ensure competency mastery.

Nevertheless, the inherent potential and legal mandate of this modular system are severely undermined by a clear disparity between established policy and its practical application on the ground. Preliminary information gathered by the researchers from a teacher at a technical and vocational secondary school in Dili indicates a significant deviation from the mandates established in Decree-Law 8/2010:

*“Many vocational schools implement learning activities and examination processes that are the same as teaching and learning activities in general high schools.”*

According to the teacher, the actual function of the modular system is as follows:

*“After completing the learning activities in the first module, a modular test or exam should be conducted before moving on to the next module. Therefore, in vocational schools, exams for the first, second, and third trimesters are not implemented. However, this practice often occurs in vocational schools.”*

The implementation of the modular system in technical and vocational secondary school in Timor-Leste confronts three major obstacles. First, issues concerning curriculum and physical resources: The modular curriculum is often deemed contextually irrelevant, frequently referencing equipment that is unavailable in Timor-Leste. This situation is compounded by a profound lack of facilities, including insufficient practical training hours and modern equipment, which compels instructors to prioritize theoretical teaching despite the practical component being significantly mandated. Second, challenges related to educators and management: Teachers are subjected to heavy workloads and frequently teach subjects outside their specialized fields. Compounding this, they must independently prepare supplementary materials and adapt modules amidst minimal governmental support.

The third critical issue pertains to assessment practices and the resulting quality of graduates. The evaluation process is severely compromised by significant delays in submitting grades and by re-examination procedures that inherently risk damaging the integrity of the assessment. This poor state of affairs directly contributes to a decline

in student motivation and enrollment figures. The culmination of these issues is a systemic failure in certification, leaving graduates without formal recognition of their acquired competencies, which severely restricts their employment opportunities and ultimately undermines the core mission of vocational education.

## **1.2. Literature Review**

According to Grundall & Mack (2023, p166) Technical and Vocational Education (TVE) are an important component in developing many countries economically and socially. TVE contributes to enhancing equal access conditions to education, employment, entrepreneurship, and decent work as it is an essential pillar for equity, productivity, and the countries sustainability (Pais et al., 2024, p9826).

The modular system within TVE is widely regarded as an effective framework for enhancing student skills, primarily because it is underpinned by the principles of Competency-Based Education (Rahman et al., 2021, p44). CBE fundamentally shifts the pedagogical emphasis away from instructional time and process (which characterizes general schooling) toward measurable and specific learning outcomes (Williams, 2025, p1).

The efficacy of the competency-oriented TVE model is affirmed by regional successes, despite Timor-Leste's unique challenges. Malaysia exemplifies this through the Industrialized Building System (IBS), demonstrating that strong industrial synergy can enhance productivity and workforce relevance (A. Halim et al., 2024,p13; Alawag et al., 2024,p1; Jaffar et al., 2025,p58). Similarly, Indonesia's vocational revitalization emphasizes competency-based training, industry partnerships, and modular use, proving that successful implementation hinges on critical job analysis and close collaboration in curriculum and certification (Alenezi et al., 2024,p9; Yoto, Marsono, et al., 2024,p1; Ruslin, 2022,p2,22,23). Globally, the International Labour Organization (ILO, 2023) confirms that training failures in developing nations often stem from the lack of adherence to competency frameworks or industry involvement,

thereby validating that effective modular systems require rigorous industrial benchmarking to achieve measurable skill outcomes (Surono, 2025, p178,185; Afriyie, 2017, p31).

### **1.3. Problematization**

1. How is the implementation of the modular system in secondary vocational and technical schools in Timor-Leste?
2. How is the modular system applied in teaching and learning activities?
3. How is the preparedness of teachers and perceptions of teachers, and students toward the modular system?
4. What are the main challenges and obstacles encountered in implementing modular-based learning?
5. How is the effectiveness of the modular system in enhancing students' practical skills in secondary vocational-technical schools in Timor-Leste
6. How the implementation of the modular system affects the teaching and learning process in secondary vocational-technical schools.

### **1.4. Hypothesis Formulation**

Based on the problematization outlined above, the hypotheses formulated for this study are as follows:

1. The implementation of the modular system in learning activities is still inconsistent and varies across schools due to limited infrastructure, incomplete modules, and insufficient coordination between curriculum planning and classroom application.
2. Teachers generally perceive the modular system positively as a structured approach to vocational learning, but their preparation is inadequate due to lack of training, unclear guidelines, and limited access to teaching resources.

3. Schools and teachers face significant obstacles in implementing the modular system, including a shortage of practical materials, limited teaching staff, lack of standardized assessment tools, and minimal government support.
4. The modular system has the potential to enhance students' practical skills, but its effectiveness is limited due to the unavailability of equipment, inadequate practice facilities, and insufficient synchronization between theory and hands-on training.
5. The application of the modular system has influenced the teaching and learning process by promoting structured planning and competency-based learning, yet its impact remains suboptimal because of implementation gaps, such as incomplete modules, limited class time, and a lack of support materials.

## **1.5. Research Objective**

### **1.5.1. General Objective**

Generally, the objective of this study is to examine the implementation of the modular system in secondary vocational-technical schools in Timor-Leste.

### **1.5.2. Specific Objectives**

Specifically, the objective of this study are:

1. To analyze how the modular system is applied in teaching and learning activities.
2. To assess the preparedness and perceptions of teachers and students toward the modular system.
3. To identify the main challenges and obstacles encountered in implementing modular-based learning.
4. To examine the effectiveness of the modular system in enhancing students' practical skills in secondary vocational-technical schools in Timor-Leste.
5. To analyze how the application of the modular system affects the teaching and learning process in secondary vocational-technical schools.

## **1.6. Importance of Research**

The results of this study are expected to help all parties, such as:

1. Students

The study will provide insights into how a module-based learning system can enhance students' practical skills, better preparing them to meet the industry and market demands.

2. Teachers

Provide useful information about the challenges and opportunities inherent in implementing a modular system, and also introduce effective strategies that can be used to overcome emerging constraints, such as resource constraints or difficulties in adapting teaching methods

3. Schools

Provides insight into the effectiveness of modular systems in enhancing learners' practical skills, as well as to help schools in re-evaluating existing teaching approaches and in improving the quality of vocational education provided.

4. Communities and industries

By improving the quality of vocational education, graduates can be well-skilled to meet the needs of an increasingly competitive labor market. This will strengthen the link between the world of education and the world of industry and provide long-term benefits to the economic and social development of Timor Leste.

5. Ministry of Education

Provide data and findings to education policymakers to formulate more effective policies in the implementation of modular systems in vocational schools in Timor Leste.

## **1.7. Organization of research**

This study began by defining its focus and objectives, aiming to examine how the modular system is implemented in vocational–technical secondary schools. A review of relevant theories and previous studies was conducted to establish a solid conceptual foundation regarding the characteristics of the modular system, its instructional principles, and its relevance to technical–vocational education.

The methodological design was then developed by adopting a case-study approach and selecting six municipalities: Dili, Manatuto, Baucau, Aileu, Ermera, and Liquiçá as research sites. At this stage, data collection instruments, including interview guides and observation sheets, were prepared to explore the processes involved in the implementation of modular teaching.

Data were collected from three groups of participants: Grade 2 and Grade 3 students, subject teachers, and school leaders. Interviews were conducted to understand students’ learning experiences, teachers’ instructional strategies, and school-level policies that support the modular system. Observations were also carried out to capture how the theoretical and practical components of learning were enacted in real teaching environments.

## **1.8. Local Geographic**

This study was carried out in six municipalities of Timor-Leste, namely Dili, Manatuto, Baucau, Aileu, Ermera, and Liquiçá. These municipalities were selected to ensure a broad representation of vocational–technical secondary schools operating in diverse geographical, social, and administrative settings. The inclusion of multiple regions provided the opportunity to observe how the modular system is implemented across schools with different levels of infrastructure, resources, and institutional capacities.

In each municipality, the research took place specifically in vocational–technical secondary schools that offer modular-based programs. These institutions were chosen

because they represent the main providers of technical and vocational education in the country and play a central role in implementing the national modular curriculum. Conducting the study across different municipalities allowed for a deeper understanding of how contextual factors—such as school conditions, access to materials, administrative support, and student demographics—shape the actual implementation of modular teaching.

The geographical distribution of the research sites also made it possible to compare school practices between urban, peri-urban, and semi-rural settings. This range of locations contributed to capturing variations in learning environments, institutional priorities, and resources available to teachers and students within the modular system.

To provide a clear overview of the research sites, a summary table is included below. The table lists the six municipalities involved in the study along with the vocational–technical schools where data collection was conducted.

Table 1: Research Sites by Municipality and School

<b>Municipality</b>	<b>Vocational–Technical Schools Included in the Study</b>
<b>Dili</b>	ESTV - EEC Becora, ESTV - GTI Becora, ESTV - EHT Becora, ESTV - IT 28 de Novembro Becora, ESTV - Sao Miguel Comoro, ESTV ETI - Fomento, and ESTV - Público de Atauro
<b>Manatuto</b>	ESTV - Mahunu Bukar Manatuto
<b>Baucau</b>	ESTV - Don Bosco Fatumaca
<b>Aileu</b>	ESTV - Aileu Melere
<b>Ermera</b>	ESTV - EFD Gleno and ESTV - Railaco
<b>Liquiçá</b>	ESTV - EC Liquiça and ESTV - Agrico la Leorema

## **2. Methodology**

### **2.1. Research Methodology**

This study uses a qualitative case study as its research design. This approach was chosen because this study aims to understand the phenomenon in depth, the implementation of the modular system in the context of technical and vocational schools in Timor-Leste, and explore the challenges and impacts of implementing this system. Qualitative research can be defined as the study of phenomena (Busetto et al., 2020, p1) and is very appropriate for answering the questions of why and how (Islam & Aldaihani, 2022, p1) in addition to gathering in-depth insights, exploring human experiences and perspectives, and capturing contextual nuances that are often lost in numerical data interpretation (Lim, 2024, p1).

A case study is an empirical investigation of a case that uses a variety of data collection methods to study a contemporary phenomenon in a real-life context, and the researcher does not take an active role in the case being investigated (Wohlin, 2021, p3). To obtain data in this study, researchers will conduct research at technical and vocational schools in Dili, Manatuto, Baucau, Aileu, Ermera e Liquiçá, both private and public schools.

### **2.2. Definition of the Research Universe and Sample**

The population in this study were teachers, directors of schools, and students at technical and vocational schools. The sample will be decided according to the opinions of experts. According to Creswell & Creswell (2018, p.264), samples in qualitative research depend on the themes collected until there is no more new information. Creswell & Clark (2018, p.231) suggest that case studies can include between 4 to 10 participants.

The target of this research activity is technical and vocational schools in the municipalities of Dili, Manatuto, Liquiça, Ermera, and Baucau. Each of these

municipalities will be represented by minimum one school, except for Dili, which will include all technical and vocational schools in the area, including those in Atauro.

The subjects of this research are students, teachers, and school leaders. At the same time, those who will participate in this activity are students and teachers who carry out teaching and learning activities in grades 2 and 3 who will choose at least one student and one teacher from each level, as well as one person as director, or vice of director, or head of study program.

Table 2: Details about the targets, subjects, and participants in the research

Districts	Total Schools	Students	Teachers	Schools Leader	Total Participants
Dili	7	1 until 4	1 until 4	1	21 until 63
Manatuto	1	1 until 4	1 until 4	1	3 until 9
Baucau	1	1 until 4	1 until 4	1	3 until 9
Aileu	1	1 until 4	1 until 4	1	3 until 9
Liquica	2	1 until 4	1 until 4	1	6 until 18
Ermera	2	1 until 4	1 until 4	1	6 until 18
<b>Total</b>	<b>14</b>				<b>42 until 126</b>

### 2.3. Methods, Techniques, and Instruments of Data Collection

The method used in this research is a case study. To obtain the necessary data, the researcher applies interview techniques. In order for this activity to run better, the researcher uses instruments such as interview guides and informed consent. The data analysis technique applied is thematic analysis, and the researcher will utilize a data analysis grid to facilitate this process. Additionally, the data analysis approach is adapted from the interactive model developed by Miles and Huberman.

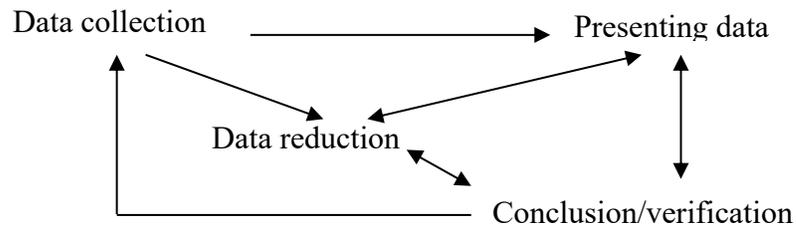


Figure 1: Components in data analysis  
Miles & Huberman (1994, p12)

## **2.4. Data Collection, Analysis and Data Transcription**

### **2.4.1. Data Collection**

The primary method used for data collection in this study was in-depth interviews. This technique was chosen to obtain detailed and nuanced information from participants directly involved in the implementation of the modular system at vocational and technical schools in Timor-Leste.

Semi-structured interviews were conducted with key informants, including teachers, students, and school principals. The interview questions were developed based on the six main research objectives, which explored various aspects such as planning, implementation, teacher roles, student engagement, encountered challenges, and the impact of the modular system on teaching and learning.

The interviews were conducted face-to-face in a conversational manner, allowing participants to freely express their thoughts, experiences, and opinions. With participants' permission, all interviews were audio-recorded to ensure the accuracy of the data collected.

### **2.4.2. Data Analysis**

The analysis of the interview data followed the interactive model of Miles and Huberman (1994), consisting of three concurrent steps:

1. Data Reduction

After the interviews were transcribed, the data were systematically selected, coded, and categorized according to relevant themes aligned with the research objectives. This process helped in organizing the large volume of qualitative information into manageable and meaningful units.

2. Data Display

The categorized data were presented in the form of descriptive narratives and thematic groupings. Key quotes from participants were used to illustrate the findings under each thematic area, allowing patterns and relationships to emerge clearly.

### 3. Conclusion Drawing and Verification

The findings were interpreted based on the patterns and themes identified during the analysis. Verification of conclusions was carried out by rechecking the consistency of data across different participants and ensuring that interpretations were grounded in the original statements. This process enhanced the credibility and trustworthiness of the findings.

#### **2.4.3. Data Transcription**

All interviews were transcribed verbatim from the audio recordings to preserve the original meaning and expressions of the participants. The transcription process was carried out carefully to ensure that no information was lost or altered. These transcripts served as the foundation for data analysis. Each transcript was reviewed multiple times for accuracy and consistency with the recorded interviews, ensuring a reliable representation of the participants' perspectives.

### 3. Work Development - Analysis of Results and Discussion of Results

#### 3.1. Analysis of Results

##### 3.1.1. Realization of Activities

The research activity was conducted in the municipalities outlined in the research plan, including Dili, Liquiça, Ermera, Aileu, Manatuto, and Baucau. The activity involved a total of 63 participants, including 19 teachers, 26 students, and 18 school leaders, from 14 schools, as shown in the following table:

Table 3: Description of Research Participants from Schools

Districts	Schools	Teachers	Students	Schools Leader
Dili	7	9	11	9
Liquiça	2	4	4	2
Ermera	2	3	5	2
Aileu	1	1	2	2
Manatuto	1	1	2	2
Baucau	1	1	2	1
<b>Total</b>	<b>14</b>	<b>19</b>	<b>26</b>	<b>18</b>
		<b>63</b>		

##### 3.1.2. Interview Result

Interview activities were conducted for students, teachers, and leaders in each school. The results of the interview are based on the research objectives that have been formulated. To make it easier for readers to understand the information regarding informants, in this section, the researcher provides "IFM" for teachers, "IFD" for leaders, and "IFA" for students.

##### 3.1.2.1. Implementation of modular system in learning activities

###### 1. Process and Mechanism of Module Evaluation

Based on the results of interviews conducted with students, teachers, and school leaders, each of them expressed the opinion that:

Teachers generally agree that the modular system allows for more focused and flexible assessments. Exams are administered immediately after a module is completed, without waiting for the entire subject to be finished, as in general secondary schools. This enables teachers to evaluate students' understanding more accurately based on specific content. Teachers find this approach effective, as it allows students to concentrate on one topic at a time before moving to the next module. The following presents the results of interviews with teachers:

I think the modular system is better because after finishing each module, students can take an exam and submit scores, then relax briefly before the next module. (IFM1)

I think the modular system is implemented differently from general secondary schools, where exams are conducted only after completing all topics. In modular, exams are held right after each module [...] One advantage is that exams are not held simultaneously like general secondary schools. In vocational schools, teachers have the right to give exams whenever a module is finished (IFM2)

Every teacher, whether in social, scientific, or productive disciplines, has the right to give an exam right after teaching a module, then proceed to the next module; this depends on the subject matter (IFM1, IFM2)

Exams in vocational schools differ from general secondary schools. For example, in a subject like '*sistema de validado*' with three modules, teachers can give the exam immediately after completing the first module. Unlike general secondary schools, exams here depend on module completion (IFM3)

We conduct several small tests for students, usually two or three per module. For instance, if a module has six subtopics, after each subtopic, a test is given. All scores from these tests are then added and divided by the total number of subtopics to calculate the overall module score. This evaluation method has been our practice; we still follow the existing system but apply it differently [...] After completing a module, an exam is held, although periodic exams are still conducted [...] In our vocational school, modular exams are conducted based on each module. After finishing one module, we proceed to the next (IFM4)

Exams are only conducted after the module is completed; if it's not finished, the teaching continues until the module ends. (IFM5)

One advantage is that exams aren't held all at once like in general secondary schools; vocational teachers can conduct exams as soon as a module is completed [...] Completing one module requires an exam. This is the learning process based on the module system that we apply here (IFM6)

The modular system works by allowing exams after each module completion; this is how modular learning operates here. (IFM10)

Once a module is fully taught, we give an exam. (IFM14)

According to students, they perceive the modular system as providing a more manageable learning process. After attending four or five learning sessions, they complete a module and take an exam before progressing to the next one. This helps them understand the content better, although they also acknowledge that it requires consistent study and discipline

After completing a module, students must take the exam before advancing to the next one; it requires diligent study. (IFA1)

Our learning process is such that after four or five sessions, one module is completed and students can immediately take the exam before moving on to the next module. (IFA2)

Beyond the perspectives of teachers and students, school leaders also argue that, while the school still follows the national assessment system, it is adapted to fit the modular approach in vocational schools. Exams are conducted after each module is completed, and the results are submitted to class coordinators. In addition to modular assessments, periodic or quarterly exams are still held, often combining materials from several completed modules.

Teachers can immediately conduct exams after finishing one module to determine the students' scores. The evaluation depends on the completed module, and after assessment, the scores are submitted to the class teacher [...] For quarterly exams, we combine several completed modules into one exam material [...] After module exams, periodic exams are still held (IFD2)

Recently, we planned to implement modular exams but structured similarly to periodic exams so all exam scores can be recorded simultaneously. (IFD4)

## **2. Credit System and Management of Failing Scores**

Discussions about the student grade management system involved teachers, school leaders, and students, with each group contributing their distinct opinions.

According to the teacher, in the modular system used in vocational schools, teachers implement a credit-based evaluation where students who score 4 are considered to have failed and must undergo remediation, while a score of 5 is the minimum passing grade. Score recovery often requires students to take the initiative,

such as purchasing practice materials or retaking exams, depending on the teacher's discretion. The system mirrors university standards, students cannot progress to the next module without passing the previous one. Accumulating too many credits due to low scores, absences, or rule violations can hinder graduation unless recovered according to ministry regulations. While the system poses challenges, teachers view it as offering fair opportunities for students to improve their performance. Below are the key takeaways from the teacher interviews:

In the modular system, if students fail a module, remediation depends on the teacher's decision whether to allow retakes or repeat the class (IFM1)

In vocational schools, scoring 4 means failing, but 5 means passing, unlike in general secondary schools where a 5 is failing. If students accumulate credits for 12 or more subjects, they cannot graduate. If 11 or fewer, they may graduate, provided they recover their scores according to ministry regulations [...] We also apply the credit system. If a student is absent three times, late, or violates school rules, they receive credit for the respective subject, which is a big challenge. If a student scores 4 in exams, it must be credited [...] On the one hand, this system facilitates students because if they fail exams or receive credit, they have the opportunity to retake the subject or module (IFM2)

For score recovery in modules where students received credits, they must do it themselves by buying practice materials for remediation [...] Students who score 4 or 5 are required to recover their scores (IFM5)

The credit system mirrors university regulations. For module 1, failing means no progression to module 2. However, teachers always approach students for retakes to improve failed credits. (IFM6)

Besides conducting interviews with teachers, the researcher also spoke with students, who stated:

As I explained, the credit system is applied if students are absent three times, late, or violate rules, resulting in credit penalties (IFA3)

Additionally, some teachers and students shared similar opinions, as shown in the following interview results:

The credit system applies if a student is absent three times or late; they receive credit for the related material (IFM1, IFA3)

Interviews were also conducted with the director of the school, and regarding this issue, two directors stated that students who score below five (5) are required to

retake or recover their scores to meet the minimum passing criteria. The school provides opportunities for score redemption, especially for those who miss module evaluations. In some cases, alternative forms of accountability are applied; for instance, in agricultural production classes, students who miss exams may be asked to bring materials like fertilizer as a form of sanction and compensation. This approach reflects the school's effort to maintain academic standards while offering flexible and context-based recovery options.

If a student scores below five (5), they must retake or recover the score (IFD1)

If students miss module evaluations, the school allows them to retake or redeem their scores. For example, in agricultural production studies, if a student misses a module exam, they may be sanctioned by bringing fertilizer to school to compensate. (IFD2)

### **3. Internship, Reports, and Final Examinations**

When asked about the FCT, PAP, and national exam, in the interview, participants said that: to graduate from vocational schools, students must complete several key requirements after reaching the final stage. These requirements include an internship program known as FCT (Work Context Training), passing the PAP (Professional Aptitude Test), and successfully completing the national exam. These components are mandatory; failure to fulfill any of them results in ineligibility for graduation. Students are also required to submit reports for both the FCT and PAP. Internships typically begin as early as Grade 11 (second year), immediately after the third periodic exam, which ensures students gain practical experience before their final year.

When students reach the finalist stage, after internship, they must participate in PAP, FCT, and the national exam to graduate [...] Finalists must complete internship activities called FCT (Work Context Training), take the professional aptitude test (PAP), and pass the national exam to graduate. Without completing these, graduation is impossible. In grade 12, students must complete FCT internship, pass PAP, then the national exam (IFM1)

PAP exams are conducted. (IFA4, IFM12, IFM13)

We start internship in grade 2, immediately after the third periodic exam (IFA4, IFM13)

There is also a professional aptitude test (PAP). (IFD4)

After internship, students must submit FCT and PAP reports (IFD5)

#### **4. Relevance of Module Materials to Local Conditions**

Regarding the relevance between the modules used in schools and the real-life context in Timor-Leste, teachers stated that:

We apply the modular system, and although there are many modules, such as 15 modules for the technical kitchen organization subject, we only teach those relevant to our country's conditions. Materials not relevant to Timor-Leste are omitted, focusing only on what students will encounter during internship (IFM5)

#### **5. Quarterly Exams as a Solution to the Modular System**

In addition to implementing modular-based assessments in the learning process, some schools also conduct quarterly exams. The following is the information shared by the teachers:

We felt the modular system was lacking, so we implemented quarterly exams. For example, in one quarter, two or three modules are combined for one exam. This approach helps us better monitor student participation in learning activities. This is the system we use in our school (IFM13)

### **3.1.2.2. The preparedness of teachers and the perceptions of both teachers and students regarding the implementation of the modular system**

#### **3.1.2.2.1. Preparation of teachers**

##### **1. Adding references, making adjustments, and revisions**

Based on the findings, teachers use a variety of teaching references, make necessary adjustments, and revise the modular system to better address students' learning needs. School leaders acknowledge that while the national curriculum established by the Ministry of Education is followed, especially for theoretical content, the practical components are often adapted using external references and models from other countries, such as Indonesia and Japan. This approach is intended to better equip students with relevant skills for the job market. Teachers

also modify and supplement learning materials to meet the specific requirements of their vocational programs. The following are the results of interviews conducted with several school leaders:

[...] We also use other references to teach students, but we still follow the curriculum established by the Ministry of Education [...] (IFD6)

[...] but the practice we take from the job that we have prepared, so that after three years, the students can do something. If we continue to follow the system in the curriculum, after three years, the students will be disappointed. [...] theory, we still follow the system that exists, but about practice, job we take references from other countries, such as Indonesia, Japan, as now the UNTL is using [...] (IFD 9)

[...] We at ETI school take references from other books, especially in productive materials to support specific areas [...] certainly, teachers are always prepared to teach, [...] they make adjustments to subjects [...] (IFD 12)

This was not only expressed by school leaders, but also by teachers and students. The findings indicate that both school leaders and teachers actively seek additional references, particularly from Indonesian and English sources, to enrich the existing modules. This effort is driven by the need to improve the quality of learning, especially in practical areas where the content of current modules is limited or insufficient. A review process is also carried out to assess and enhance the quality of learning, particularly in practical areas, where the current modules' content, relevance, and applicability of the selected references are evaluated. The following are the results of interviews conducted with several teachers and students:

[...] we are looking for references, looking for some references that are related to module 1, 2, 3, 4, references that are related. [...] The references we are looking for can help our books or modules, so that we can enrich our modules so that our students can learn well [...] Therefore, we often take references from Indonesian books, and also some English books [...] Whether or not to implement we do a review process (IFM4).

[...] teachers look for other references so we can learn better, about the practice we do, but, some do not exist in the module, so teachers take other books to complete our practice [...] sometimes some modules' material is too little, teachers look for other references to teach [...] (IFA 20).

## **2. Prepare a manual of practice**

In teaching and learning activities, besides seeking additional references to enrich existing modules, teachers also develop practical manuals. The following is the result of an interview conducted with a teacher:

[...] if practical, we prepare a manual [...] (IFM 17)

## **3. Summarize**

In addition to adding references, making adjustments, revising, and preparing practical manuals, teachers also create summaries of the modules provided by the Ministry of Education. Based on interviews conducted with several teachers and school leaders, they emphasized the importance of summarizing module content to make it more manageable for students. Since some modules contain extensive theoretical material, sometimes totaling up to 1,000 pages across several modules, teachers prepare summaries or conclusions to reduce the volume and allow more time for practical activities. These summaries are often made available for students to photocopy and use during lessons. The following is the result of an interview conducted:

[...] before we go to teach, we have to check each module, for example, in modules 1 and 2, there is more theory, so we take a summary of the modules, so that there can be a little free time for practice [...] (IFD 9)

[...] so we create a plan, we summarize, every book always summarizes, [...] (IFM11).

[...] So we summarize [...] (IFM 15)

[...] to complete this module, we use the method, we distribute books, but we make conclusions or summaries of the material [...] (IFM 16)

[...] sometimes many modules, we have to prepare a summary for students to photocopy, [...] (IFM 17)

[...] in a book, each module is almost about 200 pages, when four modules are about 1000 pages, so we have to summarize so that its content can be small, [...] (IFM 18)

#### **4. Increase the time or volume of the meeting**

To ensure that the teaching process aligns with the prescribed workload and to fill any free periods, teachers look for available hours from their colleagues. The information provided is as follows:

[...] can take extra time, sometimes on Saturday, we do general cleaning. So we take two or three hours to add to our time to finish the material. So, every day we had to cover four class hours. Otherwise, we also consult with colleagues who have already taken the exam module, to take their hours to cover [...] (IFD 9)

#### **3.1.2.2.2. Perception**

##### **1. Perception of teachers**

##### **1] Advantages of the Modular System**

From the interviews conducted with the informants, various perceptions were expressed, one of which relates to the advantages of the modular system. Several teachers and school leaders believe that the modular system in vocational schools is beneficial because it allows exams to be conducted immediately after the completion of each module, enabling timely evaluation of students' learning outcomes. This approach contrasts with general secondary schools, where exams are scheduled periodically after all topics have been covered. Additionally, vocational schools benefit from the simultaneous integration of both theory and practical classes, which supports a more effective learning process.

I think the modular system is better because after each module is completed, students can take exams and submit grades; after finishing a module, we can relax, which is good (IFM1)

One advantage is that exams are not held all at once [...] unlike general secondary schools that must have periodic exams, here vocational and technical school teachers have the right to give exams whenever a module is finished teaching [...] One of the strengths of the modular system is that students can directly evaluate their learning outcomes after each module [...] I think the modular process makes it easier for students to learn (IFM2)

Teachers can give exams right after finishing one module, which is different from general secondary schools (IFM6)

Vocational school exams are different from general secondary schools; here exams depend on module completion, unlike general schools where all topics must be completed first (IFM3, IFM2)

The advantage of vocational schools is the existence of both theory and practice classes running simultaneously (IFD6)

## **2] Challenges Related to Module Content and Curriculum**

Another perception shared by teachers and school leaders concerns the challenges they face in implementing the modular system. They point out several issues with the current curriculum, including its direct import from Portugal without adaptation to the local context. Many skills and module contents are irrelevant to the country's needs, with a significant imbalance favoring theory over the practical training that vocational education requires. Additionally, outdated materials, lack of modern equipment, and limited involvement of key stakeholders such as companies and private schools highlight the need for curriculum revision to better suit local conditions.

The curriculum is imported from Portugal without adjustment to our country's conditions (IFM1)

Some skills are not relevant because the books describe things from other countries that we do not have (IFM4)

Some subjects have many modules, but sometimes textbooks lack modules, which makes it difficult [...] 70% of vocational education should be practice, but often only theory is taught (IFM6)

There are big challenges in practical activities, such as lack of modern equipment mentioned in modules (IFM11)

Some modules contain content that is not relevant to the practice or the local context (IFD1, IFM4)

The curriculum has not been updated since 2011 and needs revision to fit our country's context (IFM1, IFD3)

The curriculum lacks input from stakeholders like companies and private schools (IFM1, IFD1)

### **3] Resource and Implementation Constraints**

After conducting interviews with the informants, additional information revealed their perception of several challenges in implementing the modular system. These challenges include insufficient practice hours, delays in exam grade submissions, and a lack of adequate equipment, which leads to an overemphasis on theory. Teachers are sometimes assigned outside their areas of expertise, and there is a need for additional staff to effectively handle both theory and practical lessons. Moreover, some teachers and government officials lack sufficient knowledge about the modular system's implementation, and government oversight and support to address these issues are limited.

Practice hours are too few; one hour is not enough [...] There is a delay in submitting exam grades from subject teachers to homeroom teachers (IFM8)

Schools lack equipment, so students only learn theory without practical training (IFM9, IFM11)

Teachers sometimes are assigned outside their expertise (IFM13, IFM1)

One teacher cannot teach both theory and practice; additional teachers are needed (IFD3)

Some teachers and government officials lack knowledge about how to implement the modular system effectively [...] The government implements the modular system but does not monitor or address the challenges teachers face (IFD1, IFD3)

### **4] Student Attitudes and Perceptions**

Based on interviews conducted with several teachers and school leaders, they believe that the implementation of the modular system also affects students' attitudes and perceptions. According to them, there are several student-related challenges with the modular system, including boredom due to routine exams, lack of motivation to study the modules, and a perception that modular evaluations are less important than quarterly exams. Additionally, students often misunderstand the modular system by comparing it to general secondary schools,

expecting exams to be held simultaneously. These issues have contributed to a decline in student enrollment.

The modular system sometimes causes boredom; students feel exams are routine and do not prepare seriously (IFM3)

Students sometimes lack motivation to study modules because the system is new [...] Some students view the modular evaluation as less important than quarterly exams, resulting in low participation (IFM13)

Students often generalize vocational schools as being the same as general secondary schools [...] Students generalize that exams must be held simultaneously, which conflicts with the modular system (IFM6)

Student enrollment is declining because of the modular system (IFD5)

## **5] Certification and Employability Issues**

In relation to this issue, the informants stated that students often graduate without proper certification, partly because many teachers themselves lack the necessary qualifications. This absence of formal recognition makes it difficult for students to secure employment after graduation. It was also suggested that the certification system should be aligned with the modular structure to ensure that students receive certificates upon completing each module.

Students graduating from vocational schools often lack certificates because teachers also lack certifications [...] Without certificates, students have difficulty finding jobs after graduation (IFD1)

The certification system should align with modular studies so students get certificates upon completion (IFM1)

## **6] Issues Related to Government and Policy**

The findings reveal concerns about the government's role in implementing the modular system. Government officials are often assigned to positions without relevant expertise, and there has been limited involvement of stakeholders in curriculum development. As a result, the modular curriculum adopted from other countries, does not align well with local conditions. Furthermore, there is a lack of government support and follow-up after the system's implementation. The

following are the results of interviews conducted by the researcher with the informants:

Government officials are often placed in positions without relevant expertise (IFM1, IFM13)

The government has not adequately involved stakeholders in curriculum development [...] The modular curriculum adopted from other countries does not fit local conditions (IFM1)

There is a lack of support and follow-up from the government after implementing the modular system (IFD1, IFD3)

## **7] Suggestions and Reflections**

The findings suggest that while the modular system offers benefits such as faster exam processes, it still requires improvements, particularly in its evaluation mechanisms. Informants also emphasized the need to revise the curriculum to better reflect the country's context. Additionally, quarterly exams are sometimes used alongside the modular system to address its limitations. There is also a recommendation to separate theory and practical teachers to improve instructional effectiveness. The following are the results of interviews conducted by the researcher with the informants:

The modular system should separate theory and practice teachers (IFD4)

The curriculum needs revision to suit our country's needs better (IFD3)

Quarterly exams are used alongside the modular system to compensate for its shortcomings (IFM13)

The modular system helps students get faster exams but needs improvements in evaluation mechanisms (IFM8)

## **2. Perception of students**

### **1] Structure and Mechanism of the Modular System**

The modular system at ESTV is widely regarded as a superior learning approach compared to the methods used in general secondary schools (ESG), primarily due to its focused and structured logic. Students appreciate that

modules must be completed and assessed sequentially before they can advance to new material, which effectively ensures thorough content mastery. The system is perceived as being both faster and more efficient for self-managed study time outside of class hours. Furthermore, the Credit (remedial) mechanism offers students with lower scores the ability to retake exams or complete assignments, providing a valuable second chance that is often unavailable in general education. Despite this, the school maintains a mixed approach by still implementing periodic/quarterly exams, where the modular scores serve as crucial supportive data. Overall, the system is highly commended for fostering independence and effective time management.

The modular system is preferred as it is faster and more effective. Exams are conducted module-by-module upon completion (IFA1, IFA2, IFA3, IFA4, IFA14)

Modular learning helps manage study time outside of class. (IFA1, IF2, IFA14, IFA15)

The system fosters independence in learning and practice. (IFA13, IFA15, IFA3)

Low scores (credit) require students to retake the exam (re-exam). (IFA14, IFA4)

Modular scores help boost grades for Periodic/Quarterly exams (ESG-style exams), which are still conducted (IFA16, IFA4)

If a credit occurs in an early module, the student must remediate it before advancing, potentially slowing progress. (IFA12)

## **2] Benefits and Job Readiness (Relevance, Positive Impact, & Outcomes)**

Students consistently find the modules they study to be highly relevant and directly reflective of modern workplace needs. They gain practical skills essential for both technical and service sectors, ranging from tech installation and repair to business management and customer service procedures. The modular approach helps them understand practical steps in a structured way. This positive impact fosters a high level of confidence in obtaining employment or even starting their own business. Furthermore, the skills acquired are deemed to provide a good foundation for those planning to pursue higher education. However, this

confidence is notably diminished among students whose practical or foreign language skills (English/Portuguese) are lacking.

Module content is highly relevant to job skills (e.g., welding, networking, accounting, hotel services) (IFA1, IFA14, IFA15, IFA16)

Students learn modern practices over traditional methods (IFA12, IFA12)

The system provides a good foundation for university studies (e.g., report writing skills) (IFA12)

Students generally feel confident about getting a job or starting a business (IFA10, IFA15, IFA16)

Confidence is lower for students with practical limitations or foreign language difficulties (English/Portuguese) (IFA1, IFA13)

### **3] Implementation Constraints and Facility Shortages (Practical Aspects & Materials)**

The most critical and consistent impediment to the modular system is the severe gap between theory and practical implementation. Although the modules are theoretically complete and integrated, the facilities are often inadequate. The lack of tools, practical materials, laboratories, and machinery is a near-universal complaint. In some departments, students have never conducted practical work since Grade 10 due to the absence of labs. In other areas, students must pool money or bring their own tools from home to facilitate the required practice. Furthermore, there are concerns that the taught material often focuses on older models and does not keep up with current technology.

Practical tools and materials are incomplete or missing (IFA10, IFA11, IFA12, IFA14)

Computer shortages necessitate sharing (1 computer for 2-3 students) (IFA15)

Students must contribute money or bring their own tools from home to practice (IFA2, IFA15)

Modules are complete in theory but lack corresponding practical implementation, leading to low confidence (IFA13, IFA13)

The technology taught often focuses on older models rather than the latest advancements (IFA15, IFA15)

#### **4] Human Resources and Administrative Challenges**

The primary non-academic challenge is the Human Resources (HR) issue. There is a severe problem with teacher shortages and absenteeism; remaining teachers often take on a heavy workload of 3-4 subjects, which students fear compromises the quality and timely completion of modules. On the administrative side, while strict rules exist, the rigorous Discipline/Credit rules (absences 3 times, lateness, low scores) are a major challenge. These rules, while intended to promote discipline, can severely penalize students by disallowing them from attending class. Finally, the physical infrastructure of the school, which is deemed too small and in need of repair, is also a prevalent concern.

Teachers are scarce or absent, and remaining teachers often teach 2-4 subjects, leading to module delays (IFA4, IFA4, IFA12)

Students are required to report absent teachers to the Director (IFA4)

Strict Credit rules (absences, lateness, low scores) are viewed as a significant non-academic challenge (IFA2, IFA4, IFA3)

Students with credit are often not allowed to attend regular classes (IFA2, IFA3)

The school premises are considered too small, and rooms require maintenance (IFA5)

#### **3.1.2.3. The obstacles faced by schools and teachers in implementing the modular system-based learning approach.**

##### **1. Limited Practical Hours and Facilities**

The interviews with teachers, school leaders, and students reveal a major concern regarding the lack of practical implementation in the modular system. Although the curriculum is designed to prioritize 70% practice and 30% theory, in reality, most teaching is limited to theory due to insufficient facilities, limited equipment, and inadequate infrastructure. Challenges include a shortage of functional classrooms, outdated or missing practical tools, limited internship opportunities, and scheduling constraints that reduce practical hours. As a result, students often miss out on hands-on learning, which negatively impacts their confidence and skill development. There

is a shared perception that the system is implemented without adequate preparation of resources, leaving students unprepared for real-world applications. The following are the results of interviews conducted by the researcher with the informants:

[...] now the weakness is sometimes they only learn theory, but in reality, there is no practice [...] (IFM4)

[...] the negative side of the modular system is that we only teach theory; there is no practice. The ministry says the content is only about business plans, but we have to run a business with no supporting facilities [...] now the curriculum is 70% practice, 30% theory, but often there is only theory without practice [...] (IFM6)

The weakness is when teaching practice, sometimes equipment is missing or incomplete; some elements and components are not complete [...] (IFM7)

[...] practical hours are too few [...] one hour of practice is not enough [...] practical hours are too few, one hour is not enough [...] The challenges are [...] laboratory facilities, practice equipment, classrooms [...] (IFM8)

In my opinion, the modular system applied does not align with practice, which is not sufficient. How can we improve students' knowledge through practice, when schools lack equipment for practice activities? [...] the school lacks equipment [...] the problem we face is there are no practical activities for students. We mostly apply theory only, no practice. That is the problem [...] (IFM9)

[...] schedule burden, for example each subject has 60 minutes or 120 minutes. If 120 minutes is the maximum, with 60 minutes we can only use 30 minutes after theory for practice. Talking about practice is difficult and also hinders the schedule [...] a big challenge is practical activities, such as modern equipment from abroad. The modern equipment in the modules is not available in our country, so we only teach theory and cannot provide practice [...] some modern equipment from abroad, modern equipment mentioned in the modules is not found in our country, so we only teach theory and cannot provide practice [...] (IFM11)

[...] the limited places for practice and internships are a big problem for the students to do internships [...] no place for practice and internships, this is a big problem [...] limited places to do practice and internships [...] (IFM13)

Here we have three study programs, nine classes in total, but only six classrooms. One is for teachers, five are for students, and one classroom is divided into two. [...] sometimes we only talk theory, no practice, which becomes a problem for students and they become very doubtful (IFM14)

[...] during computer practice, we have to share one laptop, sometimes even three students share one [...] (IFA5)

[...] often we feel the student's become victims, victims because we only implement the system but do not prepare resources [...] for example, the report book designed by the government, but when asked how to fill it, even they do not know [...] (IFD1)

[...] no classrooms, no chairs, no tables [...] no place to secure agricultural seeds [...] here students do not practice because there are no supporting facilities. Practice is only done during internship time, so they use internship to learn practice [...] (IFD3)

[...] here only 4 to 7 classrooms are good, with windows and doors; the rest cannot be used [...] (IFD4)

[...] we want to do practice, but like I said before, students in administration only learn theory. When they reach grade 3, they do internships but there is no practice [...] (IFD5)

[...] no practical equipment or incomplete tools [...] (IFM13, IFM5, IFD4, IFM12, IFM11, IFA5, IFM10, IFD3, IFM6, IFM1)

## **2. Certification and Recognition Issues**

The findings highlight a critical issue regarding certification in vocational schools. Both teachers and school leaders expressed concern that students often graduate without receiving proper certificates, which significantly hinders their ability to find employment. One major factor contributing to this problem is that many teachers themselves lack certification, leading institutions like INDIMO to hesitate in issuing certificates to students. Informants suggest that the Ministry of Education should adopt a clearer certification system, similar to practices in countries like Portugal, to ensure that all vocational graduates receive valid certificates upon completion. The following are the results of interviews conducted by the researcher with the informants:

[...] certificates are a problem; students do not have certificates [...] (IFM1, IFD1)

[...] certificates remain a problem; students who finish vocational school want jobs but cannot be accepted due to lack of certificates [...] This certificate is a problem until now. INDIMO also does not dare to give certificates to students because teachers themselves do not have certificates. Students who finish vocational school want to find jobs, but because they do not have certificates, they cannot be accepted. (IFD1)

[...] when they finish their diploma, there is also a certificate. In Portugal, this is categorized as 12th grade level C. I think the ministry should adopt this approach. INDIMO should discuss the modular system. Our students do not have certificates. They must have certificates. Whether they want it or not, after finishing vocational school, they must get certificates [...] (IFM1)

### **3. Teacher Workload and Human Resource Constraints**

The findings reveal significant challenges related to human resources in vocational schools. Teachers, school leaders, and students reported issues such as teacher shortages, especially in science and productive subjects, leading to excessive workloads, often exceeding 24 teaching hours per week. Many teachers are required to teach multiple subjects outside their specialization, affecting the quality of instruction and preparation. Additionally, high teacher turnover and the limited number of qualified staff further hinder effective implementation of the modular system. These challenges point to an urgent need for improved teacher recruitment, placement, and workload management. The following are the results of interviews conducted by the researcher with the informants:

[...] my working hours already exceed 24 hours per week, maybe I have 32 or 38 hours. How do we manage this? So, we have to perform our duties in the allotted time, but sometimes we feel tired and cannot prepare maximally because I teach three subjects from grade 1 to grade 3 [...] (IFM6)

[...] the challenge at this school is one teacher can teach 4 or 5 subjects, not according to their specialization [...] (IFM13)

[...] limited human resources, our challenge is the lack of teachers in productive fields [...] (IFM13, IFM11)

[...] many teachers leave our study program [...] (IFA4)

[...] the number of science and productive teachers is still very low [...] (IFM10, IFM6, IFM7, IFM1, IFM2, IFM5)

[...] teacher teaching hours are very high, even exceeding civil servant regulations [...] (IFM1, IFM6)

[...] teacher placement issues: one teacher teaches many subjects unrelated to their specialization [...] (IFM3, IFM14, IFM13, IFD2)

[...] human resources are inadequate [...] (IFD3)

### **4. Curriculum, Modules, and Content Relevance**

The data highlight ongoing issues related to textbooks and learning materials in vocational schools. Teachers and school leaders report that many textbooks are incomplete, with some modules missing or unavailable causing disruptions in the

teaching process. In several cases, students must share limited books due to shortages. Additionally, some modules are seen as excessive or irrelevant to the local context, especially in productive subjects like hospitality, agriculture, and multimedia. These challenges underline the need for more complete, relevant, and accessible teaching materials that align with students' practical learning needs and local conditions. The following are the results of interviews conducted by the researcher with the informants:

[...] textbooks are incomplete, some modules are missing. For example, modules 1, 2, 3, then jump to 5 and 6 [...] (IFM4)

[...] we implement the modular system here, [...] for grade one there are many modules, for example, technical kitchen organization has 15 modules, but we only teach what is relevant to our country. Materials not relevant to our country we do not teach; we only teach what students will do during internships [...] first, I want to say our challenge is that textbooks are often incomplete; many students, so books are insufficient; they have to share to read the books [...] (IFM5)

In my opinion about vocational schools, some subjects have too many modules. Sometimes textbooks lack modules, for example, business management in grade 10 has modules 1 and 2, in grade 11 should have modules 3 and 4 but module 3 is missing, jumping to module 4, which complicates teaching [...] especially student guidebooks, especially productive materials, are very few, particularly in the hospitality program [...] first, I want to say our challenge is that textbooks are sometimes incomplete [...] I think too many modules are harmful for us and students because there are too many modules [...] (IFM6)

[...] our challenge with books is that sometimes they are limited, with some modules lacking [...] (IFM13)

[...] some module contents are not relevant to practice[...] the biggest challenge is books for productive fields, especially textbooks [...] (IFD1)

[...] some subjects have many modules; for example, agricultural production has 12 modules. Multimedia and entrepreneurship also have many modules [...] books are still very few[...] (IFD2)

## **5. Facilities and Infrastructure Challenges**

The data reveal significant infrastructure challenges in vocational schools. Teachers and school leaders reported a shortage of classrooms, with some being divided or in poor condition, and a lack of essential equipment and facilities such as chairs, tables, and secure storage for agricultural seeds. Additionally, limited support

from the Ministry has led to maintenance issues, resulting in many practice tools remaining unused. These constraints hinder effective teaching and practical learning. The following are the results of interviews conducted by the researcher with the informants:

We have nine classes in three study programs, but only six classrooms: one for teachers, five for students, and one classroom divided into two. (IFM14)

[...] school lacks equipment [...] (IFM9)

[...] no place to secure agricultural seeds [...] no classrooms, no chairs, no tables  
[...] minimal ministry support; practice tools are often unused due to lack of maintenance [...] (IFD3)

[...] only 4 to 7 classrooms are good; the rest are unusable [...] (IFD4)

## **6. Communication, Assessment, and Management of Grades**

Teachers report a significant challenge in the timely collection of exam scores, as homeroom teachers often experience delays, sometimes up to a year, in receiving scores from subject teachers. This slow process hinders the prompt compilation and communication of students' academic results. The following are the results of interviews conducted by the researcher with the informants:

[...] homeroom teachers find it difficult to get exam scores from subject teachers; sometimes scores take too long, even up to a year to be collected [...] the challenge is the slow delivery of scores from subject teachers to homeroom teachers, resulting in late student score collection [...] (IFM8)

## **7. Training, Government Support, and Unaddressed Proposals**

Teachers express frustration over the lack of timely responses from the Ministry of Education to their proposals, citing frequent changes in ministry leadership as a contributing factor. Additionally, training opportunities have been limited in recent years, with teachers highlighting the need for specific training such as in the Portuguese language. Some practical activities are supported through collaboration with parents during meetings to facilitate resources. The following are the results of interviews conducted by the researcher with the informants:

[...] from 2016 to 2025, we have submitted many proposals to the ministry; ministers change often. We have sent many proposals, but until now there has been no response [...] the problem is we made proposals, but the response takes a long time, making us confused and making it difficult for us [...] (IFM1)

[...] in two years we have not had training opportunities; we do not know if the ministry did not provide chances, but in recent years we have had some opportunities for training. Actually, we need Portuguese language training [...] (IFM4)

[...] sometimes when we want to do practice, teachers and parents hold meetings so parents can contribute to practical activities (IFM13)

#### **3.1.2.4. The effectiveness of the modular system in enhancing students' practical skills.**

##### **1) Integration of Theory and Practice**

Students and school leaders appreciate the integration of theory and practice within the vocational school modular system, highlighting it as a key advantage that enhances the learning experience. The following are the results of interviews conducted by the researcher with the informants:

I feel very happy because through this module, there is both theory and also practice. (IFA5)

The advantage of vocational schools is that theory and practice classes go together. (IFD6)

##### **2) Obstacles in Assessment and Evaluation**

Teachers acknowledge that the modular system allows for immediate evaluation after each learning segment, which is beneficial. However, challenges include low student participation affecting grades, significant delays in receiving exam scores by homeroom teachers, and issues with retests where students may have an unfair advantage by knowing the questions in advance. The following are the results of interviews conducted by the researcher with the informants:

The good thing is that during the learning process, evaluation happens immediately [...] The advantage is good because the learning is followed by immediate evaluation. The downside is that students do not fully participate, which affects their grades and learning outcomes. (IFM2)

The challenge is, the homeroom teacher finds it hard to get the student's score from subject teachers, because teachers take too long to submit exam results. Even when the exam has started, sometimes it takes up to one year and the grades are still not collected. (IFM8)

The modular system, whether we want it or not, requires retests, which affects the test questions already prepared. Some students who scored low initially, after retaking the test, got high scores because they already knew the questions. (IFM9)

### **3) Irrelevance of Module Content with Local Context**

The informants highlight that much of the module content is not relevant to the local context of Timor-Leste. Many materials and examples are imported from other countries and do not reflect the realities or industries present locally. Additionally, modern equipment referenced in the modules is often unavailable, limiting practical training and resulting in a focus on theory. This disconnects between module content and local practice presents a significant challenge for effective vocational education. The following are the results of interviews conducted by the researcher with the informants:

Ah, the content in the module materials... some are not really relevant to the reality of Timor-Leste, because the book talks about other things, and our reality is different [...] In some books or modules, the content is very different [...] the examples given in the book are all from other countries. They didn't take anything from our own country [...] The skills are not relevant because the book explains other things that exist in other countries, but in reality, we don't have those things [...] Some lesson materials are not relevant to the reality in Timor-Leste [...] Some of the available modules have content that is relevant to the Timor-Leste context, but some are not. Because, uh, in Timor-Leste we don't have industry. We only have services or small jobs (IFM4)

Some modern equipment mentioned in the modules and imported from abroad is not available in our country, so we only teach theory to students and can't provide the practical part. (IFM11)

The reality is, sometimes we only have a hand tractor [...] ahh sometimes we talk more about international things than our own country, we look at the design, but in reality, it's not there. (IFM12)

The content of the existing modules is sometimes not relevant to practice [...] The content of the modules is sometimes not relevant to practice. (IFD1)

#### **4) Curriculum Limitations and Incompatibility**

The informants express strong concerns about the current curriculum, noting that it was adopted from Portugal without adequate adaptation to the local context. They believe the curriculum does not support the subjects effectively and is not suitable for the students' needs. Furthermore, the implementation of this modular curriculum is viewed as detrimental, causing students to become victims of a system that does not align with their realities. The following are the results of interviews conducted by the researcher with the informants:

From a curriculum perspective, I think it needs to be improved in the future because it doesn't support the subject. The current curriculum is not good. I feel this curriculum doesn't fit the student's situation [...] The current curriculum we use was taken from Portugal. They applied what exists in Portugal to our country without considering anything about our situation (IFM1)

Because of this curriculum implementation, students have become victims. That's why I say the implementation of the modular curriculum is a mistake made by our country, and the victims are our children. (IFD1)

#### **5) Student Engagement and Motivation**

The informants report challenges related to student engagement with the modular system. They note that students often show low motivation and participation, leading to boredom and poorer learning outcomes. Additionally, the modular system appears to impact student enrollment negatively, with fewer new students registering compared to previous years. The following are the results of interviews conducted by the researcher with the informants:

One weakness of the modular system is that students do not participate maximally, which affects their learning outcomes. (IFM2)

The modular system also makes students bored... they feel like it's just a regular exam... we say the exam is tomorrow, but students don't care, they think it's nothing serious. But when exams are held all at once like in general secondary schools, they start preparing [...] When we implement the module, it's something new for students, and they do not have strong motivation to study the module (IFM3)

Another obstacle is that students are not as enthusiastic as in previous years to register as new students in this school [...] like I said, the number of students is not high because the school applies the modular system. (IFD5)

## **6) Practical Implementation Barriers**

The teacher highlights significant challenges in practical activities due to the unavailability of modern equipment referenced in the modules. As a result, teaching is largely theoretical, limiting students' practical learning experiences. The following are the results of interviews conducted by the researcher with the informants:

There are big challenges [...] for example, in practical activities [...] such as some modern equipment that comes from abroad. The equipment shown in the module is not available in our country, so we only teach theory and not practice. (IFM11)

## **7) Opportunities for Remediation and Improvement**

The teachers note that the opportunity for students to retake modules in vocational schools is a supportive feature of the modular system, enabling students to review and improve their understanding positively. The following are the results of interviews conducted by the researcher with the informants:

In vocational schools, students have the opportunity to retake modules. I think this supports them in responding positively to the modular system [...] Students have the chance to review their subjects or modules again, and I think this helps them positively. (IFM2)

## **8) Certification Problems**

The school leaders highlight that the lack of certificates for graduates of vocational and technical schools poses a significant barrier to their employment opportunities. The following are the results of interviews conducted by the researcher with the informants:

This certificate issue is still a problem [...] students who graduate from vocational and technical schools want to find jobs, but because they don't have a certificate, they cannot be accepted. (IFD1)

### **3.1.2.5. The effect of implementing the modular system on the teaching and learning process**

#### **1) Student Initiative and Support from Families**

School leaders report that students and their families are responsible for providing practical equipment, such as basic tools, as the school does not supply these materials.

The following are the results of interviews conducted by the researcher with the informants:

Every student who joins this department brings their own equipment, like knives, sticks, buckets, brooms, for practical purposes. This all comes from the students themselves, with support from their families [...] Again, when students enroll in this department, they bring tools for practice such as knives, sticks, buckets, and brooms. These materials come from the students and their families, not the school (IFD3)

## **2) Opportunities and Limitations in Practical Activities**

Students value the practical opportunities offered by the modular learning system, such as computer assembly. However, both students and teachers face challenges due to limited availability of equipment, leading to situations where students must share devices and practical sessions are often replaced by theory. The following are the results of interviews conducted by the researcher with the informants:

This modular-based learning gives students a chance to practice [...] for example, assembling a computer. (IFA3)

When we do computer practice, we sometimes have to share one laptop between two students, or even three. (IFA5)

There's a major challenge in the practical sessions. For example, some of the modern equipment mentioned in the modules isn't available in our country. So we end up teaching theory only, without being able to provide hands-on practice. (IFM11)

## **3) Declining Student Enrollment and Motivation**

Teachers and school leaders observe a significant decline in student enrollment, attributing this decrease to the emphasis on theory over practical learning and the implementation of the modular system, which has affected student enthusiasm for enrolling. The following are the results of interviews conducted by the researcher with the informants:

Currently, the number of students has dropped significantly. It's because here we only study theory [...] there's no practice. (IFM6)

Another issue is that students are no longer as enthusiastic as they used to be about enrolling in this school. As I mentioned earlier, student numbers are low, and one reason is because the school uses the modular system. (IFD5)

#### **4) Parental and Student Dissatisfaction**

School leaders report that some parents have protested the lack of practical training in technical schools, and students have also expressed complaints about this issue. The following are the results of interviews conducted by the researcher with the informants:

Some parents have protested because the technical school doesn't provide any practical sessions [...] Yes, some parents complained and asked, "Why doesn't the technical school offer practical training?" [...] Have students also complained about the school? Yes, they have (IFD2)

#### **5) Impact of Retesting in the Modular System**

Teachers report that the mandatory retests in the modular system impact the exam process, as some students who initially scored low achieve higher marks on retests due to prior knowledge of the questions. The following are the results of interviews conducted by the researcher with the informants:

With the modular system, whether we like it or not, there has to be a retest. This really affects the exam process. Some students who initially scored low ended up with high marks after the retest because they already knew the questions. (IFM9)

#### **6) Student Attitudes Toward Modular Learning**

Teachers observed that when the modular system was first introduced, students showed low motivation to engage with the new modules. The following are the results of interviews conducted by the researcher with the informants:

When we introduced the modules, it was a new thing for the students, and they didn't show much motivation to study them. (IFM13)

#### **7) Issues with Curriculum Continuity and Understanding**

Teachers report that students perceive the current modular curriculum as less effective compared to the previous one, citing a lack of continuity in the modules that makes it difficult for them to understand the material. The following are the results of interviews conducted by the researcher with the informants:

According to students, the current curriculum or modules aren't very good. They say the previous curriculum was better. But as we've said, there's no continuity.

Because the modules lack continuity, students find it hard to understand the material. (IFM4)

## **8) Certification Problems**

School leaders highlight that the ongoing issue of students graduating without certificates hinders their ability to secure employment after completing technical and vocational education. The following are the results of interviews conducted by the researcher with the informants:

The certification issue still persists. Students who graduate from technical and vocational schools want to find jobs, but without certificates, they can't get hired. (IFD1)

### **3.1.2.6. Recommendation**

#### **1. Comprehensive Curriculum Reform and Contextual Adaptation**

##### **1) Curriculum Revision and Improvement**

Based on the issues raised by the informants, one of the main concerns is the curriculum. Both school leaders and teachers strongly recommend revising and improving the current curriculum and modules to better address the educational needs. The following are the results of interviews conducted by the researcher with the informants:

[...] My first recommendation is to revise the curriculum. [...] (IFD1)

[...] We strongly urge the Ministry to make an immediate decision to revise the curriculum. [...] (IFD3)

[...] The ESTV curriculum must be updated. [...] (IFD12)

We would like to recommend to the education sector that they at least improve the modules. (IFM3)

[...] There is a need to make changes to the curriculum. [...] (IFM6)

[...] I would like to recommend to the Ministry of Education to improve the curriculum. [...] (IFM10)

##### **2) Stakeholder Involvement in Curriculum Revision**

Still related to the curriculum, the informants emphasized that any future improvements should involve key stakeholders, particularly companies, to ensure

the curriculum aligns with real-world needs and job market demands. The following are the results of interviews conducted by the researcher with the informants:

I think in the future, if the Ministry wants to improve the curriculum, it needs to involve stakeholders, especially companies. (IFM1)

### **3) Curriculum Relevance to the Local Context**

Another issue related to the curriculum is its lack of alignment with the real context of Timor-Leste. The informant emphasized that while it is acceptable to use educational models from countries like Portugal and Brazil as references, the curriculum must be adapted to reflect the actual conditions and context of Timor-Leste, as directly adopting foreign models may not address local needs and realities. The following are the results of interviews conducted by the researcher with the informants:

[...] First, regarding the content of the modular system adopted from Europe, especially from Portugal and Brazil, the education sector must be evaluated. It is true that we can take initial references from those countries, but they must be compared with the real situation in our own country. [...] We can refer to other countries, but we cannot adopt everything into our curriculum, because the people in those countries are different, and our country is different. [...] (IFD9)

### **4) Structure and Distribution of Modules within the Curriculum**

Another issue related to the curriculum is the structure and distribution of modules. Informants pointed out that the way modules are currently organized and distributed across grade levels is problematic, some modules are too broad and could be divided into smaller sub-modules, while others are repeated across different grades. This structure creates confusion and adds unnecessary challenges for both teachers and students, indicating a need for curriculum restructuring. The following are the results of interviews conducted by the researcher with the informants:

[...] Therefore, we ask the Ministry of Education, particularly those responsible for the curriculum, to consider breaking down some modules into sub-modules, so as not to disadvantage the teachers who teach these subjects. [...] We also ask the Ministry, especially the national curriculum division, to review and ensure that the modules intended for Grade 3 are not repeated in Grade 2 or Grade 1. [...] (IFD13)

## **2. Human Resources Needs and Qualifications**

### **1) Need for and Increase in the Number of Teachers and Human Resources**

In addition to curriculum challenges, a significant issue raised by informants is the shortage of human resources. School leaders, teachers, and students all stress the urgent need to increase the number of qualified teaching staff to improve the effectiveness of vocational and technical education. The following are the results of interviews conducted by the researcher with the informants:

[...] I would like to recommend to the relevant ministry, through the Vocational Technical Directorate, that teacher recruitment be accelerated, so that some underperforming teachers in our school can be dismissed. [...] (IFD2)

[...] The government has opened ESTV, a vocational technical school, but must increase the number of ICT teachers and other staff. [...] (IFD8)

[...] We have only two Portuguese teachers, which means we cannot cover all the classes. We suggest that recruitment be completed soon so that we do not have a shortage of teachers. [...] (IFD13)

[...] As deputy director, my recommendation is that ESTV is currently facing a shortage of human resources. We are waiting for recruitment and hope our school can be fully staffed soon. [...] (IFD14)

[...] For the Ministry of Education, if they want ESTV to move forward, the first priority is to complete the human resources. [...] (IFD16), (IFM1)

Well, my first recommendation is that the human resources we have need to be increased. [...] (IFM2)

[...] Complete the human resources, [...] complete the teaching staff. [...] (IFM6)

Increase human resources. [...] (IFM11)

[...] We need to increase the number of teachers so that we can learn effectively. [...] (IFA13)

[...] Suggestions include increasing the number of teachers. [...] (IFA14)

[...] Add more teachers so that each teacher can handle one subject. [...] (IFA19)

## **2) Qualifications and Background of Human Resources**

In addition to recommending an increase in human resources, the informants also emphasize the importance of the qualifications and backgrounds of these personnel. They suggest that teachers should possess relevant technical expertise to effectively deliver subject matter, ensuring higher quality education in vocational and technical schools. The following are the results of interviews conducted by the researcher with the informants:

[...] The ministry must facilitate the development of human resources. [...] (IFD4)

[...] I recommend that the Ministry of Education prepare human resources soon to teach Portuguese. [...] (IFD5)

[...] There should also be investment in human resources. [...] (IFD9)

[...] Regarding the human resources we request, candidates should have a technical background. [...] (IFD13)

[...] I would like to recommend to the Ministry of Education to address the problems that schools face regarding [...] and the shortage of subject teachers. [...] (IFM10)

[...] Human resources are very important. Each subject should be taught by at least two teachers. [...] (IFM18)

## **3. Quality, Accessibility, and Relevance of Teacher Training**

### **1) Relevance and Specialization of Teacher Training**

Regarding the Quality, Accessibility, and Relevance of Training, the first recommendation from the informants is that teacher training provided by the Ministry of Education should be more specialized and tailored to specific subject areas, including productive skills, scientific subjects, and language instruction. They emphasize the need for ongoing, focused training programs that address teachers' qualifications and expertise, particularly in vocational and technical fields, to improve teaching quality and better support students' learning needs. The following are the results of interviews conducted by the researcher with the informants:

[...] My recommendation is, secondly, that the Ministry of Education's training should not be limited to the Portuguese language but also include scientific subjects as well as productive skills. [...] (IFD1)

[...] If the government provides training in the future, it should not be general but based on specific fields. For example, if I am an entrepreneur, I should attend training focused on entrepreneurship, not just general training. [...] Training programs must be tailored to individuals' academic qualifications and the specific subjects they teach, not just generalized for everyone. [...] (IFD10)

[...] Secondly, the knowledge of teachers, especially those in productive areas, must be improved. [...] (IFD12)

I think in the future, the Ministry must provide annual training for teachers in productive, socio-cultural, and scientific areas. (IFM1)

[...] Well, my recommendation is that we also need to update training for teachers in productive fields. [...] (IFM2)

[...] Continue to monitor technical schools, especially focusing on teacher training, particularly in language instruction. [...] (IFM4)

[...] Some training programs are needed. [...] (IFM11)

## **2) Access and Equity in Training Opportunities**

A recommendation from the informant highlights that private and Catholic schools often do not receive training provided by the Ministry of Education, indicating a gap in access to professional development opportunities. The following are the results of interviews conducted by the researcher with the informants:

[...] My recommendation is that, secondly, the training provided by our Ministry of Education is never received by us in private or Catholic schools. [...] (IFD1)

## **3) Capacity Building for Technical and Productive Areas**

Based on this aspect, the informants recommend that the Ministry of Education actively facilitate continuous training for teachers, especially those in productive sectors, to develop relevant skills and keep up with technological advancements. Strengthening teacher capacity through targeted training, including modular evaluation, is considered essential for improving vocational and technical education. The following are the results of interviews conducted by the researcher with the informants:

[...] The ministry must facilitate training for teachers from productive sectors so that they can develop relevant skills. [...] (IFD4)

[...] With the human resources available, we must provide training to keep up with technological changes. [...] (IFD9)

My suggestion is to recommend to the education sector, especially the Directorate of Vocational and Technical Education, to continue strengthening teachers through training, so that it can enhance their capacity to implement teaching in vocational and technical schools, particularly training related to modular evaluation. (IFM13)

#### **4. Support for Quality Vocational Education through Infrastructure, Resources, and Workforce Development**

##### **1) Improvement of Practical Facilities and Infrastructure**

Regarding the issue of limited support from the ministry, especially concerning practical facilities and infrastructure, several teachers recommend improving practical training facilities and equipment in vocational technical schools. They urge the government to invest in dedicated resources, such as a separate ICT laboratory and sufficient practical materials, to facilitate effective hands-on learning. Strengthening these facilities is considered vital for the development and success of institutions like ESTV. The following are the results of interviews conducted by the researcher with the informants:

[...] The government has opened a professional technical school, but it must build a separate ICT laboratory, not a general one. (IFD 8)

[...] Secondly, regarding recommendations on practical training and facilities — if we want to open ESTV, it requires significant investment. There must be investment in facilities, materials, and practical equipment. (IFD 9)

[...] The government must support practical training because it is very important. (IFD 11)

[...] As the vice principal, our recommendation focuses on improving practice facilities. (IFD 14)

[...] My recommendation to the Ministry of Education is that, if ESTV is to move forward, the school must first complete the practical facilities and provide the necessary equipment. (IFD 16)

The same concerns were also expressed by school leaders. They highlight the urgent need for investment in modern and comprehensive practical materials,

furniture, and infrastructure, especially laboratories to support productive disciplines. They emphasize that these improvements should be aligned with existing modules to enable effective practical learning in vocational technical schools. The following are the results of interviews conducted by the researcher with the informants:

[...] We need to request more materials for practice, as some have already started to be modernized. This modernization should continue and be aligned with the existing modules. (IFM 4)

[...] There should be investment in productive areas by providing complete and appropriate practical materials, especially for those areas. (IFM 6)

[...] Furniture and practical equipment are needed for productive disciplines, as well as a proper space to conduct practical activities. (IFM 11)

[...] First, infrastructure must be developed, especially laboratories. [...] must establish the necessary infrastructure, especially for practical equipment. (IFM 18)

In addition to teachers and school leaders, students also emphasize the need for improved practical learning resources, including better internet access, more computers, additional practical manuals, and increased practice sites. They stress the importance of having complete and readily available practical materials and equipment to ensure effective hands-on activities in vocational education. The following are the results of interviews conducted by the researcher with the informants:

[...] Facilitate internet access so that we can use it to create websites quickly, and also increase the number of practical manuals and computers. (IFA 9)

[...] Because our school has only one machine, we cannot operate in a larger area. The Ministry of Education must increase the other facilities that are still lacking in the school. (IFA 10)

[...] The number of practice sites should be increased [...] More practice materials should be provided. (IFA 12)

[...] Practical activities should be made easier to carry out. (IFA 13)

[...] Practical materials should be completed in advance, so that when we begin practical activities, everything is ready, and we can carry them out effectively. (IFA 16)

[...] Any missing practical items should also be completed. (IFA 19)

## **2) Availability and Quality of Equipment and Teaching Materials**

Another recommendation concerns the availability and quality of equipment and teaching materials. In this regard, the teachers recommend that the Ministry of Education prioritize upgrading and expanding laboratory equipment and teaching materials, especially in productive areas. They stress the importance of additional support and investment to ensure schools have the necessary resources to enable effective teaching and learning. The following are the results of interviews conducted by the researcher with the informants:

My recommendation, for the future the Ministry must improve [...] equipment [...] (IFM 1)

[...] My recommendation is to upgrade or increase the equipment needed in the school laboratory. (IFM 2)

Ok, we would like to recommend to the Ministry of Education [...] to help provide some equipment to our school (IFM 3)

[...] We requested additional support to complete the teaching materials. (IFM 4)

[...] There must be investment in productive areas, especially in completing the necessary teaching materials. (IFM 6)

On the other hand, a student and a school leader also recommend that the Ministry of Education provide essential practical materials and equipment, such as computers, to enhance students' hands-on learning opportunities. They emphasize that increased support is necessary to improve the quality of practical training in schools. The following are the results of interviews conducted by the researcher with the informants:

[...] My suggestion is that the Ministry of Education should provide practical materials to this school, such as computers, so that students can better understand the subjects they are learning through practice, as there is currently limited practical training. (IFA 6)

[...] The Ministry must support us by providing equipment and materials. (IFD 4)

### **3) Classroom and Building Expansion**

The next recommendation concerns Classroom and Building Expansion. The informants emphasize the urgent need to increase the number of classrooms and enhance school infrastructure, including constructing additional classrooms and installing a fence around the school. These improvements are seen as essential to support effective teaching and learning in vocational technical schools. The following are the results of interviews conducted by the researcher with the informants:

[...] Therefore, through this opportunity, we recommend to the Ministry of Education to increase the number of theory rooms, as this is essential. (IFD 13)

[...] As vice director, my recommendation, [...] another is our classroom, we have only seven classrooms, which we use only six for the learning process, one we have to use for teachers' offices, this is a difficulty that we encounter. (IFD 14)

[...] To the Ministry of Education, Vocational Technical School to have progress [...] first, increase the school building. (IFD 16)

[...] Build a fence around our school. (IFA 11)

[...] Increase the number of classrooms. (IFA 12)

### **4) Human Resources and Maintenance**

Based on these problems students recommend maintaining existing computers, increasing the number of teachers, and improving computer science materials to enhance practical learning experiences. The following are the results of interviews conducted by the researcher with the informants:

[...] Maintain our computers, increase the number of teachers, and improve computer science materials so that we can practice well. (IFA 15)

### **5) Student Job Opportunities and Internships**

Based on these problems the informants suggest creating job opportunities for students and providing special support for ESTV students, including valid certificates and internship opportunities, to improve their chances of employment. The following are the results of interviews conducted by the researcher with the informants:

[...] Yeah, in my opinion, if possible, create job opportunities for students. (IFM 15)

[...] If possible, ESTV students should receive special attention. If certain criteria can be considered, they can go for internships and receive certificates that are valid and useful for applying to job vacancies. (IFM 17)

## **6) Curriculum, Manuals, and Teaching Resources**

The informants recommend that the Vocational Technical Directorate prioritize providing manuals, teaching resources, and practical materials, especially for hospitality and tourism programs, to better support productive area education. The following are the results of interviews conducted by the researcher with the informants:

[...] A recommendation to the Vocational Technical Directorate is to pay special attention to hospitality and tourism schools regarding manuals and teaching materials, so they can support us in completing the teaching resources needed for productive areas. (IFD 6)

[...] As vice director, one of our key recommendations is the provision of didactic materials. (IFD 14)

[...] My suggestion is to support the provision of practical materials. (IFA 14)

## **7) Government Response to School Proposals**

The informant emphasizes the importance of the school's proposals being considered and responded to, highlighting that timely feedback is crucial for addressing the school's needs. The following are the results of interviews conducted by the researcher with the informants:

[...] First, they must consider the proposal that the school submitted, because the proposals are very important. That's why we made this proposal, at the very least, there should be a response. (IFM 16)

## **8) Student Assessment and Reporting Using Standardized Report Cards**

The informants highlight the need for standardized and official report cards provided by the Ministry of Education. Such report cards would ensure consistent recording and evaluation of student assessments across schools, helping teachers accurately track students' learning progress and supporting their further studies.

The following are the results of interviews conducted by the researcher with the informants:

[...] The designation of all subjects must be written in the report card, so that we write according to the report card and then link it to the book we use to teach [...] Its designation can be embedded in the report card, because the report card is empty, [...] because we write the manual can also be wrong [...] (IFM 17)

[...] We suggest that the Ministry of Education should standardize and provide report cards to all schools, so that student assessments are properly recorded and uniformly evaluated across institutions. [...] (IFM 19)

[...] It is important to have official report cards that are recognized by the Ministry, so students' learning progress can be clearly tracked and used for further studies. [...] (IFA 20)

[...] Currently, our school doesn't have standardized report cards, and that makes it difficult for teachers to record grades. [...] (IFD 15)

### **3.2. Discussion of Results**

The findings of this study reveal that the implementation of the modular system encounters several challenges, including issues related to human resources, facilities, the learning process, work systems, and various other problems. Based on these findings, the researcher further elaborates on the results according to the previously established research objectives. The elaboration of these findings is presented as follows.

#### **1. Implementation of modular system**

Research findings reveal that evaluation in the modular system of vocational schools is carried out gradually and flexibly, based on the completion of each module. Typically, assessments are conducted after each module through final exams, with additional short tests following each subtopic. These results are averaged to determine the final module score. Unlike general secondary schools, exams are administered immediately after each module ends, enabling more focused assessment and timely feedback. This system also allows for immediate remediation when students underperform, including make-up exams or alternative tasks, and imposes

credit penalties for absenteeism or rule violations. This is consistent with the findings of Sihotang et al. (2025, p532), who explain that modular learning enables students to learn independently through systematically arranged learning units tailored to their level and pace. The modular structure supports progressive achievement of outcomes and provides students with flexibility and autonomy in completing modules, which aligns closely with the practices observed in vocational schools in Timor-Leste.

A major advantage of the modular approach is its ability to improve student focus and motivation through regular and segmented assessments, contrasting with the semester-based exams in general schools. This finding aligns with studies on e-module development in vocational education, where students showed increased learning motivation and improved outcomes through structured, modular-based learning models (Sumandya et al., 2021, p303). Moreover, both studies demonstrated that gradual evaluations and targeted feedback following each module not only enhanced student independence but also ensured efficiency and practicality in the teaching-learning process. These findings reinforce the role of modular evaluation in creating a more adaptive and measurable assessment system. However, challenges remain, especially in managing credit recovery and teacher workload due to individual assessments and remedials. As a solution, some schools have adopted quarterly exams that consolidate several modules into one assessment, offering a more systematic and efficient approach to evaluation.

## **2. The preparation and perceptions of student and teachers**

Teachers in vocational schools prepare for the implementation of the modular system by supplementing learning materials with additional references, summarizing overly lengthy modules, and developing practice manuals to address gaps in content. These efforts are necessary due to the limited relevance and outdated nature of the curriculum, which often does not align with local industry needs. Teachers also adjust instructional time, including extra sessions outside regular hours, to ensure material

coverage and practical engagement. Despite these efforts, challenges persist, such as limited teaching equipment, a shortage of qualified instructors, and the lack of government support for training, curriculum revision, and monitoring.

These findings align with previous research indicating that modular learning implementation imposes significant practical challenges on vocational school teachers, particularly concerning workload and systemic readiness. Felisilda et al. (2024, p1) highlights that educators, especially in remote contexts, continue to face difficulties related to the distribution, collection, and feedback processes of modules due to constrained educational resources. Salvador et al. (2022, p1) further elucidates that many technical and vocational education (TVE) teachers are tasked with instructing subjects outside their specialization because of staff shortages, limited training opportunities, and a lack of institutional support, which compel them to develop adaptive coping strategies independently. Additionally, Lin et al. (2024, p2) observes that the shift to a new curriculum often inadequately aligned with local industry requirements necessitates teaching transformations such as the preparation of supplementary materials and adjustments in instructional time. However, these initiatives are frequently hampered by insufficient equipment, a deficit of qualified instructors, and weak monitoring mechanisms. Collectively, these scholarly insights substantiate the present study's conclusions that vocational teachers undertake additional responsibilities to redesign instructional content, provide supporting references, and adapt pedagogical approaches to overcome structural constraints and limited institutional backing, thereby ensuring the effective implementation of modular learning.

Most teachers perceive the modular system positively, especially due to its flexible assessment structure, which allows exams to be conducted immediately after completing each module. This segmented approach is seen as beneficial for improving student focus and learning outcomes. However, teachers also note issues with student motivation, misunderstandings about the modular evaluation process,

and declining enrollment. Certification remains a major concern, as many students graduate without formal recognition of skills. To address these issues, some schools have implemented quarterly exams to consolidate multiple modules into a more structured and manageable evaluation system.

In relation to the research findings presented above, particularly concerning how certain assessment practices can lower student motivation and the implementation of periodic evaluations, previous studies offer relevant insights. Research by Balo & Sanchez (2025, p131) in the Philippines emphasizes that adopting a flexible assessment approach can help enhance student motivation. Meanwhile, a study by Wati et al. (2018, p84) in Indonesia suggests that periodic evaluations are also applicable and beneficial in vocational and technical schools.

### **3. The obstacles faced by schools and teachers**

The implementation of a modular learning system in schools faces significant challenges related to facilities and resources. Many schools suffer from a lack of adequate practical hours, equipment, and laboratory facilities. Data indicates that the available practical time is often insufficient, with students having to share a single laptop among several peers. The absence of modern equipment mentioned in the modules, which is not available in the country, forces teachers to rely solely on theoretical instruction, despite the curriculum's emphasis on a 70% practical component. Furthermore, infrastructural problems such as a shortage of classrooms, chairs, and tables exacerbate the situation. The limited opportunities for practical work and internships also pose a major obstacle, preventing students from applying the knowledge they acquire.

These challenges are consistent with earlier research that points to inadequate facilities, equipment, and limited practical training as major barriers to effective vocational education. Yisa et al. (2022, p.147) found that although some human resources are adequate, material resources like ICT equipment remain lacking. They

emphasized the need for well-equipped classrooms and workshops, alongside maintaining a teacher–student ratio of 1:20, to ensure students can engage meaningfully in practical activities and keep up with technological advancements. Moreover, they advocated for stronger collaborations between schools, industries, and the private sector to better align education with workplace demands.

Similarly, Çelik & Gül (2024, p.10) highlighted the difficulty in securing appropriate internship placements, which, compounded by limited institutional support, forces many students to undertake practical training in unrelated fields, reducing the effectiveness of their learning. Hora et al. (2021, p.182–183) further supported these findings by identifying multiple barriers to internship participation in higher education, including limited availability, high costs, insufficient institutional support, and transportation challenges. Their study underscores how financial, social, cultural, and institutional factors intersect to limit students' access to quality practical learning experiences.

Beyond physical constraints, management and human resources are also major hurdles. Teachers are burdened with heavy workloads, often working more than 24 hours per week and teaching numerous subjects that are outside their specialization. The shortage of teachers, particularly in vocational fields, means that one teacher must handle multiple different subjects. The issue of certification is a serious problem, as graduating students lack the necessary certificates to secure employment. This is compounded by curriculum issues, where modules and textbooks are often incomplete or missing, and the content is deemed irrelevant to local conditions and needs. A lack of government support, in the form of teacher training and responses to proposals, adds to the complexity, highlighting a disconnect between policy implementation and the preparation of resources on the ground.

Regarding the challenges faced by educators, this study confirms that teachers are overburdened and frequently assigned to teach subjects outside their areas of

expertise. This finding aligns with Suharno et al. (2020, p1), who identified inadequate teacher competencies as a critical challenge. Furthermore, analysis of the study's findings indicates that the misalignment between the curriculum and industry needs is a central issue, an observation strongly supported by Güngör (2020, p233), who emphasized that incompatibility between training programs and industry demands remains a significant concern. The empirical data from this research not only reinforces this problem but also highlights the lack of adequate technological infrastructure as another substantial inhibiting factor.

Additionally, insufficient governmental support emerges as a crucial element that exacerbates curriculum implementation challenges. This is corroborated by Owodunni et al. (2014, p11), who explicitly identified poor governmental attitudes as a primary obstacle. The findings from this study also reveal that shortages of essential resources, such as instructional materials, tools, and equipment, further compound these issues.

#### **4. The effectiveness of the modular system**

The modular system in vocational education in Timor-Leste offers valuable potential by integrating theoretical knowledge with practical application, which many teachers and students appreciate. This integration is seen as a strong point of the system, allowing learners to gain hands-on experience alongside academic understanding. However, this benefit is overshadowed by several challenges that hinder the system's overall effectiveness. One major issue is the lack of contextual relevance within module content. Teachers reported that many learning materials are not tailored to the local reality, referring to tools, technologies, and examples that do not exist in Timor-Leste. As a result, instructors are forced to focus more on theory and are unable to provide practical demonstrations, which defeats the core purpose of vocational education.

Similar challenges have been documented internationally. In Ukraine, vocational training struggles to balance theoretical and practical components, often resulting in theory-heavy instruction (Kovalchuk et al., 2022, p329-330). Likewise, in Nigeria, the TVET system's 67:33 ratio of theory to practice has produced graduates lacking essential practical skills (Okolie et al., 2021, p94). Research in Thailand further shows that generic, one-size-fits-all teacher training limits effectiveness, while tailored approaches can improve teacher competence (Chaipidech et al., 2022, p1). These parallels highlight that the issues in Timor-Leste, limited contextualized materials, absence of suitable tools, and insufficient teacher capacity, are part of a broader global challenge in aligning vocational education with its practical objectives.

Assessment and evaluation under the modular system also present significant problems. Delays in submitting students' grades, sometimes lasting up to a year, were cited as a common frustration. Furthermore, the system's retesting approach, while intended to offer students a second chance, often leads to repeated use of the same exam questions, compromising the integrity of the evaluation. Although the idea of immediate assessment after each module is beneficial, poor student engagement weakens its effectiveness. Students are often unmotivated and treat modular exams lightly, unlike in traditional systems where exams are conducted in bulk and tend to be taken more seriously. This lack of seriousness affects not only academic performance but also contributes to declining enrollment in schools implementing the modular approach.

These findings are in line with Kirogo et al. (2023, p97-98), who emphasizes that global changes driven by the Fourth Industrial Revolution require TVET to provide relevant skills; however, outdated equipment, weak industry links, and skill mismatches reduce student motivation and enrollment. Similarly, research by Villarroel et al. (2024, p2) in Chile reveals that misaligned assessments lead to reduced student engagement and poorer learning outcomes, highlighting the

importance of authentic, timely, and contextualized assessments to improve vocational training effectiveness. Both studies underline the critical need to address assessment and training challenges to better prepare students for the workforce and enhance vocational education quality.

Another critical issue lies in the curriculum itself, which many respondents described as incompatible with Timor-Leste's educational and socio-economic context. The curriculum, largely adapted from Portugal, does not reflect the needs or realities of local students and has been criticized for being imposed without proper localization. Teachers expressed concern that students are the ones paying the price for this mismatch, as the content does not support their learning nor prepare them adequately for employment in their environment. The lack of alignment between curriculum, resources, and local industry creates a gap between what students learn and what they actually need to succeed after graduation.

This gap underscores the urgent need to shift towards a competency-based curriculum model, as advocated by UNESCO and emphasized by Scartezini & Tenorio (2024, p4). Such a model focuses on developing essential skills learning to know, do, be, and live together and promotes active knowledge construction grounded in students' experiences, helping bridge the divide between academic content and the real-world skills required by the local industry.

Despite these challenges, there are some positive aspects to build on. The modular system allows students to retake modules and review content, which supports long-term learning and helps those who may struggle initially. This flexibility is seen as a strength in supporting diverse learning needs. However, for the system to function effectively, deeper reforms are necessary, particularly in aligning module content and curriculum with the realities of Timor-Leste, improving assessment practices, ensuring student motivation, and addressing the critical issue of certification. Without formal recognition of their skills through proper

certification, even well-trained students face difficulties in entering the workforce. Therefore, while the modular system holds promise, its successful implementation requires systemic adjustments to ensure it truly benefits students and prepares them for real-world employment.

The rapid technological changes in industry highlighted by participants reinforce the necessity of lifelong learning and continuous skill updating, especially in technical fields. This study's data supports that modular learning's flexibility can meet diverse learner needs and adapt to changing labor market requirements. Nevertheless, improving access to training opportunities and ensuring formal certification are vital steps to enhance graduates' employability and acceptance by employers, aligning with insights from Poschauko et al. (2024, p1880). Furthermore, vocational schools face ongoing challenges in aligning curricula with industry demands and securing meaningful partnerships. Programs like Link and Match and initiatives such as the VS Center of Excellence aim to address these issues, but limited industry involvement and infrastructural gaps persist. Learning from successful dual VET models, stronger collaboration and curriculum relevance are necessary for the modular system to fully realize its potential in improving employability and ensuring students receive both the skills and certification required for the workforce (Yoto et al., 2024, p2,3).

## **5. Impact of the modular system**

The implementation of the modular system in vocational and technical schools has produced mixed results, influenced various aspects of the teaching and learning process. On the one hand, the system encourages student initiative, as evidenced by learners bringing their own tools, such as knives, sticks, brooms, and buckets, for practical activities, often with the support of their families. This reflects a strong sense of responsibility and engagement. However, this also highlights a systemic issue: the lack of institutional support and equipment provision from the schools,

which places an additional burden on students and their families. Although the modular system is intended to promote hands-on learning, inadequate resources and insufficient facilities often force teachers to rely heavily on theoretical instruction, and in many cases, students must share equipment or forego practical sessions entirely due to the unavailability of modern tools.

Recognizing these challenges, it is clear that developing well-structured and contextually relevant learning modules is essential. Such modules can guide teachers in delivering practical skills effectively even when resources are limited, providing adaptable and flexible content that supports student learning. By enhancing the design of learning modules, the modular system can better fulfill its goal of fostering hands-on competence, enabling students to acquire the necessary skills despite infrastructural constraints (Shaifuddin & Nashir, 2022, p.1099).

Furthermore, the findings emphasize the need for vocational education and training programs to enhance the integration of digital tools and to bridge differing perceptions of teaching effectiveness in order to better meet students' expectations and learning needs (Noguera et al., 2024, p1).

This mismatch between curricular content and actual teaching conditions has significant consequences. One of the most pressing issues is the sharp decline in student enrollment and motivation. Many students lose interest because they do not experience the practical training they expected in a technical education setting. Parents have echoed these concerns, questioning why technical schools do not provide adequate practical training. Their dissatisfaction, along with that of students, illustrates a growing disconnect between educational expectations and the realities of modular system implementation. Furthermore, the lack of practical experience ultimately weakens the quality of student learning and reduces the credibility of vocational training programs in the eyes of the community.

A lack of practical skills significantly contributes to youth unemployment and poverty, making effective vocational training essential. Studies from developing countries show that practical skill training yields positive short-term impacts, especially for women, supporting our findings (Chakravarty et al., 2019, p.1-3). Similarly, research on software engineering education reveals a persistent gap between university curricula and industry needs, with programs emphasizing theory over practical skills. Our study confirms that this mismatch in vocational education leads to decreased student motivation and parental dissatisfaction, undermining both educational quality and program credibility (Garousi et al., 2020, p1-2).

Another area of concern lies in the assessment and curriculum design. The modular system requires students to undergo retesting, which in some cases has led to inflated scores when students are exposed to the same questions. This raises concerns about fairness and the integrity of the evaluation process. In addition, many students and teachers express frustration with the modular curriculum itself, describing it as disjointed and difficult to follow. The lack of continuity between modules prevents students from developing a deep understanding of the material, and many believe that the previous, non-modular curriculum was more coherent and effective. These issues point to a need for improved curriculum development and alignment to ensure that students receive a meaningful and connected learning experience.

Assessment plays a crucial role in shaping curriculum implementation and has evolved from rigid government control toward collaborative efforts that emphasize alignment with learning outcomes, addressing fragmentation and discontinuity common in modular systems (Gleeson, 2024, p237). Effective learning requires students' active engagement and the development of deep understanding, but modular curricula often disrupt this process, leading to frustration among students and teachers. Assessment design must ensure fairness, validity, and integrity, especially given challenges like retesting and inflated scores, to support meaningful

and connected learning experiences (Elsamanoudy et al., 2024, p2). Therefore, improving curriculum development and aligning assessments with curricular goals are essential to foster coherent learning and maintain evaluation integrity in modular education.

Finally, the problem of certification remains unresolved and significantly undermines the purpose of vocational education. Graduates often struggle to find employment because they lack official certificates, despite completing their training. This administrative shortcoming represents a serious flaw in the implementation of the modular system and limits students' opportunities in the job market. In conclusion, while the modular system offers potential benefits, such as promoting student responsibility and practical engagement, its success is currently hindered by inadequate resources, ineffective curriculum design, demotivated learners, and institutional challenges. Addressing these issues is essential to enhance the quality and credibility of vocational education in the context of modular learning.

These findings are reinforced by existing literature, specifically the OECD (2023, p82) report, *Building Future-Ready Vocational Education and Training Systems*, which also highlights the challenges of implementing modularization in VET. The report underscores the necessity of clear learning outcomes and a transparent national qualifications framework to avoid module overlap and resolve certification issues. While competency-based curricula, developed through collaboration between education and industry, can equip graduates with relevant skills, many still lack official certification. This limitation restricts their job opportunities and ultimately diminishes the impact of the vocational modular system. Therefore, addressing certification and administrative problems is crucial for improving the quality of vocational education and the employability of graduates (Nguyen et al., 2024, p113,110).

## **4. Conclusion and Recommendation**

### **4.1. Conclusion**

Based on the results and discussion presented above, the researchers concluded that:

Teachers actively prepare for the modular system by utilizing various references and making adjustments to the curriculum. They look for references from other countries, such as Indonesia and Japan, to enrich their modules and help students learn effectively. Teachers also summarize long modules to make the content more manageable for students. Additionally, some teachers increase class time to ensure the material is covered. Some teachers also prepare practical manuals for their classes.

The modular system has several perceived advantages, particularly concerning examinations and student learning. Exams are not held all at once, which is different from general secondary schools, and teachers can administer them as soon as a module is completed. This allows students to receive immediate feedback on their learning outcomes. The system is also seen as faster for learning and completing exams. Students and teachers appreciate that vocational schools integrate both theory and practice simultaneously.

Significant challenges exist with the content of the modules and a lack of resources. Many modules and textbooks contain content that is not relevant to the local context or available job market in Timor-Leste. The curriculum, which was imported from Portugal, has not been updated since 2011 and does not align with the country's conditions. Schools also suffer from a lack of modern equipment and facilities, forcing teachers to focus on theory instead of the practical training that makes up 70% of the curriculum.

The implementation of the modular system faces multiple issues related to students and teachers. Students sometimes lack motivation because the system is

new to them, and they may not take the exams seriously. There has also been a decline in student enrollment, with some parents and students complaining about the lack of practical activities. Teachers face a heavy workload, often teaching multiple subjects outside their specialization due to a lack of qualified staff. Additionally, there is a significant delay in submitting exam scores from subject teachers to homeroom teachers.

A major and persistent problem is the lack of proper certification for students. Students who graduate often cannot find jobs because they lack the necessary certificates, a problem partly attributed to teachers themselves not having certifications. While this is a challenge, the modular system does offer a credit and remediation process where students have the opportunity to retake exams and recover failing scores. Finalist students must also complete an internship (FCT), a professional aptitude test (PAP), and a national exam to graduate.

#### **4.2. Recommendation**

Based on the conclusion, the following recommendations are proposed for consideration by the Ministry of Education:

1. **Revise and Adjust the Curriculum:** The Ministry should review and revise the existing modular curriculum. The current curriculum, which was imported from Portugal, is not entirely relevant to the realities and conditions in Timor-Leste and has not been updated since 2011. It is crucial to remove materials that are not relevant to the local context and develop content that is essential for students.
2. **Enhance Facilities and Practical Equipment:** The Ministry must prioritize providing adequate facilities and practical equipment in vocational schools. Many schools currently lack modern equipment mentioned in the modules, forcing teachers to focus on theory instead of the practical training that makes up 70% of the curriculum. Investment in practical equipment that is relevant to

the local job market is necessary to ensure students can develop the required hands-on skills.

3. **Develop Human Resources and Teacher Training:** The Ministry needs to address the shortage of skilled teachers, especially in productive fields. Teachers often have heavy workloads, exceeding civil servant regulations, and are assigned to teach multiple subjects outside their specialization due to the lack of qualified staff. Continuous training, including language training, is also needed to ensure teachers can effectively implement the modular system.
4. **Establish a Clear Certification System:** The persistent issue of certification must be resolved promptly. Many vocational school graduates cannot find jobs because they lack the necessary certificates, a problem partly attributed to teachers themselves lacking certifications. The Ministry, through INDIMO, should collaborate to create a clear and structured certification system that is awarded upon completion of vocational education.
5. **Improve Engagement and Communication:** The Ministry should improve communication and engagement with schools and other stakeholders. Schools have submitted many proposals for improvements but often receive no response. The government also needs to monitor the implementation of the modular system and provide necessary support to address the challenges faced by teachers and students. Additionally, the Ministry should consider input from companies and private schools in curriculum development.
6. **Revise Module Content to Ensure Local Relevance:** The Ministry of Education needs to revise the content of the modules to make them more relevant to the reality and conditions in Timor-Leste. Currently, much of the material discusses international topics and uses examples from other countries, which are not available locally. The adjustment should be focused on what students will encounter during their internships and after graduation.

7. **Provide Complete Modules and Textbooks:** The Ministry must ensure that all modules and textbooks are fully available for every subject. Currently, some modules are missing or incomplete, making the teaching process difficult. The number of books is also often insufficient for all students, forcing them to share.
8. **Reduce the Excessive Number of Modules:** Some subjects have too many modules, which is seen as a burden for both teachers and students. The Ministry should review and reduce the number of modules to make them more efficient and achievable within the allotted time.
9. **Integrate Modules with Curriculum and Practical Activities:** Although the curriculum mandates 70% practice and 30% theory, the reality is that often only theory is taught. This issue is compounded by module content that is sometimes irrelevant to practical application. The Ministry must ensure that module content supports practical activities and that schools have the necessary facilities to conduct them.
10. **Increase Support for Teachers:** Teachers often have to summarize lengthy modules, search for additional references from books in other countries like Indonesia or Japan, and make their own adjustments to supplement the module material. The Ministry should provide better support to teachers by supplying complete and relevant teaching materials so that they do not have to perform extra work

## 5. Bibliographical References

- A. Halim, H., Ani, A. I. C., & Chohan, A. H. (2024). Measuring the Performance of Industrialized Building System (IBS) Construction on Projects Towards Achieving IR 4.0 in Malaysia- Contractor's Perspective. *International Journal of Built Environment and Sustainability*, *11*(3), 13–20. <https://doi.org/10.11113/ijbes.v11.n3.1236>
- Afriyie, D. (2017). Leveraging Predictive People Analytics To Optimize Workforce Mobility, Talent Retention, and Regulatory Compliance in Global Enterprises. *International Journal of Engineering Technology Research & Management*, *1*(5), 31–49. <https://doi.org/10.13140/RG.2.2.26092.27521>
- Alawag, A. M., Alqahtani, F. K., Alaloul, W. S., Liew, M. S., Baarimah, A. O., Al-Mekhlafi, A. B. A., & Sherif, M. A. (2024). Developing Framework for Implementing Total Quality Management (TQM) in Sustainable Industrialized Building System (IBS) in Construction Projects. *Sustainability (Switzerland)*, *16*(10399), 1–23. <https://doi.org/10.3390/su162310399>
- Alenezi, M., Akour, M., & Alfawzan, L. (2024). Evolving Microcredential Strategies for Enhancing Employability : Employer and Student Perspectives. *Education Sciences*, *14*(1307), 1–24. <https://doi.org/https://doi.org/10.3390/educsci14121307>
- Balo, V. T. M., & Sanchez, J. M. P. (2025). Evaluation of educational assessment module for flexible STEM education. *STEM Education*, *5*(1), 130–151. <https://doi.org/10.3934/steme.2025007>
- Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice*, *2*(14), 1–10. <https://doi.org/10.1186/s42466-020-00059-z>
- Çelik, E., & Gül, İ. (2024). Teachers' Opinions on the Problems Encountered in Internship Practices in Special Education Vocational Schools. *Journal of Social Sciences and Education*, *7*(1), 1–24. <https://doi.org/10.53047/josse.1454964>
- Chaipidech, P., Srisawasdi, N., Kajornmanee, T., & Chaipah, K. (2022). A personalized learning system-supported professional training model for teachers ' TPACK development. *Computers and Education: Artificial Intelligence*, *3*, 1–10. <https://doi.org/10.1016/j.caeai.2022.100064>
- Chakravarty, S., Lundberg, M., Nikolov, P., & Zenker, J. (2019). Vocational training programs and youth labor market outcomes: Evidence from Nepal. *Journal of Development Economics*, *136*, 71–110. <https://doi.org/10.1016/j.jdeveco.2018.09.002>
- Creswell, J. W., & Clark, V. L. P. (2018). *Designing and Conducting Mixed Methods Research* (3th Ed). SAGE Publications, Inc.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed). SAGE Publications, Inc.
- Elsamanoudy, A., Shehata, M., Almarabbeh, A., & Alrefaie, Z. (2024). Evaluation of modified essay questions (MEQs) as an assessment tool in third-year medical

- students' modular summative assessment. *BMC Medical Education*, 24(1), 1–9. <https://doi.org/10.1186/s12909-024-06469-w>
- Fahrurrozi, M., Mohzana, Mispandi, & Murcahyanto, H. (2023). Developing Basic Accounting E Module Based on Scientific Approach in Vocational High Schools. *Jurnal Kependidikan: Jurnal Hasil Penelitian Dan Kajian Kepustakaan Di Bidang Pendidikan, Pengajaran Dan Pembelajaran*, 9(1), 356–364. <https://e-journal.undikma.ac.id/index.php/jurnalkependidikan/index>
- Felisilda, R. R. B., Cañedo, L. C., Bongcawil, A. A., & Bersa, D. E. (2024). Challenges of Teachers on Modular Learning: Basis for Development Plan. *International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence*, 1(6), 635–648. <https://doi.org/https://doi.org/10.5281/zenodo.11532932>
- Garousi, V., Giray, G., Tuzun, E., Catal, C., & Felderer, M. (2020). Closing the Gap between Software Engineering Education and Industrial Needs. *IEEE Software*, 37(2), 68–77. <https://doi.org/10.1109/MS.2018.2880823>
- Gleeson, J. (2024). Heads or tails: the relationship between curriculum and assessment in Irish post-primary education. *Irish Educational Studies*, 43(2), 237–261. <https://doi.org/10.1080/03323315.2022.2061564>
- Grundall, K., & Mack, A. (2023). Influencing Students' Technical Vocational Education and Training Career Path: A Qualitative Research. *Caribbean Journal of Multidisciplinary Studies*, 2(1), 165–198. <https://cjms.utt.edu.tt/ojs/index.php/cjms/article/view/26>
- Güngör, G. (2020). Problems and Solution Suggestions Encountered in Vocational Skill Training in Vocational High Schools: Teachers' Views. *European Journal of Education Studies*, 7(4), 233–253. <https://doi.org/10.5281/zenodo.3823413>
- Gyimah, N. (2020). Assessment of Technical and Vocational Education and Training (TVET) on the development of the World's Economy: Perspective of Africa, Asia and Europe. *SSRN Electronic Journal*, 1–66. <https://doi.org/10.2139/ssrn.3541072>
- Hora, M. T., Wolfgram, M., Chen, Z., & Lee, C. (2021). Closing the Doors of Opportunity: A Field Theoretic Analysis of the Prevalence and Nature of Obstacles to College Internships. *Teachers College Record: The Voice of Scholarship in Education*, 123(12), 180–210. <https://doi.org/10.1177/01614681211070875>
- Islam, M. A., & Aldaihani, F. M. (2022). Justification for Adopting Qualitative Research Method, Research Approaches, Sampling Strategy, Sample Size, Interview Method, Saturation, and Data Analysis. *Journal of International Business and Management*, 5(1), 1–11. <https://doi.org/10.37227/JIBM-2021-09-1494>
- Jaffar, M. I., Kamarulzaman, K., & Ning, T. S. (2025). A Study of Factors Affecting the Use of Industrialized Building System (IBS) Construction in Sabah. *Borneo Engineering & Advanced Multidisciplinary International Journal (BEAM)*, 4(1),

- 58–63. <https://beam.pmu.edu.my>
- Kirogo, W. D., Wawire, V., & Kirimi, F. (2023). Strategies for Aligning Institutional Engineering Technical Vocational Education and Training Practices with Industry Skills Requirements in Kenya. *Reviewed Journal of Education Practice*, 4(1), 96 – 116. [https://ir-library.ku.ac.ke/bitstream/123456789/26504/1/Strategies for Aligning Institutional Engineering Technical Vocational Education and Training Practices With Industry Skills Requirements in Kenya.pdf](https://ir-library.ku.ac.ke/bitstream/123456789/26504/1/Strategies%20for%20Aligning%20Institutional%20Engineering%20Technical%20Vocational%20Education%20and%20Training%20Practices%20With%20Industry%20Skills%20Requirements%20in%20Kenya.pdf)
- Kovalchuk, V., Maslich, S., Tkachenko, N., Shevchuk, S., & Shchypska, T. (2022). Vocational Education in the Context of Modern Problems and Challenges. *Journal of Curriculum and Teaching*, 11(8), 329–338. <https://doi.org/10.5430/jct.v11n8p329>
- Lim, W. M. (2024). What Is Qualitative Research? An Overview and Guidelines. *Australasian Marketing Journal*, 00(0), 1–31. <https://doi.org/10.1177/14413582241264619>
- Lin, T. C., Lee, Y. S., & Ye, J. H. (2024). A study on Taiwan’s vocational senior high school teachers’ teaching identity and teaching transformation when facing a new competency-based curriculum. *Frontiers in Psychology*, 15, 1–13. <https://doi.org/10.3389/fpsyg.2024.1290551>
- Maryanti, N., Rohana, & Kristiawan, M. (2020). The Principal’s Strategy in Preparing Students Ready To Face the Industrial Revolution 4.0. *International Journal of Educational Review*, 2(1), 54–69. <https://doi.org/10.33369/ijer.v2i1.10628>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An expanded sourcebook* (2nd Ed). SAGE Publications.
- Nguyen, T. N., Pham, H. M. T., Tran, T. X., Do, L. T. T., & Pham, A. N. (2024). Perceived Impacts And Challenges To The Modular Approach To Curriculum Development In Viet Nam: Vocational Education And Training. *Proceedings ICSIT, International Conference on Society and Information Technologies, 2024-March*(Icsit), 103–110. <https://doi.org/10.54808/ICSIT2024.01.103>
- Noguera, I., Barrientos, D., Torres-Sánchez, M., & Pineda-Herrero, P. (2024). Exploring Pedagogical and Digital Practices in Vocational Education and Training: Comparing Teacher and Student Perspectives. *Education Sciences*, 14(734), 1–14. <https://doi.org/10.3390/educsci14070734>
- OECD. (2023). Building Future-Ready Vocational Education and Training Systems. In *Innovation in vocational education and training*. OECD Publishing. <https://doi.org/https://doi.org/10.1787/28551a79-en>
- Okolie, U. C., Elom, E. N., Igwe, P. A., Binuomote, M. O., Nwajiuba, C. A., & Igu, N. C. N. (2021). Improving graduate outcomes : Implementation of problem based learning in TVET systems of Nigerian higher education. *Higher Education, Skills and Work-Based Learning*, 11(1), 92–110. <https://doi.org/10.1108/HESWBL-12-2018-0140>
- Owodunni, A. S., Magida, J. F., Saba, T. M., & Usman, G. A. (2014). Constraints to Effective Implementation of Technical and Vocational Education Curriculum in

- Technical Colleges in Nigeria. *International Journal of Advanced Research in Education*, 2(2), 11–19.  
<http://irepo.futminna.edu.ng:8080/jspui/handle/123456789/3005>
- Pais, M. R., Véliz-Campos, M., & Quiroz, J. S. (n.d.). Digital competences in Chilean Year-1 university students from technical-vocational secondary education (TVSE) and scientific-humanistic secondary education (SHSE). *Education and Information Technologies*, 29, 9825–9842. <https://doi.org/10.1007/s10639-023-12207-4>
- Poschauko, V. C., Kreuzer, E., Hirz, M., & Pacher, C. (2024). Engineering Education goes Lifelong Learning: Modularized Technical Vocational Education and Training Program for the Automotive Sector. *Procedia Computer Science*, 232, 1799–1808.  
<https://www.sciencedirect.com/science/article/pii/S1877050924001790/pdf?md5=daa96be21cac1501dd63d7e4e8fd3b46&pid=1-s2.0-S1877050924001790-main.pdf>
- Rahman, K. A. A., Jalil, N. A., M. Arsad, M. A., Hashim, S., Rahim, M. B., Yunus, F. A. N., Razali, N., & Ismail, M. E. (2021). Development of mobile application framework based on competency-based education for technical and vocational education. *Journal of Technical Education and Training*, 13(2), 44–52. <https://doi.org/10.30880/jtet.2021.13.02.005>
- Rohmana, A., Mustaji, & Fatirul, A. N. (2021). Pengembangan E-Modul Interaktif Materi Sistem Bilangan Untuk Mendukung Pembelajaran Siswa Sekolah Menengah Kejuruan. *Jurnal Inspirasi Pendidikan*, 11(1), 61–71. <https://ejournal.unikama.ac.id/index.php/jrnspirasi/issue/view/453>
- Salvador, R. Q., Borromeo, C. M. T., Limon, M. R., Parinas, M. A. G., De la Cruz, L. L., & Dalere, J. M. B. (2022). Exploring Technical-Vocational Education Teachers' Challenges and Adaptation Strategies in Teaching Courses Outside their Specializations. *Journal of Technical Education and Training*, 14(2), 34–48. <https://doi.org/10.30880/jtet.2022.14.02.004>
- Scartezini, R., & Tenorio, R. (2024). *An integrated proposal for a rural school curriculum and physical infrastructure reform on Ataúro Island, Timor-Leste: a case report*. <https://research-repository.uwa.edu.au/en/publications/an-integrated-proposal-for-a-rural-school-curriculum-and-physical>
- Shaifuddin, S. H., & Nashir, I. M. (2022). A Systematic Review Analysis on Module Development: Systematic Review Analysis of Module Development in Technical Teaching and Learning for Technical and Vocational Education Systems. *International Journal of Academic Research in Business and Social Sciences*, 12(4), 1099–1111. <https://doi.org/10.6007/ijarbss/v12-i4/12958>
- Sihotang, M. R. Q., Yudhayana, Y., & Salsabilla, M. N. (2025). The Impact of Modular Learning on Student Comprehension, Motivation, and Skill Development. *Jurnal Tarbiyah Islamiyah*, 10(1), 530–549. <https://ejournal.stairu.ac.id/index.php/raudhah/article/view/855>

- Suharno, Pambudi, N. A., & Harjanto, B. (2020). Vocational education in Indonesia: History, development, opportunities, and challenges. *Children and Youth Services Review, 115*(01), 1–8. <https://doi.org/10.1016/j.childyouth.2020.105092>
- Sumandya, I. W., Candiasa, I. M., Suharta, I. G. P., & Sugiarta, I. M. (2021). Development Of A Vocational Based Mathematics E-Module. *INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH, 10*(06), 303–309. <https://www.ijstr.org/research-paper-publishing.php?month=jun2021>
- Surono. (2025). Unit of Competency for Development of Occupational Standards to Align Workforce Competence with Labor Market Demands and Educational Outcomes. *Edunity, 4*(5), 174–190. <https://edunity.publikasikupublisher.com>
- Villarroel, V., Melipillán, R., Santana, J., & Aguirre, D. (2024). How authentic are assessments in vocational education? An analysis from Chilean teachers, students, and examinations. *Frontiers in Education, 9*, 1–12. <https://doi.org/10.3389/feduc.2024.1308688>
- Wati, L., Kasmawi, & Mawarni, S. (2018). Implementasi Computer Based Test (CBT) di Sekolah Menengah Kejuruan. *Batoboh: Jurnal Pengabdian Pada Masyarakat, 3*(1), 83–91. <https://doi.org/10.26887/bt.v3i1.491>
- Williams, K. (2025). Course Design in Competency-Based Education: An Approach Based on ADDIE. *Competency-Based Education Research Journal, 2*(1), 1–13. <https://journals.ku.edu/cberj/article/view/23812>
- Wohlin, C. (2021). Case Study Research in Software Engineering — It is a Case , and it is a Study, but is it a Case Study? *Information and Software Technology, 133*, 1–3. <https://doi.org/10.1016/j.infsof.2021.106514>
- Yisa, S. N., Musa, S., & Abdullahi, K. M. (2022). Adequacy of Human and Material Resources of Technical and Vocational Education and Training in Nigeria : a Study of Government Technical Colleges in Niger State Nigeria. *Annals of Technology Education Practitioners Association of Nigeria, 5*(4), 143–157. <http://irepo.futminna.edu.ng:8080/jspui/handle/123456789/18428>
- Yoto, Suyetno, A., Wibawa, A. P., & Romadin, A. (2024). Unveiling the Distinctive Impact of Vocational Schools Link and Match Collaboration with Industries for Holistic Workforce Readiness. *Open Education Studies, 6*, 1–18. <https://www.degruyterbrill.com/document/doi/10.1515/edu-2024-0045/pdf>