



THE DARIU FOUNDATION

# FINAL REPORT

MID-TERM EVALUATION FOR  
THE DIGITAL LITERACY PROGRAMME  
OF THE DARIU FOUNDATION IN VIETNAM

Hai Anh Vu – UEH  
Thanh Nguyen – UEH  
Anh Nguyen - VLU  
Nghị Trương – SASIN

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The evaluation team hopes that the discoveries, conclusions, and recommendations presented in this assessment will aid in the successful culmination of the project and foster progress in comparable initiatives in other nations.

## List of abbreviations and acronyms

AI	Artificial intelligence
DAC	Development assistance committee
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
ILO	International Labour Organization
IT	Information Technology
KIIs	Key Informant Interviews
MOU	Memorandum of Understanding
OECD	Organisation for Economic Co-operation and Development
RBM	Results-Based Management Principles
SASIN	Sasin School of Management, Chulalongkorn University, Thailand
STEM	Science, Technology, Engineering, Mathematics
TDF	Dariu Foundation Switzerland
ToC	Theory of Change
ToR	Terms of References
UEH	UEH University, Ho Chi Minh City, Vietnam
VLU	Van Lang University, Ho Chi Minh City, Vietnam

## **Executive summary**

### **Background, purpose, methodology, and limitations of this Mid-term Evaluation**

This independent mid-term evaluation (“the Evaluation”) assesses the Digital Literacy Programme (“the Programme”) of the Dariu Foundation Switzerland (TDF) from January 2020 to June 2022. Four external evaluators conducted the evaluation based on the Terms of References (ToR) and Inception Report approved by TDF, between August 2022 and March 2023. Interviews with key stakeholders were conducted in November 2022 and February 2023. This final report incorporates all factual corrections and comments provided by the Project Manager on 27 February 2023 and 16 March 2023 to the draft reports submitted on 3 February 2023 and 15 March 2023.

### **Purpose and scope of the Evaluation**

TDF commissioned an independent evaluation of the Programme to serve three purposes: (1) assess its quality, (2) provide recommendations for future implementation and replication, and (3) offer lessons on digital literacy education for Vietnam. The evaluation also included the development and validation of the Programme's Theory of Change. It covers TDF's Digital Literacy education and Coding Clubs activities in Vietnam from January 2020 to June 2022, and excludes other former TDF activities in Vietnam and TDF's activities in other countries.

### **Methodology**

The Evaluation followed a mixed-method design, triangulating qualitative and quantitative data from different sources and methods to ensure validity and credibility. Using the Development Assistance Committee (DAC) criteria and participatory, learning-oriented, and gender-responsive principles, the evaluation involved all stakeholders, encouraged self-reflection, and gave special attention to gender issues. Data collection methods included desk review and document analysis, semi-structured key informant interviews (KIIs), field visits and focus group discussions (FGDs) and face-to-face surveys. See Annex 1 and 2 for reviewed documents and survey participants.

### **Key limitations**

Due to resource constraints, it was not possible to fully evaluate the impact of the Programme. However, the team revamped the Theory of Change (ToC) and evaluated student outcomes through self-evaluation

and post-test analysis, supplemented by a quasi-experimental impact evaluation study. Interviews with Information Technology (IT) teachers and students in the North of Vietnam were limited to online, but the team validated the results across regions.

## **Project description**

Vietnam's labor-intensive economy faces challenges from Industry 4.0, which requires technical and core skills for a competitive labor force. In 2019, TDF launched the Digital Literacy Programme in rural areas of Vietnam to empower poor, rural students to participate in the digital economy. The Programme focuses on Coding and Artificial Intelligence Literacy, with objectives to provide high-quality digital literacy education, boost students' coding skills, creative thinking, team-work skills, and confidence through coding club activities, and replicate the Programme's results through local partners.

## **Main findings and conclusions**

### **1. Relevance**

The Programme aligned with the government's policy documents on Industry 4.0, digital transformation, and educational reform, which prioritize Science, Technology, Engineering, Mathematics (STEM) and informatics education. Its interventions matched the needs and priorities of its direct beneficiaries, including IT teachers and students. The Programme's design was also highly adaptable to various settings, making it possible for IT teachers to customize it according to their local needs. However, the evaluation team noted that the Programme lacked clear strategies to update its approach and ensure its ongoing relevance amidst the fast-changing economic conditions and educational reforms in Vietnam.

### **2. Coherence**

The Programme aligned well with the TDF's goals and complemented other initiatives, creating a comprehensive support system to promote digital inclusion and empower disadvantaged children through education and vocational training. The teaching content and materials of the Programme also complemented the new national curriculum and enhanced STEM education in the targeted schools and provinces. The Coding Club activities, which utilized Micro:bit and provided equipment support, offered a cost-effective and impactful way to engage students in practicing their STEM skills to solve real-life problems.

### **3. Effectiveness**

Most of the Programme's outcomes were achieved as planned, with some even exceeding the targets.

Main outputs delivered by the Programme included: 160 schools were equipped with 4,000 laptops for delivering coding courses (output 1.1). The Programme organized 11,496 training turns for IT teachers to teach new coding programmes (output 1.2). 500 target schools integrated teaching material developed by the project into their IT classes (output 1.3). Teachers trained by the Programme provided 812,000 training turns to students (output 1.4). Moreover, 252 coding clubs with 2,527 members benefitted from the Programme's support (output 2.1). Members of these coding clubs implemented 366 projects (output 2.2).

The Programme's outputs were assessed as high-quality, and IT teachers confirmed that digital literacy education had been successfully implemented in their schools. The evaluation team also found a positive spillover effect of the Programme on the community, contributing to the replication of the Programme. However, progress towards the coding club outcomes were slower than anticipated.

#### **4. Efficiency**

The Programme adopted a strategy of training for the trainers and building coding clubs, instead of directly delivering digital literacy courses to students. This approach allowed the Programme to achieve scalability and sustainability better. Furthermore, the Programme also worked closely with local authorities, schools, and other stakeholders at the very beginning. Therefore, it was able to gain trust and support from the local authorities.

In terms of financial implement, the Programme fully used its budget allocation. However, its financial efficiency could not be evaluated in detail due to the absence of a financial report linking expenses to budget lines and outcomes.

#### **5. Programme Management**

The Programme was led by an experienced management team that provided regular monitoring and technical support, conducted school visits, and collaborated closely with local authorities. The team had a balanced blend of technical and managerial skills, and external experts were involved in developing teaching materials and conducting training courses. However, there is room for improvement in the monitoring and evaluation system, which currently involves extensive paperwork and is not based on a proper ToC framework. The current monitoring and evaluation mainly focused on reporting activities and outputs, with little emphasis on measuring outcomes and impact in relation to the baseline. There is a need for a more streamlined reporting procedure and a system to monitor outcomes and link expenditures to specific outcomes.



## **6. Impact**

Data from the field work highlights positive broad outcomes that are expected to lead to the long-term impact, although a comprehensive impact assessment is still premature. According to feedback from IT teachers and students, the Programme had a positive effect on various skills such as communication, teamwork, problem-solving, creativity, and confidence in coding and computer usage. Self-assessment by students confirmed the improvement in their skills and confidence after participating in digital literacy training and coding clubs. In addition, the Programme also helped develop computational thinking and self-study habits in students. However, school managers and IT teachers suggested that to ensure students' future success, they should also be equipped with an understanding of the digital economy and entrepreneurial skills.

## **7. Sustainability**

The Programme's sustainability has not yet been evaluated as its second phase has not been completed. However, the evaluation team identified key factors that could impact sustainability, including technical and financial viability and community participation and ownership. The transfer of knowledge and skills to IT teachers ensured the technical viability of the program. Materials were provided free of charge on the TDF's website, enabling IT teachers to continue using them without additional costs. While some areas still require support, the government's increased investment in computer infrastructure allowed many schools to offer coding courses independently. However, schools continue to struggle with finding resources for coding clubs. To address this, fostering community ownership and active involvement from local authorities, schools, IT teachers, parents, and students is essential. The Programme did well in involving these stakeholders in its design, implementation, and monitoring but needs to encourage more proactive involvement from schools and IT teachers.

## **8. Cross-cutting issues**

The Program integrated gender and climate change issues in its design of the Coding Club activities. However, due to varying school capacity and resources, there was a lack of clear connection between the program's orientation and actual activities. In terms of outcomes, student survey results showed that the Program successfully advanced gender equality and environmental protection, with over 90% of students agreeing that girls and boys were equal in learning coding and pursuing coding-related careers, and almost 90% expressing an interest in using their coding skills for environmental solutions. However, the survey

also revealed a need for further education on environmental practices to help students become more environmentally conscious.

## **Recommendations**

### **Recommendations on potential future approaches and activities in the next phase**

1. Establish regular feedback and update strategies to maintain relevance and sustainability, consider a flexible model with core schools as role models.
2. Re-evaluate demands of local partners to focus on schools in need of digital literacy training, rather than those with existing resources.
3. Explore partnerships with schools catering to children with special needs or in extremely difficult circumstances to increase the relevance and impact of the Programme.
4. Offer more captivating and large-scale activities and competitions for coding club members and provide follow-up support for their projects.
5. Develop interventions to address students' understanding of the digital economy and entrepreneurial skills, offer career guidance and entrepreneurial training.

### **Recommendations on training content**

6. Collaborate with IT teachers to update teaching materials to align with the new IT curriculum.
7. Promote environmental awareness through practical, relevant issues such as proper disposal of IT equipment.

### **Recommendations on the Programme management**

8. Upgrade the monitoring and evaluation system towards a more results-based one to track outcomes and potential impact.
9. Streamline reporting procedures to prevent excessive paperwork for local stakeholders.

### **Recommendations for new programmes**

10. Use the ToC developed in this evaluation for future projects and develop a results-based planning and monitoring system with a result-based budget and financial reporting mechanism.
11. Retrieve data on students, not training turns, to avoid duplication and consider using an online report system for efficiency.

## Lessons learned

1. Digital literacy programs should align their objectives with national education strategies and consider the national curriculum in IT and STEM subjects to increase relevance and value.
2. Digital literacy programs should be designed and implemented to allow tailoring to the specific circumstances of each school, involving collaboration with local authorities, school managers, and other stakeholders.
3. The "train-the-teachers" approach is considered more effective, efficient, scalable, and sustainable than the "train-the-students" approach in promoting digital literacy education.
4. Digital literacy programs should offer free, accessible, and adaptable online teaching and learning materials for both teachers and students to expand the reach of the program and facilitate the sharing of knowledge.
5. Digital literacy programs should prioritize the development of algorithmic thinking over the memorization of specific coding languages to provide students with valuable problem-solving skills.
6. Hands-on and practical learning activities through Micro:bit and coding clubs are effective in improving students' knowledge and skills. Follow-up activities such as workshops, competitions or mentorship programs can ensure the effectiveness and sustainability of these approaches.
7. Digital literacy programs should promote gender equality by encouraging both boys and girls to take on new challenges outside of their comfort zones, with inclusivity and challenging gender stereotypes central to the program's design.
8. Digital literacy programs should plan for frequent revisions, including updating models and financial plans, and develop a clear theory of change and results-based planning, monitoring, and evaluation system.
9. Successful digital literacy programs should plan in advance how to transfer ownership of all activities to institutions that will be financially and technically able to provide support beyond the program's end.

**Table 1: Ratings of the Programme (summary)**

	<b>Evaluation criteria</b>	<b>Rating</b>
<b>A</b>	<b>Project performance</b>	
	<b>Relevance</b>	5 (satisfactory)
	<b>Coherence</b>	6 (highly satisfactory)
	<b>Effectiveness</b>	5 (satisfactory)
	<b>Efficiency</b>	4 (moderately satisfactory)
	<b>Programme Management</b>	4 (moderately satisfactory)
	<b>Impact</b>	--
	<b>Sustainability</b>	4 (moderately satisfactory)
<b>B</b>	<b>Cross-cutting issues</b>	
	<b>Gender equality</b>	6 (highly satisfactory)
	<b>Environmental awareness</b>	5 (satisfactory)
<b>C</b>	<b>Overall rating</b>	5 (Satisfactory)

Explanations:

- Highly satisfactory (HS = 6): The project had no shortcomings
- Satisfactory (S = 5): The project had minor shortcomings
- Moderately satisfactory (MS = 4): The project had moderate shortcomings
- Moderately unsatisfactory (MU = 3): The project had significant shortcomings
- Unsatisfactory (U = 2) The project had major shortcomings
- Highly unsatisfactory (HU = 1): The project had severe shortcoming

## **1. Background, objectives, methodology and limitations**

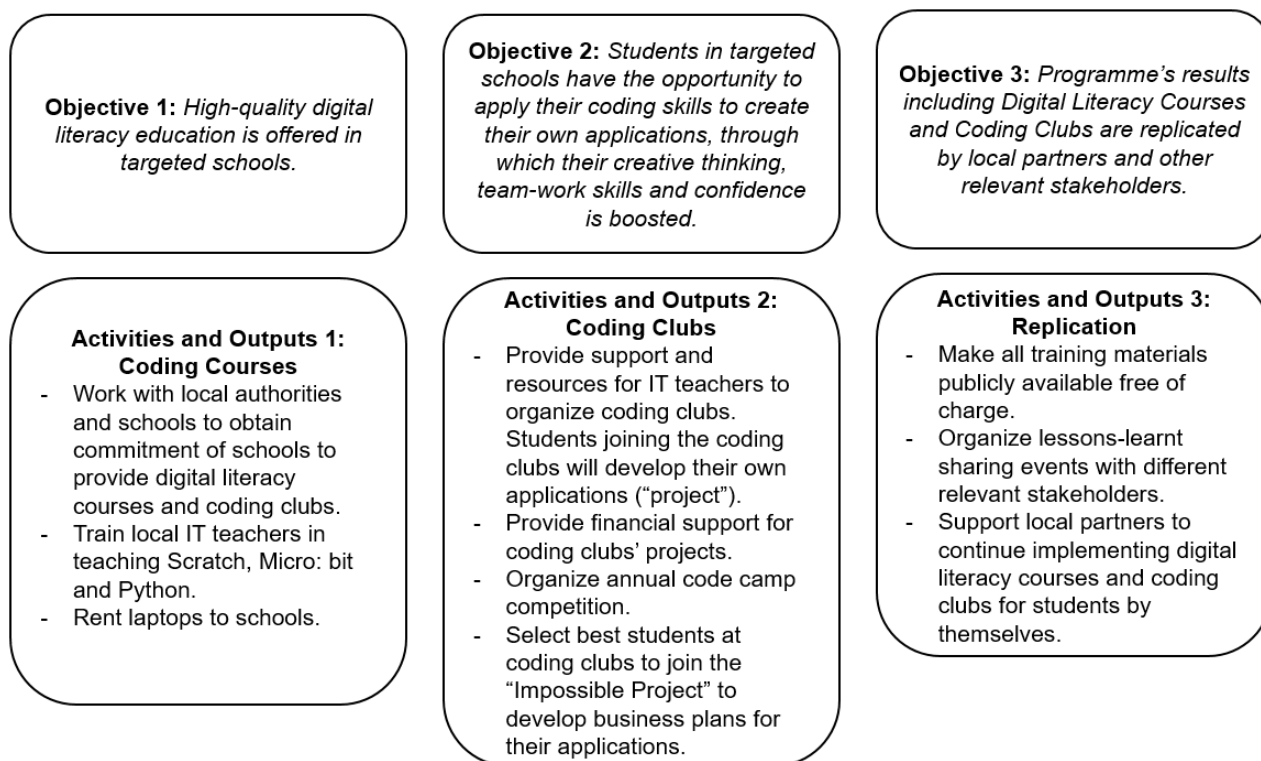
This independent mid-term evaluation (“the Evaluation”) covers the Digital Literacy Programme (“the Programme”) of the Dariu Foundation Switzerland (TDF) from January 2020 to June 2022.

### **1.2. Programme Background and Description**

Industry 4.0—the digital transformation and automation of the economy and society—impose great challenges on the labor-intensive economy of Vietnam. A report of the International Labour Organization (ILO) (2019) suggests that the 4<sup>th</sup> Industrial Revolution has been moving the skill-ladder up and the training systems must prepare students for the new labor market requirements. A combination of technical skills, especially digital literacy, and core skills, such as teamwork, self-learning, and critical thinking, is the key for a competitive labor force in the digital era.

To enhance the labor force and prepare for Industry 4.0, the Vietnamese Ministry of Education and Training also unveiled the new general educational curriculum, which aims at developing new skills and competences for students. With this new program, students have the chance to get familiar with computer science and technology at the primary school level, and advance knowledge in these fields at higher school levels. According to the National Assembly’s plan, the new curriculum started to be applied nationwide in the 2020-21 school year. However, there have been many barriers to a smooth transition from the old curriculum to the new program. Many schools in rural areas do not have sufficient functioning computer equipment and as a result, students do not have enough practice opportunities to enable them build comprehensive understanding of and become skillful in computer science and coding. The problem is further exacerbated by the shortage of qualified Information Technology (IT) teachers who are able to deliver new computer courses.

In this context, in 2019, The Dariu Foundation (TDF) launched the Digital Literacy Programme in rural areas of Vietnam. The Programme is a continuation of TDF’s long-term Digital Literacy Initiative with new curriculums focusing on Coding and Artificial Intelligence (AI) Literacy. The Programme seeks to empower poor, rural students to successfully participate in the digital economy. Main beneficiaries include IT teachers and students, school managers and local authorities in targeted geographical areas. Three specific objectives and their interrelated outputs and activities are summarized in Figure 1.



**Figure 1: The Programme's Objectives and Outputs**

### 1.3. Evaluation scope and methodology

The Evaluation was commissioned by TDF and conducted by four external Evaluators, based on the Terms of References (ToR) dated 17 May 2022 and the Inception Report approved by TDF on 14 October 2022. The TDF's Evaluation Manager managed the evaluation and ensured quality control. The Evaluators were recruited by TDF through a competitive offering process, worked independently and were free from conflicts of interest.

#### 1.3.1. Evaluation scope

The evaluation covered the Programme from January 2020 to June 2022. Its scope is limited to TDF's activities relating to Digital Literacy education and the Coding Clubs in Vietnam. Other former activities of TDF in Vietnam and TDF's activities in other countries were not covered by the evaluation.

#### 1.3.2. Evaluation objectives

The main objectives of the evaluation were to:

- Assess the ongoing relevance and coherence of the Programme, its Theory of Change (ToC), the Programme's role in boosting digital literacy in rural areas of Vietnam, its efficiency and effectiveness, and the sustainability of the Programme.
- Provide actionable recommendations for future implementation of the Programme until the end of 2023 and for the planned replication in other countries.
- Provide key lessons on digital literacy education for the Vietnamese education sector.

### *1.3.3. Evaluation framework and methodology*

In line with the ToRs, the Inception Report and the guidance by the standards of the OECD DAC Network on Development Evaluation, the evaluation was conducted based on the following criteria:

- **Relevance:** The extent to which the Programme's objectives and design were relevant to the needs of its partners and stakeholders, including students in targeted schools and provinces. How the Programme's design evolved over time to adapt to new circumstances, especially under Covid-19.
- **Coherence:** How the Programme was consistent with other activities of TDF and synergetic with Vietnam's 2019 education reform and other digital initiatives.
- **Effectiveness:** The extent to which the Programme achieved progress towards its objectives and results, and the factors influenced the achievements of outputs and outcomes of the Programme.
- **Efficiency:** How resources were allocated efficiently to achieve the Programme's outputs and outcomes.
- **Programme Management:** The degree to which project management followed good practices, including application of Results-Based Management Principles (RBM).
- **Sustainability:** The extent to which the net benefits of the Programme are likely to continue after the Programme ends.

A mixed method design (qualitative and quantitative) was used in this evaluation. The validity and credibility of the evaluation findings relied on triangulating data from different sources and different methods. Conclusions and recommendations were derived from evaluation findings.

The evaluation used the following data-collection methods to assess the Programme:

- Desk review and document analysis: Desk study covered the Programme introduction and summary, Memorandum of Understanding (MOU) between TDF and local authorities, the 2020 Procedural Guidance for Digital Literacy Initiative Implementation, annual reports, training reports, statistical reports, and training materials for IT teachers.
- Semi-structured Key Informant Interviews (KIIs) were used to validate and complement information and findings from desk reviews and analysis of project documents. KIIs were conducted with the relevant TDF's staff, local authorities, and school managers.
- Field visits and Focus Group Discussions (FGDs): In November 2022, the evaluation team visited 14 schools in 04 provinces, such as Tien Giang, Vinh Long, Hau Giang, and Lam Dong. During these visits, the opinions of IT teachers at these schools were collected and some findings were drawn from direct observation. The team also organized two virtual FGDs to interview IT teachers in Hoa Binh.
- Face-to-face surveys: In addition to FGDs with teachers, a group of trained enumerators also interviewed students during the field trips and through the virtual session. The survey was designed to measure the attitudes, skills and learning outcomes of students after receiving the interventions of the Programme.

The evaluation approach followed the principles of participatory, learning-oriented and gender responsive. All stakeholders were included throughout the evaluation, and interviews and surveys were designed as open as possible to collect all opinions. The evaluation was also conducted in a way that encourages self-reflection and self-improvement to facilitate organizational learning. Finally, a special attention was given to gender issues during the evaluation.

#### *1.3.4. Key evaluative steps*

Main evaluation phases included the development of the inception report, the data collection, an intermediate de-briefing on the evaluation results and the submission of a draft report for factual verification and comments and the final submission of the final report integrating consolidated comments.

#### *1.3.5. Ethical considerations*

The evaluation team conducted all interviews based on the following ethical standards: confidentiality, informed consent, no persuasion, and pressure.



## **1.4. Limitations**

According to the ToR and the guidance by OECD DAC Network on Development Evaluation, there are six evaluation criteria, including impact (the extent to which the Programme has generated positive and negative, intended, or unintended effects). However, it would be premature to assess broader outcomes and the impact of the Programme. Moreover, due to time and resources limitation, it is difficult to design an (quasi) experimental study to evaluate the impact of the study.

To address this limitation partially, the team first reconstituted the ToC, including the links of the Programme's activities and outputs to outcomes and impact, and the assumptions that need to be satisfied. Second, the team also tried to evaluate the outcomes of students based on self-evaluation and one-group posttest analysis and complement our analysis with the results of the impact evaluation study of the coding courses of TDF in 2021, in which a quasi-experimental approach was used.

Ideally, it would have been desirable for the evaluation team to visit schools across all regions of Vietnam. However, due to budget constraints, field trips and on-site interviews were only conducted in provinces of the South of Vietnam. Interviews with IT teachers and students from the North of Vietnam were limited and had to be conducted online. The evaluation team overcame this limitation by carefully implementing the virtual interviews and validating the results across regions. The substantial amount of information gathered through all interviews ensured that all findings were objective and representative.

## **2. Findings and assessment**

### **2.1. Relevance**

#### *2.1.1. Relevance to national and regional priorities*

Desk review of Vietnamese government's policy documents on Industry 4.0, digital transformation, and educational reform revealed that the Programme is in line with the national development plan and priorities.

The Prime Minister's Directive No. 16/CT-TTg, dated May 4, 2017, on strengthening the response to the 4<sup>th</sup> Industrial Revolution emphasizes the importance of promoting STEM (science, technology, engineering, mathematics) and informatics in the general education program to develop a workforce that can adapt to new production technology trends. To implement this directive, the Ministry of Education and Training has taken steps to provide teacher training in STEM education and integrate STEM education into the new general education curriculum from 2020 (Official dispatch No. 3089/BGDĐT-GDTrH).

These efforts demonstrate the government's commitment to education reform towards STEM, with digital literacy and coding literacy training being an important component. Hence, the Programme's interventions aligned directly with national education strategies and policies addressing Industry 4.0.

Key informants from local governments also confirmed that the Programme was a timely intervention that contributed to education reform towards STEM education and narrowed the digital skills gap between urban and rural children. A key informant from one education department in Mekong Delta described the Programme's relevance local education needs as follows:

*“Promoting STEM education is a major educational policy that is taken seriously by the government and the education sector. The Programme's activities have created a good foundation for the implementation of STEM education in general and teaching coding literacy particularly. Teaching (coding) with the STEM approach requires teachers to invest a lot of time to gain new knowledge, to improve teaching skills and to prepare new lessons. TDF's Training for Trainers program has helped teachers access advanced digital literacy and coding curriculum, and thus encouraged them to develop STEM activities at schools. TDF's laptop and Micro:bit kit lending program also met the equipment needs of schools, especially ones in remote, difficult areas. Thanks to this program, students from these schools now have opportunities to work with computers and practice coding.”*

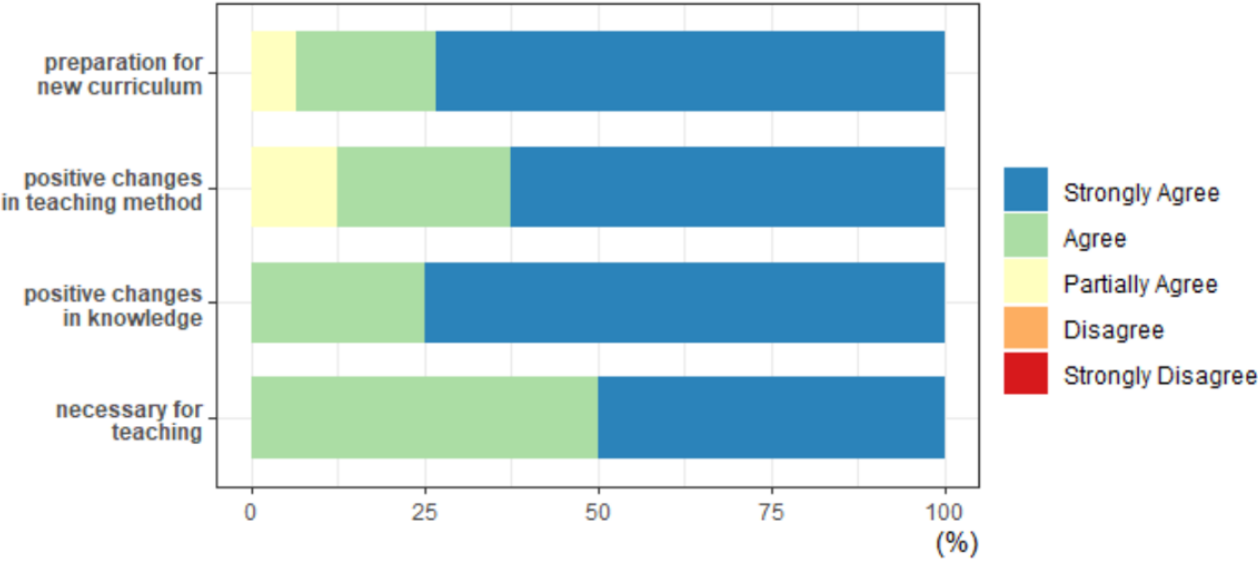
However, the evaluation team also noticed that there were no clear strategies in place to update the Programme's approach and ensure its ongoing relevance amidst the fast-changing economic conditions and educational reforms in Vietnam. This issue is particularly concerning given the continuously evolving needs for provinces and schools for more advanced and diverse interventions in STEM education and digital literacy training.

### *2.1.2. Relevance to direct beneficiaries*

Results from FGDs with teachers and student surveys show that the Programme matched very well with their needs and priorities.

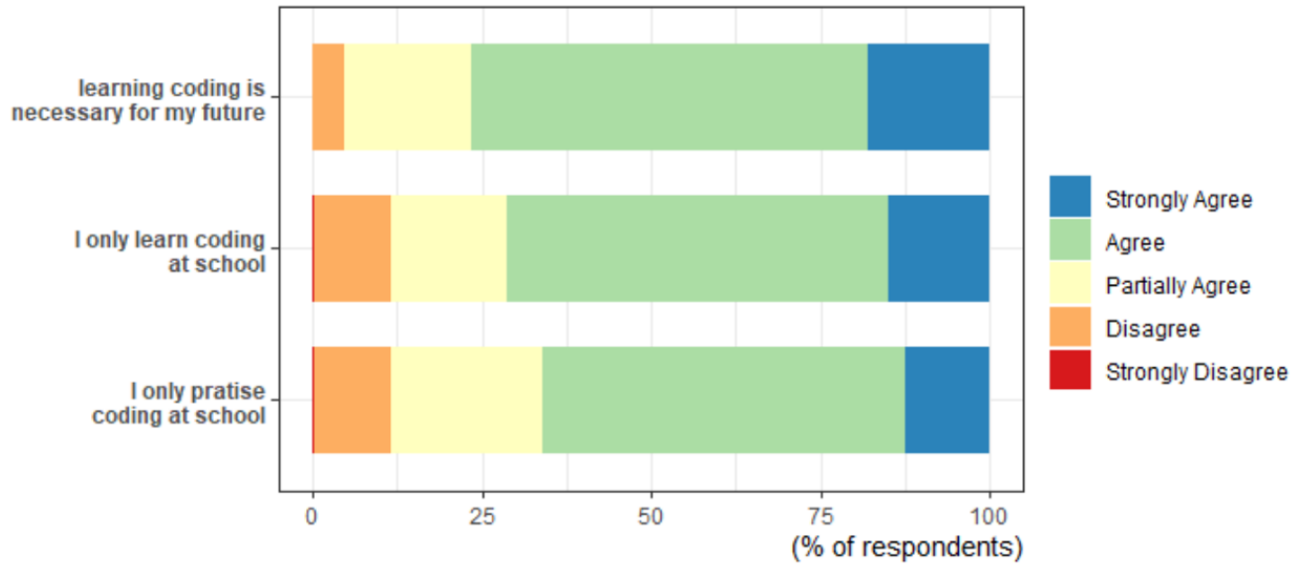
Before 2020, the Informatics subject in Vietnam's general education curriculum focused primarily on teaching students about computer and software usage, not computer science understanding. With the new education curriculum in 2020 and STEM education promotion, IT teachers have faced many challenges in incorporating computer science concepts as well as active learning methods into their

teaching. The Programme, therefore, has been incredibly beneficial for IT teachers, providing resources and support for effective education in this rapidly evolving field. All IT teachers participating in our FGDs agreed that the Programme activities were necessary for their teaching, brought positive changes to their knowledge and teaching methods, and helped prepare better for the new general education curriculum implementation (Figure 2).



**Figure 2: IT teachers’ opinions about the relevance of the Programme**

The Programme also met students’ expressed needs to learn coding in schools. Figure 3 presents students’ opinions on the importance of learning coding and how they access training opportunities. Over 95% of surveyed students recognized the significance of learning coding for their future careers and lives, and schools were often the only source for students to learn and practice coding. However, outdated curricula and a lack of resources made it challenging for schools to provide students with sufficient coding courses and practice opportunities. The Programme addressed this issue by supporting coding courses and Coding Club activities at schools, helping students prepare for a future in a technology-driven world.

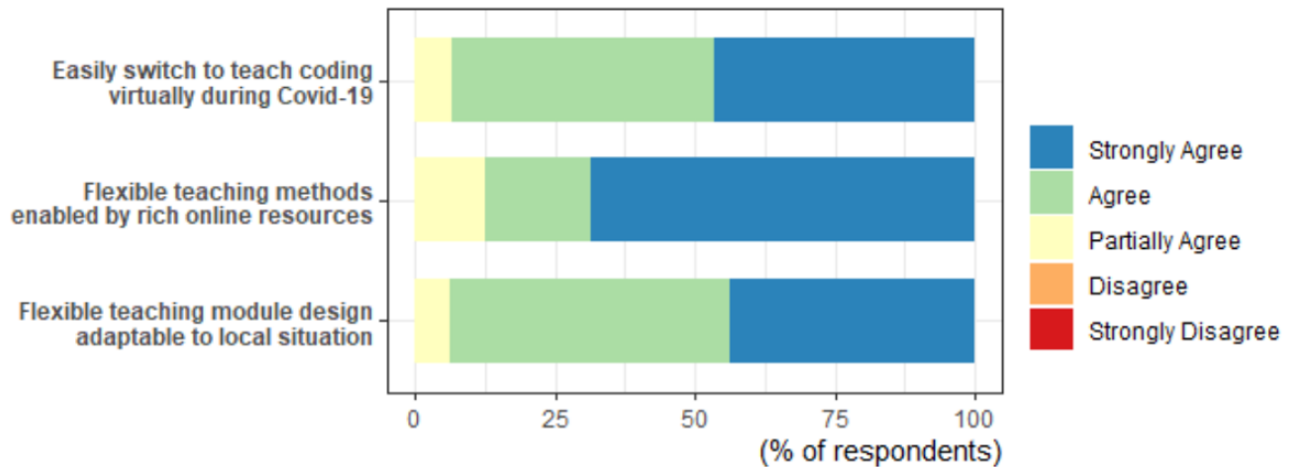


**Figure 3: Students’ opinions about their needs and the relevance of the Programme**

*2.1.3. Adaptability of the Programme*

Evidence shows that the Programme's design is highly flexible and can be adapted to various settings. Figure 4 reflects IT teachers' opinions on its adaptability. All respondents agreed that the design allows for customization to fit local needs. IT teachers can either follow the provided coding curriculum or incorporate select modules into other courses. The Programme also provides abundant online resources for flexible teaching methods, including online instruction and self-learning. During the 2021 Covid-19 pandemic, IT teachers easily transitioned coding courses to a virtual format, responding to challenges posed by the pandemic.

Evidence from FGDs and individual interviews shows that the Programme's design is highly flexible and can be adapted to various environments. Figure 4 presents IT teachers' opinions on its adaptability. All respondents agreed that the design allows for customization to fit local needs. IT teachers can either follow the provided coding curriculum or incorporate selected modules into their courses. The Programme also provides ample online resources for flexible teaching methods, including online instruction and self-learning. Consequently, during the Covid-19 in 2021 when all schools were closed and students were required to study remotely, IT teachers easily transitioned coding courses to a virtual format, effectively responding to challenges posed by the pandemic.



**Figure 4: IT teachers' opinions on the adaptability of the Programme**

The evaluation found that the Programme is closely aligned with national and local priorities and met the needs of IT teachers and students. However, to mitigate the risk of decreasing relevance overtime, the Programme needs to frequently revise its approach and model. Consequently, the relevance criteria received 5 (satisfactory) in the evaluation.

## 2.2. Coherence

### 2.2.1. Internal coherence

The TDF empowers disadvantaged children through promoting education and vocational training. The Programme aligns with the TDF's goals as digital literacy is crucial in today's world. By promoting access to coding resources, training and practice opportunities, it contributes to the TDF's mission of empowering rural children to succeed in the digital era. It also complements other TDF's initiatives: it lays the foundation for children to develop their own IT applications, from which they can participate in the TDF's startup project. Together, the Programme creates a comprehensive support system that promotes digital inclusion and helps children reach their full potential in the digital world.

### 2.2.2. External coherence

The Programme's teaching content and materials complements the new national curriculum. For instance, students who had previously learned about Scratch through the Programme were able to apply that knowledge when studying Subject E (IT applications) of the new IT curriculum. The evaluation team also confirmed that the Programme's Coding Club activities significantly enhanced STEM education in the targeted schools and provinces. While other STEM education programs and initiatives were available,

they often required substantial resources and could be difficult to implement in rural areas. The Programme's introduction of Micro:bit and provision of equipment support for Coding Clubs was a cost-effective and impactful way to engage students in practicing their STEM skills to solve real-life problems.

The programme received a score of 6 (highly satisfactory) for coherence criteria due to being highly coherent internally and externally.

### 2.3. Effectiveness

In this section, we first present the ToC. We then assess the achieved outputs and outcomes against the plan as stated in the ToC.

#### 2.3.1. Theory of Change

Figure 5 illustrates the main elements of the ToC of the Programme.

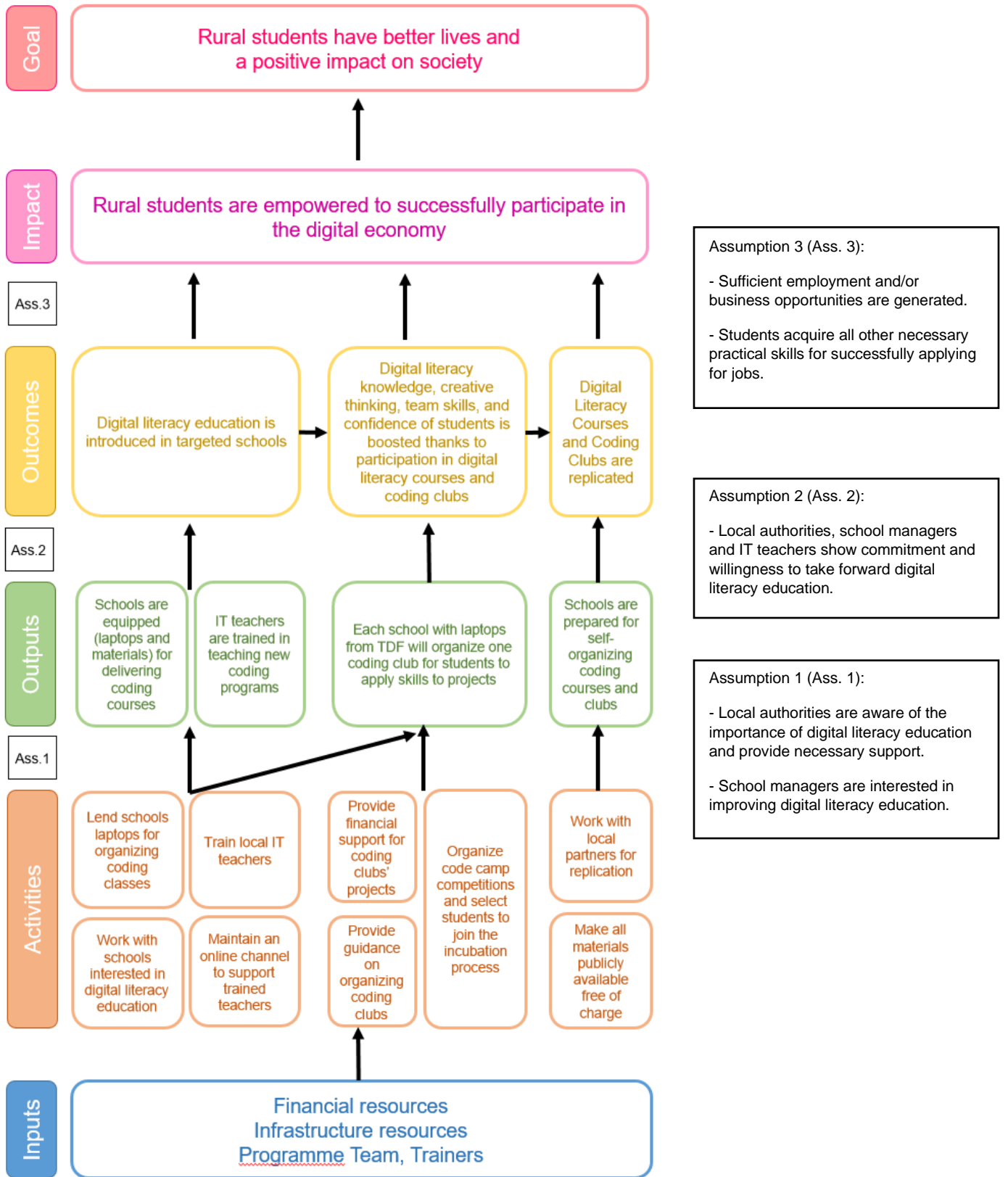
**Development objective** or **Goal** of the Programme was to enhance the quality of life of rural children, and, through that, create a positive effect on society. To accomplish this goal, the **expected impact** of the Programme was to empower rural students with the necessary skills and resources to successfully participate in the digital economy. Three direct **outcomes** that would contribute to create such an impact were:

- *Outcome 1:* Digital literacy education was introduced in targeted schools. Under this outcome, TDF was expected to (1.1) lend schools' laptops and provide schools' materials for delivering coding courses, and (1.2) train IT teachers in teaching the new coding programs.
- *Outcome 2:* Digital literacy, creative thinking, team skills and confidence of students was boosted through participating in coding courses and coding clubs. Under this outcome, each school with laptops from TDF was expected to organize one coding club for students to apply their coding skills to develop their own IT projects.
- *Outcome 3:* Digital literacy courses and Coding clubs were replicated by local schools and partners. Under this outcome, TDF was expected to work with local partners to prepare schools for self-organizing coding courses and coding club activities.

**Key assumptions** regarding the impact and expected outcomes include:

- *Impact level:*
  - Sufficient employment and/or business opportunities are generated.

- Students acquire all other necessary practical skills for successfully applying for jobs.
- *For outcome 1 and 2:*
  - Local authorities' strong awareness of the importance of digital literacy education.
  - Local authorities' strong support of digital literacy education.
  - Strong interest of school managers in improving digital literacy education.
- *For outcome 3:*
  - Strong support, commitment and willingness of local authorities, school managers and IT teachers to take forward digital literacy education.



**Figure 5: Theory of Change**



2.3.2. *Assessment of the Programme's outputs and outcomes*

Table 2 presents a summary of the plan versus accomplishment of the Programme from 2020 to 6/2022. Most of the outcomes were accomplished as per the plan or even exceeded the targets. The progress towards the second outcome, however, has been occurring at a slower pace, and in the next phase, the Programme needs to give more attention to ensuring all coding clubs remain active, as well as providing support for talented children from Coding Clubs to develop business plans from their applications.

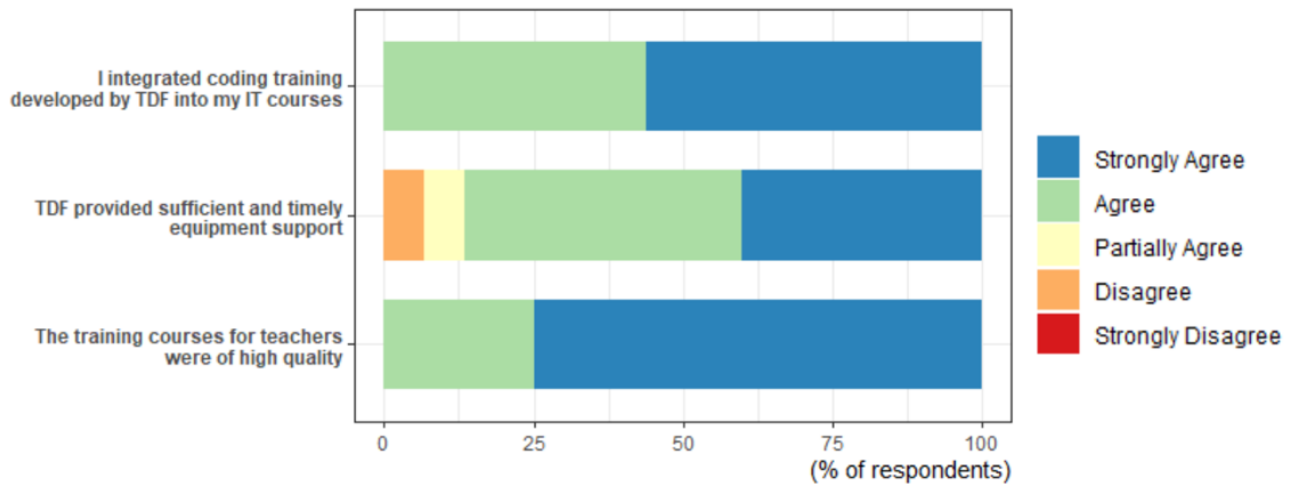
**Table 2: Summary of the plan versus accomplishment of the Programme**

Outcome	Outputs	Project Performance			Remarks
		Target	Accomplishment (by 6/2022)	%	
1. Digital literacy education was introduced in targeted schools	1.1. Schools were equipped with laptops for delivering coding courses.	[[4,000 laptops to 130 schools]]	4,000 laptops to 160 schools	100	
	1.2. IT teachers received professional training in teaching new coding programs.	[[7000 training turns]]	11,496 training turns	164.23	

	1.3. Target schools integrated digital literacy education developed by the project into their IT classes.	[[400 Schools integrated digital literacy education]]	500 schools offering digital literacy education	125	
	1.4. Number of students received coding training.	[[no target]]	812,000 training turns		
2. Digital literacy knowledge, creative thinking, team skills, and confidence of students is boosted thanks to participation in digital literacy courses and coding clubs.	2.1. Number of coding clubs for students to apply skills to projects.	[[100 coding clubs]]	252 coding clubs, in which 158 clubs were active with 2,527 members.	252	
	2.2. Number of applications/projects were independently implemented by beneficiary students.	[[200 applications]]	366 projects were independently implemented by students.	183	
	2.3. Number of business plans for applications were independently developed by beneficiary students by the end of the project.	---	---		The programme only implemented the phase of developing business plans from Coding Clubs applications since

					the beginning of 2022, and as such, it is too premature to assess this indicator.
3. Digital Literacy Courses and Coding Clubs are replicated	3.1. Number of schools without equipment support participated in the project and replicated the digital literacy courses.	[[no target]]	334 schools		
	3.2. Number of schools without equipment support participated in the project and replicated code clubs.	[[no target]]	63/158 coding clubs were organized by schools without equipment support. 70/158 coding clubs were organized by schools borrowing TDF's laptops. 25/158 coding clubs received financial support from TDF.		

During the field trip, the evaluation team also verified and assessed the quality of these achievements. FGDs and survey data with school managers and IT teachers shows that the outputs of the Programme are of high quality and have been effective in achieving desired outcomes. Figure 6 presents the evaluation of IT teachers regarding the first outcome of the Programme. All IT teachers agreed that the training for trainer’s courses provided by the Programme was of exceptional quality. Nearly all of them, at 93.33%, also acknowledged that their schools received sufficient and timely support from the Programme. As a result, all teachers confirmed that digital literacy education had been successfully implemented in their schools.



**Figure 6: IT teachers’ evaluation of the first outcome of the Programme**

The FGDs results confirmed the desk review findings for the second outcome. 87.5% of surveyed schools established coding clubs, but student participation varied widely between them, resulting in slow progress towards the second objective. Three reasons were identified for the diverse and unstable participation rates: the availability of resources and capacity of schools, the limited extracurricular time due to a heavy school schedule, and student interest. Since the first two factors are beyond the control of the Programme, the third factor is the most critical for enhancing the participation of Coding Clubs.

Regarding the final outcome, through FGDs with local authorities and school managers, the evaluation team found that there was a positive spillover effect of the Programme on the community. Participating schools and IT teachers actively shared their knowledge and experiences with other schools in their provinces, contributing to the replication of the Programme. Additionally, the availability of free, publicly accessible teaching materials ensured that even IT

teachers who did not participate in the Programme had the opportunity to incorporate digital literacy knowledge into their courses and benefit from the Programme.

The evaluation revealed that the Programme successfully delivered all key outputs to a high standard of quality. Nevertheless, the coding clubs' performance on the Programme still has a few exceptions. Consequently, the effectiveness criteria received a score of 5 (satisfactory) in the evaluation.

## **2.4. Efficiency**

### *2.4.1. Assessment of approach*

The Programme employed a comprehensive and flexible approach to deliver digital literacy education, addressing one of the key challenges faced by educational development projects - achieving scalability and sustainability. To overcome this challenge, the Programme adopted a strategy of training for the trainers and building coding clubs, rather than self-delivering digital literacy courses to students. By focusing on IT teachers in schools as the primary drivers of digital literacy education, the Programme ensured that its activities were flexible and scalable. Furthermore, the Programme also involved and worked closely with local authorities, schools, and other stakeholders from the very beginning. By that, it was able to gain the trust and support of the local government.

### *2.4.2. Financial implementation*

The Programme fully used its 2020-6/2022 budget allocation, but the absence of a financial report linking expenses to budget lines and outcomes makes it difficult to assess financial efficiency. Cost-saving efforts, such as keeping a small number of the staff and seeking equipment alternatives were attempted, but not all were successful. For instance, online training, while cost-effective for basic topics, was insufficient for advanced ones. As the needs of target schools are becoming more complex, a well-balanced financial plan considering the Programme's dynamics and development is necessary to achieve both effectiveness and efficiency.

The Programme received a score of 4 (moderately satisfactory) for efficiency criteria due to its comprehensive and flexible approach. However, its financial efficiency could not be evaluated in detail, because reporting does not link expenditures to specific outcomes.

## **2.5. Programme Management**

This section looks into the Programme's management effectiveness, as well as monitoring and evaluation standards and practices. Interviews with TDF staff showed that the Programme was led by an experienced management team knowledgeable in digital literacy education and well-connected to local educational systems. The Programme's leaders provided regular monitoring and technical support. Additionally, the management team conducted monitoring school visits and collaborated tightly with local authorities to revise the Programme's activities and swiftly address any implementation challenges, such as the Covid-19 outbreak.

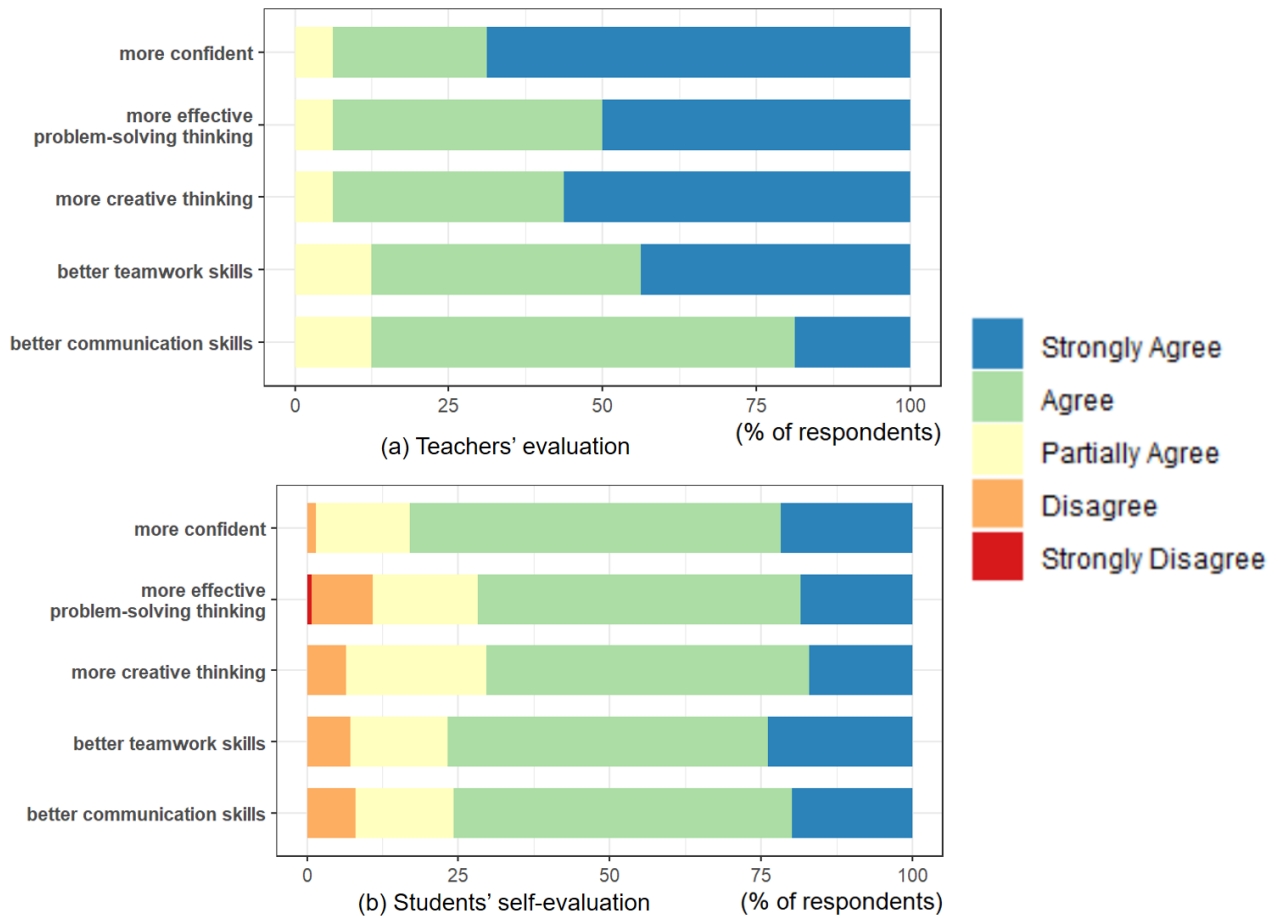
The Programme's team possessed a balanced blend of technical and managerial skills. The team, consisting of five full-time staff, were very dedicated and made significant efforts in organizing teacher training courses and supporting coding club activities. The Programme also wisely chose external experts from the Ho Chi Minh City University of Technology to develop teaching materials and conduct the training courses. This results in high-quality teaching materials and courses, as evaluated in the previous section.

While the Programme was operationally well managed, there is a significant room for improvement in the monitoring and evaluation system. There is no proper ToC and consequently also no logical framework. Key informants from local governments reported that the Programme's monitoring process involved extensive paperwork. A more streamlined reporting procedure is thus desirable. Further, the current monitoring and evaluation mainly focused on reporting activities and outputs, overlooking the measurement of outcomes and impact in relation to the baseline. Although it might not be feasible to change this for the current Programme in Vietnam, there is room to set-up a system to monitor outcomes and to link expenditures to both budget lines and specific outcomes for new projects.

Consequently, the Programme management criteria earned a score of 4 (moderately satisfactory) in the evaluation.

## **2.6. Impact**

Field level data and findings from two research projects conducted within the Programme's setting indicated positive wider outcomes that are anticipated to bring long-term impact, though a full impact assessment is premature.



**Figure 7: IT teachers' and students' evaluation on students' abilities and skills after participating in digital literacy courses and coding clubs**

Figure 7 (a) shows the evaluation by IT teachers of students' abilities and skills after participating in digital literacy courses and coding clubs. All teachers agreed that the Program improved students' communication and teamwork skills, fostered creativity, and developed more effective problem-solving approaches. This resulted in an increase in the students' confidence in both coding and computer usage and their overall academic performance. These findings are supported by the self-assessment of students, as depicted in Figure 7 (b), where the majority reported that their teamwork, communication, and problem-solving skills had improved, as well as their creativity and confidence after they participated in digital literacy training and coding clubs. These positive outcomes serve as a stepping-stone for students to succeed in the digital economy, which is the expected long-term impact of the Program.

Moreover, in today's rapidly advancing technological world, it is crucial for students to possess the ability to self-study digital literacy. Two research projects by Vu et al (2022) showed that participation in the Programme led to the development of computational thinking and self-study habits in students. This is important in ensuring they remain ahead of the curve and are equipped to handle the ever-evolving landscape.

However, the results from the FGD and survey data with school managers and IT teachers suggest that to ensure the future success of students, it is equally crucial for students to get an understanding of the digital economy and the entrepreneurial skills necessary to succeed in it. This includes learning about careers in digital industries, understanding the importance of innovation and creativity, and developing an entrepreneurial mindset. By gaining these skills and knowledge, students will be better equipped and the probability of realizing the long-term impact of the Programme will be enhanced.

Since it is still too early to evaluate the impact, we have refrained from providing a rating for this criterion. Nonetheless, we hold a positive outlook that the Programme's positive effects on students' computational thinking, self-regulated learning and social skills will position them for success in the digital economy in the future.

## **2.7. Sustainability**

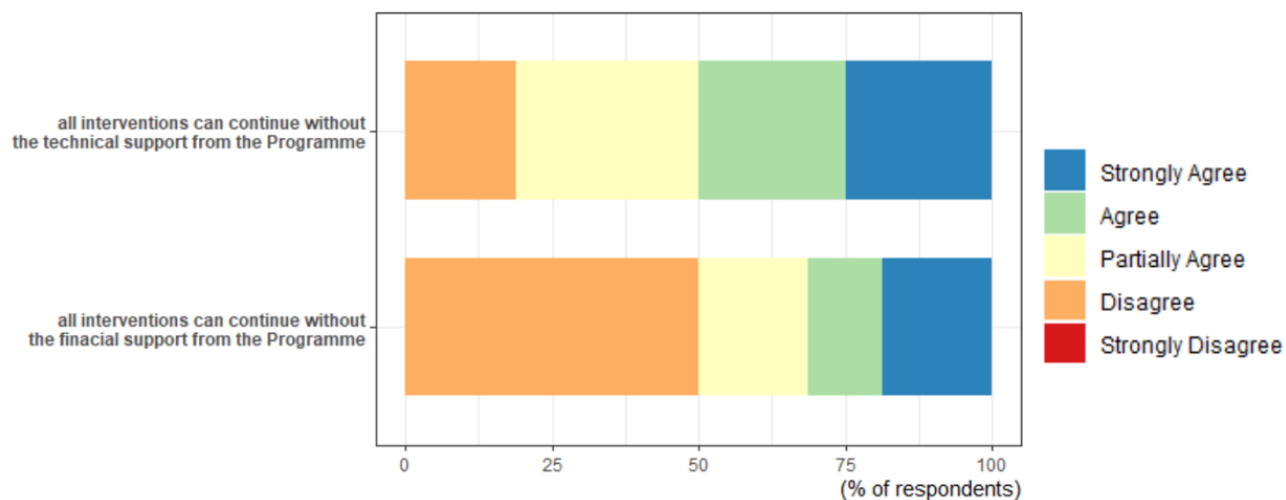
The assessment of the sustainability of results is not yet possible as the program has yet to complete its second phase. Therefore, the focus is on factors that can affect sustainability, including technical and financial sustainability and community participation and ownership.

### *2.7.1. Technical and Financial Sustainability*

During the fieldwork, the evaluation team noted that the transfer of knowledge and skills to IT teachers ensured the technical viability of the Programme. IT teachers could build their own capacity and continue offering courses without direct technical support from the Programme. Additionally, the materials were provided free of charge on the TDF's website, enabling the IT teachers to continue using them without additional costs. In terms of financial sustainability, while some struggling areas still require support from the Programme, the increasing investment in computer infrastructure by the government allowed many schools to offer coding courses on their own. However, finding resources for coding clubs, including incentives for IT teachers managing



the clubs and equipment for students to develop their applications, remains a challenge for most of the schools.



**Figure 8: IT teachers' assessment of the technical and financial sustainability of the Programme**

Figure 8 illustrates the IT teachers' assessment of the technical and financial sustainability of the Programme. The results confirm the evaluation team's observation that the Programme has made good progress in building technical capacities, but much work remains to secure financial sustainability. One potential strategy to mobilize local financial resources for sustainability is to foster a sense of community ownership in the Programme, which is discussed in detail in the next sub-section.

### 2.7.2. *Participation and Community ownership*

Ultimately, the sustainability of a development project depends on the community's level of ownership and responsibility. In this Programme, this includes local authorities, schools, IT teachers, parents, and students.

The evaluation found that the Programme did well in involving local authorities, schools and IT teachers in its design, implementation, and monitoring, which may be considered as benefitting sustainability. Strong partnerships were also formed between the Programme and the community. However, the local communities were not actively shaping the Program's activities. For example, most of the training contents and materials were selected by the Programme, and

schools and IT teachers rarely proposed new training content or activities for the coding clubs. This proactive involvement from schools and IT teachers is crucial for sustainability but was not given enough attention.

The evaluation revealed that the Programme demonstrated high technical viability. However, there were challenges in fostering a sense of community ownership and mobilizing local resources. Consequently, the sustainability criteria received a score of 4 (moderately satisfactory) in the evaluation.

## **2.8. Cross-cutting issues**

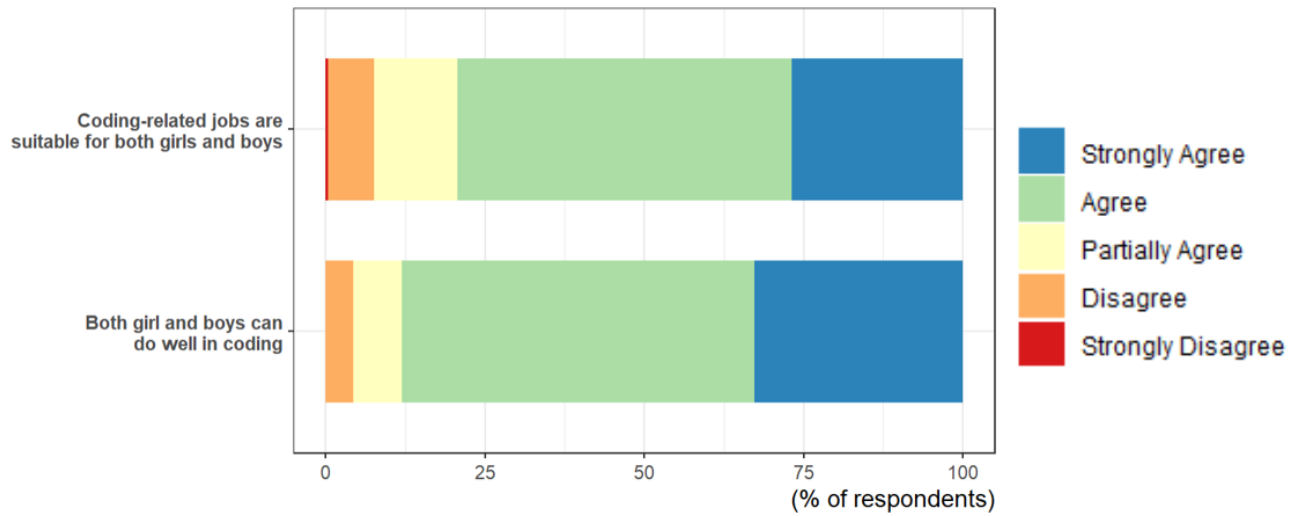
### *2.8.1. Cross-cutting issues in the objectives and design of the Programme*

While the Programme targeted both male and female students equally, the design of the Coding Club activities attempted to contribute to reducing the gender bias. The Programme's guidance for organizing Coding Club activities encouraged both boys and girls to "move out of their comfort zones" by having girls participate more in coding and boys in communication and presentation. Additionally, Coding Club projects were encouraged to focus on environmental issues and climate change. Overall, the Programme's design aimed to address gender and climate change in its activities.

However, it was observed that there was a lack of clear connection between the Programme's orientation and actual Coding Club activities. Key informants from the Programme commented that the implementation of Coding Club activities was heavily reliant on each school's capacity and resources. Thus, while the Programme's objectives and design considered cross-cutting issues, there is room for improvement in the Programme's contributions to these issues.

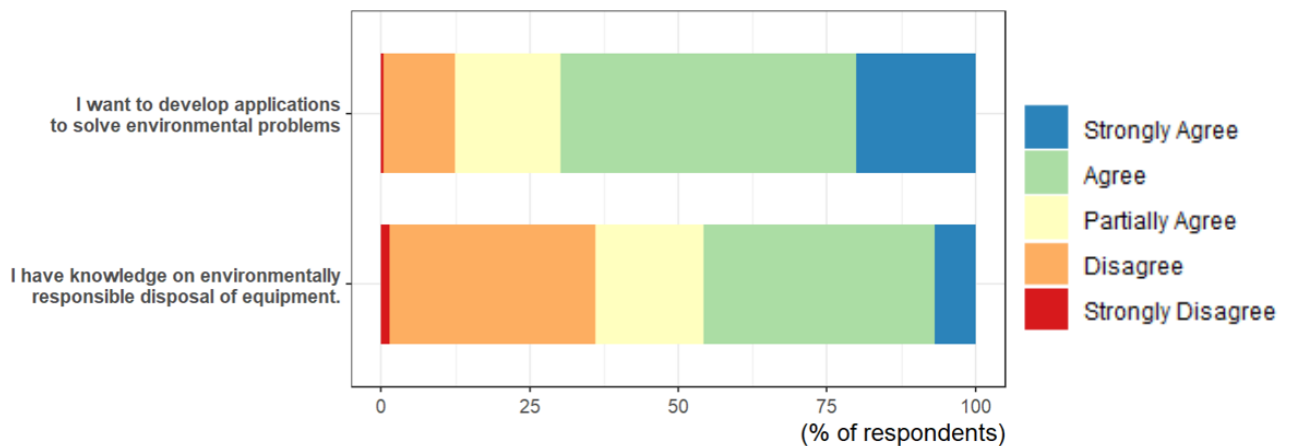
### *2.8.2. Cross-cutting issues in the outcomes of the Programme*

The student survey results showed that the Programme not only met its objectives but also advanced gender equality and environmental protection. Figure 9 displays students' perceptions of gender stereotypes after participating in digital literacy courses. Over 90% of students agreed that girls and boys were equal in learning coding and pursuing coding-related careers, demonstrating the Programme's contribution to gender bias reduction.



**Figure 9: Students’ perceptions of gender stereotypes after participating in the Programme**

The Programme also covered environmental issues in its activities. It was successful in raising environmental awareness among students, with almost 90% of survey students expressing an interest in using their coding skills for environmental solutions. However, the survey also revealed that some students may benefit from additional education on environmental practices, as only 65% were familiar with proper equipment disposal methods. Therefore, there is an opportunity to further integrate environmental issues into digital literacy education to help students become more environmentally conscious.



**Figure 10: Students’ environmental awareness**

Based on these findings, the Programme received a score of 6 for gender equality due to its highly satisfactory progress in advancing gender equality, and a satisfactory score of 5 for environmental awareness.

### **3. Conclusions and overall rating**

#### **3.1. Conclusions**

The evaluation assessed the Programme's performance based on 6 criteria: relevance, coherence, effectiveness, efficiency, impact, and sustainability. It also evaluated the Programme's management, M&E conception, and implementation of the Programme, and also achievements in cross-cutting issues.

From a relevance perspective, the Programme's interventions aligned with the national education strategies and was confirmed as timely by local authorities. The Programme was highly relevant to both IT teachers and students, providing resources and support for effective digital literacy education. It was also adaptable to various settings due to its rich online resources, flexible training methods and curriculum that acts only as guidance, allowing for customization. However, there was a critical gap in its strategies to continuously update the approach and ensure its ongoing relevance.

The TDF's Programme demonstrated good coherence with other (former) TDF's initiatives and supported the TDF's overarching goal of empowering disadvantaged children through education. Its Coding Club activities, especially the introduction of Micro:bit, significantly enhance STEM education in targeted schools and provinces. Additionally, the teaching content and materials developed within the Programme complemented the new national curriculum, although it is worth noting that the curriculum has only recently been introduced (since 2000) and much more work needs to be done to ensure continued alignment between the Programme's interventions and the new curriculum.

Overall, the Programme was effectively and efficiently implemented. Despite some challenges with inconsistent participation among coding clubs, the Programme achieved most of its planned outcomes, which have the potential to lead to long-term impact, provided that additional skills and conditions are also met. This success can be attributed to the Programme's comprehensive and flexible approach, as well as its online resources. By putting IT teachers at the

core of all activities, the Programme was able to overcome the scalability problem. Moreover, cross-cutting issues were also considered and integrated in the Programme’s activities.

The sustainability of the Programme was analyzed in terms of technical and financial viability, and community participation and ownership. The transfer of knowledge and skills to IT teachers and the provision of free materials on the TDF's website ensure the technical sustainability of the Programme. However, financial sustainability remains a challenge, particularly in securing resources for coding club activities. While the Programme was successful in involving local authorities and schools in its design and implementation, active involvement and ownership from the community was not given enough attention.

The management of the Programme showed strengths in its operational capabilities. However, the monitoring and evaluation system was suboptimal. The reporting process was complex and not aligned with a logical framework, which could demotivate local partners. There is ample opportunity for improvement in incorporating a result-based management approach throughout all stages of the Programme.

### 3.2. Overall rating at exit

	<b>Evaluation Criteria</b>	<b>Rating and Summary Comments</b>
<b>A</b>	<b>Project performance</b>	
	<b>Relevance</b>	5 (satisfactory): highly relevant for national and regional education strategies and reforms, fully met the needs of IT teachers and students. However, there is a risk of decreasing relevance over time, requiring the Programme to frequently revise its approach and model.
	<b>Coherence</b>	6 (highly satisfactory): highly coherent internally and externally.
	<b>Effectiveness</b>	5 (satisfactory): with a few exceptions in the performance of coding clubs, all key outputs were delivered with high quality.

	<b>Efficiency</b>	4 (moderately satisfactory): Comprehensive and flexible approach but the financial efficiency could not be evaluated. Some cost saving measures were implemented, but not all of them were effective.
	<b>Programme Management</b>	4 (moderately satisfactory): experienced management team and dedicated project staffs. Regularly monitoring and timely revisiting. However, no systematic and streamlined monitoring of outcomes based on logical framework and there is room to improve reporting towards a result-based management approach.
	<b>Impact</b>	Not rated: too early to assess, some preliminary outcomes that are anticipated to bring long-term impact.
	<b>Sustainability</b>	4 (moderately satisfactory): high technical viability but the challenges of creating a sense of community ownership and mobilizing local resources remain.
<b>B</b>	<b>Cross-cutting issues</b>	
	<b>Gender equality</b>	6 (highly satisfactory): advancing gender equality.
	<b>Environmental awareness</b>	5 (satisfactory): Although there is room for improvement, the Programme has made noteworthy strides in integrating environmental issues into its activities and has significantly raised environmental awareness.
<b>C</b>	<b>Overall rating</b>	5: Satisfactory

Explanations:

- Highly satisfactory (HS = 6): The project had no shortcomings
- Satisfactory (S = 5): The project had minor shortcomings
- Moderately satisfactory (MS = 4): The project had moderate shortcomings
- Moderately unsatisfactory (MU = 3): The project had significant shortcomings
- Unsatisfactory (U = 2) The project had major shortcomings
- Highly unsatisfactory (HU = 1): The project had severe shortcoming

## **4. Recommendations and lessons learned**

### **4.1. Recommendations**

Based on the evaluation, the following recommendations are proposed to sustain the accomplishments and addressing the challenges of the program in the coming years:

#### **Recommendations on potential future approaches and activities in the next phase**

1. The rapidly change economic and educational landscape in Vietnam poses a risk of decreasing relevance over time. To address this issue, the Programme should establish a systematic, regular feedback mechanism to identify areas for improvement, as well as an update strategy to ensure its ongoing relevance. One solution is to consider adopting a more flexible and adaptable model that involves a network of core schools responsible for selecting the training topics and designing training activities. The Programme would only provide support for their implementation, and if these activities are successful at core schools, they would be the role models, responsible for knowledge sharing with other schools in the same area. Through this model, the Programme can not only enhance its relevance over time but also foster a greater sense of ownership among the communities and increase its long-term sustainability.
2. As socio-economic conditions in rural areas of Vietnam improve, there may be a need for more advanced interventions that the Programme may not be well-positioned to provide. To ensure that the Programme is focusing its efforts on schools that truly need digital literacy training, it would be useful to re-evaluate the demands of local partners and re-focus activities accordingly. This could involve targeting schools that face significant challenges in offering digital literacy training to their students, rather than those that may already have access to similar resources.
3. To increase the reach of the Programme to serve the most disadvantaged children, it may be beneficial to explore the option to with schools and institutions catering to children and adolescents with special needs and/or living under extremely difficult circumstances. This requires a detailed feasibility study in close coordination with relevant government agencies (including the Ministry of Labor and Social Affairs).

4. To sustain the participation of students in coding clubs, it is important to increase their interest. The Programme should strive to offer more captivating and large-scale activities and competitions for members of coding clubs. This will not only raise student participation but also encourage them to further their self-learning and exploration in the field. Additionally, the Programme should have more follow-up activities and support for the projects developed by members of coding clubs to ensure they remain motivated to participate.
5. While the Programme's outcomes show promise and indicate that it is making progress towards achieving its long-term impact, students' understanding of the digital economy and entrepreneurial skills is also crucial for the realization of the impact. Given the significant lack of education in these areas in Vietnam, the Programme should consider developing new interventions to address these needs. One potential solution is to offer career guidance for students interested in digital industries and provide entrepreneurial skill training at the high-school level.

#### **Recommendations on training content**

6. The new IT curriculum has been recently rolled out since 2020. The Programme could collaborate with IT teachers at targeted schools to update teaching materials to ensure they align optimally with the new curriculum.
7. As the Programme has already taken significant steps to integrate environmental awareness into its activities, it would benefit from systematic efforts to promote this aspect further. One effective approach could be to prioritize practical issues that are relevant to students' daily lives. For instance, incorporating hands-on activities that demonstrate proper disposal of IT equipment can help students understand better the impact of electronic waste on the environment.

#### **Recommendations on the Programme management**

8. Based on the theory of change framework, the Programme should upgrade its monitoring and evaluation system to track outcomes and potential impact, in addition to activities and outputs. The ToC used for this evaluation might provide a good starting point for a more elaborate, results-based planning and monitoring system.



9. The management team should streamline reporting procedures, to prevent local stakeholders from feeling burdened by excessive paperwork.

### **Recommendations for new programmes**

10. The ToC developed in this evaluation can be used to build the result framework for future projects with some adaptations if needed. Future programmes need to develop a results-based planning, monitoring and evaluating system that also includes a result-based budget and financial reporting mechanism at the design phase.
11. Retrieve data on students and not on training turns to ensure that the same students are not reported several times. Consider using the online report system to increase the efficiency and reduce paperwork.

### **4.2. Lessons learned**

The Programme provides an example of digital literacy education in developing and emerging countries. The following lessons are drawn from the Programme:

1. In order to gain buy-in from relevant authorities, digital literacy programs need to align their objective with national education strategies. Additionally, when designing the interventions, programs must consider the national curriculum in IT and STEM subjects to increase their relevance and value to potential beneficiaries.
2. Given the vast differences in conditions, resources, and infrastructure among different schools within developing countries, digital literacy programs need to be designed and implemented in a way that allows for tailoring to the specific circumstances of each school. To achieve this, programs should involve and collaborate with local authorities, school managers and other stakeholders throughout all phases of program design and implementation.
3. For promoting digital literacy education, the “train-the-teachers” approach is considered more effective, efficient, scalable, and sustainable than “train-the-students” approach. Teachers can adapt to changing needs and sure long-term support for students. It can also be cost-effective, reaching more students over a longer period. Therefore, digital literacy programs should continue to apply this approach rather than to directly deliver courses to students.

4. Digital literacy programs should offer free, accessible, and adaptable online teaching and learning materials for both teachers and students. This approach not only promotes innovation and creativity among teachers but also expands the reach of the program and facilitates the sharing of knowledge. By offering online resources, teachers and students can access quality materials anytime, anywhere, and adapt them to suit their specific teaching and learning needs.
5. In digital literacy education, it is important to prioritize the development of algorithmic thinking over the memorization of specific coding languages and how to write command lines. By starting with courses that focus on algorithms like Scratch, students can gain a deeper understanding of algorithms and how they are applied. Once they have a solid foundation in algorithmic thinking, they will have a much easier time picking up any coding language they choose to learn. This approach will not only benefit their overall understanding of computer science, but also provide them with valuable problem-solving skills that will be useful in a variety of fields.
6. Hands-on and practical learning activities through Micro:bit and coding clubs are effective in improving students' knowledge and skills. Therefore, it is recommended that digital literacy programs can adopt these approaches. However, to ensure the effectiveness and sustainability, it is important to implement follow-up activities such as workshops, competitions or mentorship programs to maintain students' interest and motivation.
7. Gender equality can be promoted through digital literacy activities by encouraging both boys and girls to take on new challenges outside of their comfort zones. Therefore, inclusivity and challenging gender stereotypes should be central to the design of digital literacy programs.
8. It is important to plan for frequent revisions in the design phase of digital literacy programs, as technology as well as socio-economic conditions in developing and emerging countries change rapidly. A proactive approach that includes updating models and financial plans will be desirable to ensure that the program can adapt to the evolving needs of local stakeholders. Additionally, it is essential to develop a clear theory of change and a results-based planning, monitoring and evaluation system, including a results-based budget and financial reporting, during the design phase. This will allow the program to make necessary

adjustments and updates, ensuring that it stays on track towards achieving its goals in both an effective and efficient manner.

9. A successful digital literacy program needs to plan in advance how to transfer ownership of all activities to institutions that will be financially and technically able to provide the Programme's support beyond its end.

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## **Annexes**

### **Annex 1: List of documents were collected and reviewed**

The following documents were collected and reviewed by the evaluation team:

- Overview of TDF, TDF's Strategic Plan and TDF's projects
- Introduction and Summary of the Programme
- Memorandum of Understanding (MOU) between TDF and local authorities
- TDF Annual Reports 2020 and 2021
- Regular Training Reports 2020 – 2022
- The 2020 Procedural Guidance for Digital Literacy Initiative Implementation
- Statistical reports and training materials for IT teachers
- Training reports
- Coding Clubs Reports and Statistical Records of Coding Clubs

## **Annex 2: List of interviewed stakeholders**

The evaluation team interviewed the following stakeholders during the evaluation process:

- TDF’s staff, including Deputy Manager responsible for education project and Project Manager and Coordinators of the Programme.
- 01 Deputy Director of Department of Education and Training of Lam Dong and 03 Deputy Head of Division of Education and Training of Vung Liem, Go Cong Dong and Vi Thanh.
- 14 school managers, 16 IT teachers and 277 students from the following schools:
  - Phan Van Tri Secondary school
  - Le Quy Don Secondary school
  - Nguyen Viet Hong Secondary school
  - Hoang Dieu Secondary school
  - Hieu Phung Secondary school
  - Vung Liem town Secondary school
  - Nguyen Chi Trai Secondary school
  - Nguyen Trung Kien Primary school
  - Vo Duy Linh Secondary school
  - Vo Van Kiet Secondary school
  - Gia Thuan Primary school
  - Nguyen Thi Tu Primary school
  - Dong Da Secondary and High school
  - Bui Thi Xuan High school
  - Mai Hich Primary and Secondary school
  - Cong Nghiep High school