Research Article

Enhancing the Digital Competence of Maritime Education Faculty in the Philippines Using DigComp 2.0 Framework

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ABSTRACT

Digital Competence is seen as a driver for educational innovation since its immediate result is the production of new digital media resources for teaching. This study aimed to determine the digital competence of maritime education faculty in the Philippines, particularly in the Zamboanga Peninsula. The descriptive method used a survey questionnaire for Seventy-three (73) Maritime Education Faculty. Results revealed that Maritime education faculty are very competent, particularly in information and data, literacy, communication and collaboration, and digital content creation. In the dimensions of safety and on the problem -solving skills, the faculty perceived themselves as Competent. The researcher concluded that some aspects of the digital competence of the faculty need to be enhanced to enable them to successfully handle and deal with digital technologies. Thus, it is recommended that there is a need to enhance their problem-solving skills in online environments to enable them to be careful and produce creative and innovative when confronted with technical problems in their handling of digital technologies.

Keywords: *Digital competence, Higher Education Institutions, Maritime Education Faculty*

Introduction

Nowadays, digital tools such as the Internet (IoT), mobile apps, Big Data, Intelligent Systems, automation, and machine learning are widely employed. The education industry comprises ICT, social media, and online meeting platforms.

The European Union developed digital competence in five main competencies in DigComp 2.0. These competence areas are 1) information and data literacy, 2) communication and collaboration, 3) digital content creation, 4) safety, and 5) problem solving (Mannila et al., 2018).

Digital competence is the total competencies linked to knowledge and application of information, communication and collaboration, digital content creation, safety, and problem-solving (Carretero et al., 2017). Moreover, digital Competence (DC) is seen as a driver for

educational innovation since its immediate result is the production of new digital media resources for teaching, such as Open Educational Resources (OER) (Ramirez-Montoya et al., 2017). Digital competence comprises more than simply knowing how to use gadgets and programs; it also includes communication and information skills (Falloon, 2020).

Both teachers and students have moved to the online learning mode, where classes are held online in the comforts and safety of their homes. The virtual classroom setting has necessitated technology to facilitate learning remotely. Computers and the internet have greatly enabled teachers and learners to continue their classes despite the pandemic. Because of this virtual learning mode, teachers must improve their digital competence even at the tertiary level.

The COVID-19 pandemic has changed the educational sector, and digitalization is the new normal. Thus, teachers need to understand the level of digital competence to adapt to the changing landscape, as technology plays a significant role in the teaching and learning process (Alex et al., 2021).

Teachers' digital competence is demonstrated by their ability to use digital technology to improve instruction and communicate professionally with colleagues, clients, families, and various education community agents (Cabero-Almenara et al., 2020). With the existing literature cited above, the researcher aimed to evaluate the digital competence of maritime education faculty in Higher Education Institutions in the Philippines.

Methods
This study used descriptive research to determine the digital competence of maritime education faculty in the Zamboanga Peninsula.

The respondents of the study were seventy-three (73) maritime education faculty from three (3) different Maritime Institutions in the Zamboanga Peninsula. The researcher identified and determined the number of samples based on the population of the maritime education faculty in the three schools. The sample size was determined with the use of a Raosoft calculator.

The digital competence questionnaire was adopted from the standardized questionnaire of Tuoron, et al. (2017) using the Five Point Likert Scale from 1 (Very not competent) to 5 (Very competent). Although standardized, the questionnaire was subjected to reliability testing for consistency. The reliability of the questionnaire $\alpha=.92$ and above.

Results and Discussion
Table 1 shows that maritime education faculty were very competent regarding data and information literacy in their respective institutions.

Table 1. Digital Competence of Maritime Education Faculty in terms of Information and Data Literacy

No.		Mean	Interpretation
1.	I identify my needs when searching for data, information or digital content in online environments.	4.37	Very competent
2.	I use information search strategies to access data, information, and digital content in online environments.	4.37	Very competent
3.	I critically evaluate the accuracy of the data, information or digital content I access	4.21	Very competent
4.	I access the data, information and digital content I need in online environments.	4.38	Very competent
5.	I investigate from different sources whether the data, information or digital content I access is reliable.	4.29	Very competent
6.	I pay attention to source and citation representations when sharing data, information or digital content.	4.37	Very competent
	Average Weighted Mean	4.33	Very competent

The Average Weighted Mean is 4.33, which is interpreted as Very Competent. This implies that the faculty from the respective institutions in the Philippines perceived themselves as very competent in information and literacy.

When faculty have the digital competence to search for information in an online environment and can check and verify the information's accuracy, there is much fake news and scams in online social media on the Internet. The faculty should be able to discriminate accurate information and data needed for teaching.

This digital competency is the first dimension mentioned in the DigiComp 2.0 framework applied in this study.

According to Mannila et al. (2018), the first dimension pertains to the digital skill of searching for information and data literacy. This digital competence also pertains to faculty who have search strategies for getting accurate information and data. The faculty members perceive themselves as able to evaluate or assess the source and citation of the online content before sharing these with co-faculty and students.

Table 2. Digital Competence of Maritime Education Faculty in terms of Communication and Collaboration

No.		Mean	Interpretation
1.	I easily organize and store data, information and content in online environments.	4.14	Competent
2.	I use digital technologies to communicate in online environments.	4.34	Very Competent
3.	I share data, information or digital content using different digital technologies.	4.29	Very Competent
4.	I use digital technologies to collaborate in online environments.	4.29	Very Competent
5.	I comply with behavioral norms (ethical rules) when interacting in online environments.	4.44	Very Competent
	Average Weighted Mean	4.30	Very competent

Table 2 shows that maritime education faculty were very competent in communication and collaboration.

The Average Weighted Mean is 4.30, which is interpreted as Very Competent. Based on the DigComp 2.0 framework, this second dimension pertains to the digital competence of communication and collaboration in online environments.

According to Falloon (2020), digital competence is knowing how to use gadgets and computer programs and communicating and collaborating, particularly in online environments. The online mode of teaching demands the Maritime faculty to communicate with students located in different parts of the world as part of their shipboard training. There are also virtual teams composed of faculty members dispersed in different locations in the Philippines. Therefore, there is a need for good communication and collaboration.

Table 3. Digital Competence of Maritime Education Faculty in terms of Digital Content and Creation

No.		Mean	Interpretation
1.	I develop content in simple forms using digital technologies	4.37	Very Competent
2.	I can develop content in different formats (video, visual, animation, etc.) using digital technologies.	4.08	Competent
3.	I pay attention to copyrights and licensing when developing digital content.	4.40	Very Competent
4.	I produce digital content by making changes to ready-made content.	4.05	Competent
	Average Weighted Mean	4.23	Very Competent

Table 3 shows that the maritime education faculty were very competent in digital content creation.

The Average Weighted Mean was 4.23, which is interpreted as Very Competent. The digital competence dimension evaluated in this table is the third dimension of the DIgComp 2.0 framework, digital content creation. The Maritime faculty of the respective institutions in the Philippines perceived themselves as very competent regarding digital content creation.

However, some statements have the rating of just Competent, and they are just competent in producing changes in ready-made digital content. According to Alex et al. (2021), teachers are expected to know about technology to help them in their online teaching, but they need not be experts in digital content creation. This is mainly the work of IT professionals. Likewise, the Maritime education faculty perceived themselves as competent in producing different digital content using different formats like videos, visuals, and animation. The IT professionals or technicians in their schools can assist them in preparing these different digital content formats.

Table 4. Digital Competence of Maritime Education Faculty in terms of Safety

No.		Mean	Interpretation
1.	I know what to look out for when creating a digital identity (profile) in online environments.	4.18	Competent
2.	I am aware that I leave a digital footprint when I navigate online environments.	4.19	Competent
3.	I am aware of the risks and threats in online environments.	4.30	Very Competent
4.	I take different measures to protect my digital device and content.	4.23	Very Competent
5.	I take precautions about safety and privacy in online environments.	4.38	Very Competent
6.	I protect personal data and privacy in online environments	4.55	Very Competent
7.	When sharing my personal information online, I take precautions to protect the personal data of others (not to tag them in a photo without permission, etc.).	4.42	Very Competent
8.	I am aware of the effects of digital technology use on health (physical, psychological).	4.48	Very Competent
9.	I am familiar with data policies (how to use personal data) of the digital services that I am a user of (social networking, etc.).	4.14	Competent
10.	I am aware of the environmental impact of using digital technologies.	4.42	
11.	I know how to deal with online threats	4.11	
	Average Weighted Mean	4.31	Very Competent

Table 4 shows that maritime education faculty were very competent in terms of Safety. The Average Weighted Mean is 4.31, which is interpreted as Very Competent. The digital competence dimension being evaluated in Table 4 is the dimension of Safety. This pertains to the fourth digital competence dimension, which concerns the safety n online environments. This is a very important dimension, and Maritime education faculty rated themselves as Very Competent, in general, although there are statements where the faculty perceived themselves as Competent. This implies that there are some aspects of Safety in online environments that teachers should be trained and be made aware of.

These are security risks of personal identity and issues of privacy. This will also involve protecting the personal data of others, for instance, of their students or co-faculty members. There are also online policies and rules to be followed by members or users of digital technologies

and to respect intellectual property rights even from online sources. This calls for security measures from the school level and individual faculty level.

Table 5. Digital Competence of Maritime Education Faculty in terms of Problem-Solving Skills

No.		Mean	Interpretation
1.	I identify the causes of technical problems I encounter when using digital media and devices.	4.00	Competent
2.	I solve the technical problems I encounter when using digital media and devices.	3.89	Competent
3.	I use different digital technologies to create innovative solutions.	4.03	Competent
4.	I identify opportunities for the development of my digital competences.	4.12	Very Competent
5.	I develop my digital competence by following new developments.	4.21	Very Competent
	Average Weighted Mean	**4.05**	Competent

Table 5 presents the digital competence of Maritime Education Faculty in terms of Problem-Solving Skills. The Average Weighted Mean is 4.05, which is interpreted as Competent. This table pertains to the 5th digital competence dimension is problem-solving skills. The Maritime education faculty members from their respective institutions in the Philippines perceived themselves as competent in problem-solving skills in online environments.

This implies that this dimension needs enhancement through training and seminar workshops among the dimensions. The problem-solving skills involve technical aspects of digital technologies in which IT professionals and technicians are considered experts in troubleshooting. However, these experts will only sometimes be around, primarily if the teachers work online in the safety of their homes.

Carretero et al. (2017) remarked that digital competence involves using digital technologies to develop new digital innovations. Problem-solving skills involve creativity and innovation. Hence, this fifth dimension of digital competence should be developed among the teachers to innovate and develop new and better solutions in dealing with digital technologies.

Conclusion
Based on the findings of the study, it can be concluded that the digital competence of the Maritime education faculty is generally very competent, particularly in the dimensions of information and data, literacy, communication and collaboration, and digital content creation. In the dimensions of safety and on the problem-solving skills, the faculty perceived themselves as Competent. It can further be concluded that some aspects of the digital competence of the faculty need to be enhanced to enable them to successfully handle and deal with digital technologies.

Recommendations
Based on the findings and conclusions, enhancing the Maritime faculty's digital competence in handling safety and security risks in online environments is highly recommended. There is also the need to enhance their problem-solving skills in online environments to enable them to be careful and produce creative and innovative when confronted with technical problems in their handling of digital technologies. The following enhancement activities can be undertaken by the respective Maritime education institutions in the Philippines, as follows:
1. Seminar-Workshop on Safety and Security in online environments;
2. Training on digital content creation to be handled by IT professionals or experts in their schools; and
3. Seminar-Workshop on Problem-Solving Skills in Online Environments.

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