The Australia-Indonesia Centre

PAIR — PARTNERSHIP FOR AUSTRALIA-INDONESIA RESEARCH

How vocational education leaders can improve digital competencies of port workers

Introduction

The Port of Makassar is busy. Designated a primary port by the national government, it has the highest passenger traffic among Indonesian ports and the largest cargo traffic on the island of Sulawesi. This piece of infrastructure represents an opportunity for young people to pursue careers using the digital skills required in a modern workforce.

To understand the level at which this opportunity is available to young people, we focussed on local vocational education and training (VET) schools in South Sulawesi. We examined current education programs and the learning provided compared to what we have learned about the digital competencies needed by those who run the port, the managers at Pelindo Regional IV. The assessment included:

1. The digital literacy competencies of current vocational education students.

2. Comparing the competencies learned with the needs of port management.

3. The relationship between vocational schools, port management and ways to improve it.

In our research, we used a combination of interviews, focus group discussions and surveys with four vocational schools in Makassar. The schools were selected by considering a balance between public and private schools, geography, a relatively large number of students and teachers and a balance of high-achieving and low-achieving schools. With the last, we are interested in whether higher and lower-achieving schools differed in their efforts to enhance the quality of vocational education.

Focus group discussions were held with the principal or deputy principal of the schools, the human resources division at Makassar port and policy stakeholders to understand digital literacy competencies and explore the potential of developing digital literacy education and training for young people.

An online survey was conducted with VET school students to identify their digital literacy competency levels.

At this point, we developed a digital literacy framework to measure the skills gap. The framework consists of nine areas to measure digital competencies and help assess current and expected digital literacy skills. See our primary report for details. Based on the curriculum review, focus groups, and survey results, we have identified opportunities to improve existing educational and training programs at local VET schools in Makassar

Findings

The student's current level of digital literacy competence does not meet the standard expected of the port's management. This gap occurs in almost all levels of competence, with students significantly lacking in understanding supply chain management-related, computational and algorithmic thinking and digital content fluency.
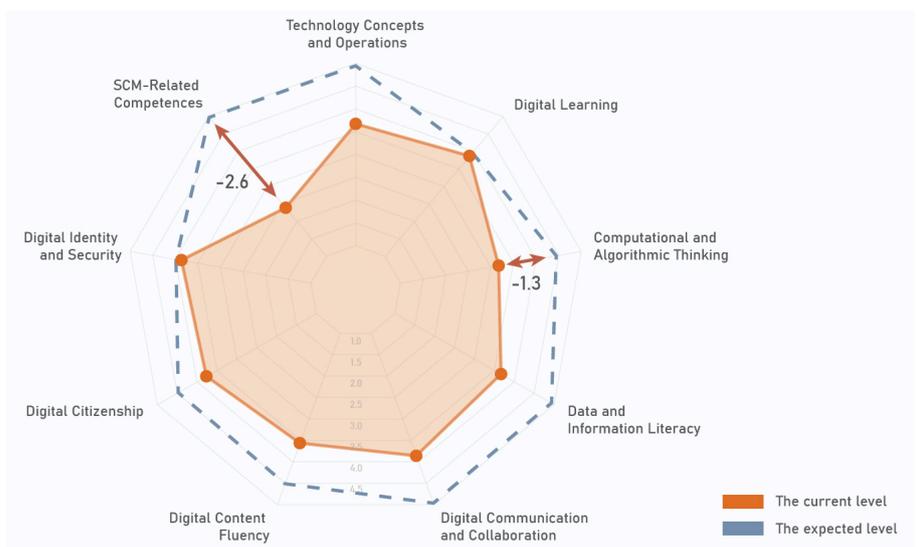
Spider web diagram showing the gap between current student digital literacy levels and the standards expected by Makassar port management.

These three competencies need to be prioritised to improve VET school students' digital literacy levels.

It was found that four aspects contributed to this gap between skills learned and industry need; curriculum, teaching staff, learning facilities and infrastructure, and cooperation between vocational schools and industry. learning and digital identity and security.

Curriculum

The VET schools' curricula are structured on current job market demand, with teaching and learning methods adapted to work circumstances.

Looking closely at the subject content of digital studies and based on the digital literacy framework, there are still missing elements such as technology concepts and operations, digital identity and security, and supply chain management-related skills.

A look at the curricula is useful to see how this gap exists. The curriculum used today is from a 2013 regulation called Kurikulum 13 (K13), revised in 2018. The K13 outline removed information and communication technology subjects from the compulsory list and the learning incorporated into other subjects to allow students to demonstrate these skills in several fields of study.

Information and communications technology (ICT) subjects were integrated into a new subject called Digital Simulation and Communication in 2018. This subject is compulsory for all programs to improve students' digital literacy skills.

Despite these efforts, there are still gaps between the competencies learned and the needs of the port industry. Schools also face challenges around insufficient computer laboratory facilities and infrastructure and, for many, poor access to electricity.

Teaching quality

The availability of teaching staff is critical for the competencies we have identified. The Ministry of Education and Culture regulates the certification of teachers in information and communication technology (IT&K), computer skills and information management (KKPI), software engineering, computer and network engineering, and multimedia.

Our study found that some teachers teaching simulation and digital communication subjects still do not yet have the required certification. In discussions, the reason for this situation was given as inadequate funding and a desire of the teaching staff to continue learning.

The effectiveness of learning is also determined by the methodological skills of teaching staff to convey teaching materials (pedagogy). Our data shows that more than half of the teaching staff at vocational schools have not been certified. The level of teacher certification in the two vocational schools is just 10 and 23.64 percent, respectively. Our focus group discussion with the principal shows teaching staff have a weak desire to continue learning, so the level of teacher certification is still limited.

> **"We are of the view that the current curriculum still needs to be adjusted to the development of digitalisation. In addition, the quality of teaching staff also needs to be considered, especially for teaching staff in simulation and digital communication subjects."**

Facilities and infrastructure

Under Indonesian regulations, a vocational school that provides learning in information and communication technology must have infrastructure and facilities such as computer laboratory rooms, computers, and multimedia rooms. Our focus group with the school principals shows that some schools still have limited infrastructure and facilities. The main factor is due to financial limitations.

It's clear that learning facilities and infrastructure are needed to support orderly and sustainable learning, and the standards regarding this are regulated by the Minister of National Education.

Cooperation with industry

The existence of industry in vocational education cannot be separated in the current development context. This relationship is close and even becomes an absolute requirement because, apart from ensuring the relevance of vocational education to industrial needs, it can jointly bear the cost of education so that students are ready to enter the industrial world. Industry involvement also opens opportunities for students to practise fieldwork and internships.

This study found that most schools built partnerships with various industries to develop curriculum alignment. However several schools are not working with the Makassar port so the potential exists for future cooperation with the port as the largest logistics industry in Indonesia.

A way forward

- Vocational school students' current level of digital literacy competence does not meet the standard expected of port management, with the gap occurring in almost all levels.

- Vocational schools in Makassar need to enhance the curricula, especially those concerning supply chain management-related digital competencies.

- Develop and redesign curricula to develop digital skills required in today's business environment. The curriculum development can be guided by our proposed digital literacy framework.

- Teachers have a crucial role in delivering learning content effectively. Enhance teaching staff competencies to ensure that they meet standards. Schools should identify teaching staff who do not have digital competency certificates.

- Strengthen partnerships between local vocational schools and the industry to better align with industry needs and provide students with job-ready experience.

- Conduct periodic assessments of the digital competencies of relevant staff using the digital literacy framework as an assessment tool. Regular assessment can identify potential issues with inadequate skills.

Image: ICTSI

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