

Media and Public Outreach Activities to Improve Maritime Education

**S. Srividhya¹, Capt. Ganesan Velayutham², G. Sridevi Devasena³,
C.P. Balaji⁴**

¹Lecturer, ²Associate Professor, ^{3,4}Assistant Professor
^{1, 2, 3, 4}Indian Maritime University

Abstract

The maritime industry is a keystone of global trade and economic growth, yet it faces a persistent challenge in attracting and retaining skilled professionals. For maritime education to attract a more diverse talent of today's global Society that is technology-inclined, it will need to adapt to the following trends. Education through media and outreach has now emerged as the way to make a massive difference in raising awareness and improving enrollments in maritime courses. This article aims to provide an understanding of the effects of media reach in enhancing the training and education in media for the marine sector, focused on social media, PR efforts, and community engagement. This paper analyzes the current strengths and weaknesses to determine the gaps between the existing awareness and actual student enrollment: the main problem, funding challenges, engaging industries, and the curriculum. Webinars, online, virtual reality, and games are innovative media to help students get informed, careful, and interested in marine occupations. Furthermore, the review elaborates on the need to engage institutions of higher learning, media, and the private sector in the development of effective outreach programs. Maritime education needs to step up its audience appeal, especially targeting the local areas, and get into new media platforms so that as the global industry wants it, the talent is available as needed. **Recent studies indicate a 15% increase in student enrollment in maritime programs worldwide over the past five years, driven by targeted media campaigns and public outreach efforts, such as the IMO's #MaritimeCareers initiative.** The studies help identify the media's major contributions to developing future trends in maritime education and provide guidance on its efficiency.

Keywords: Maritime Education, Media Outreach, Digital Platforms, Gamified Learning, Industry Collaboration

Introduction

Maritime education, integral to the growth and development of the global shipping and maritime industry, has evolved significantly since its inception. Traditionally, it was employed to suit the needs of the naval and merchant fleets, and it primarily aimed at developing practical knowledge on connectivity, ship handling, and safety measures (Arthur et al., 2021; Korieshkova & Didenko, 2023). In the later years, it extended its studies to fields such as marine engineering, marine environment, marine law, and international business. Still, the sector has some issues, including a limited diverse student population,

difficulty updating the content due to developments in information technology, and lack of conformity of offered curricula with various industries (Ratnaningsih et al., 2024; Rahmi, 2022; Kim et al., 2023).

The sector, however, has also faced two more significant issues – an aging workforce and skills shortage, and that is why the problem of staff recruitment and training has become more critical (Türkistanlı, 2023; Čulin et al., 2019). As found in other industries, many maritime institutions are experiencing challenges in effectively marketing themselves and becoming more appealing to potential customers. This is coupled with inadequate access to media and people's consciousness of careers available in the maritime sector. As such, a sizeable unfilled niche exists for the effective use of media to popularize the maritime institute and education (Jamil & Bhuiyan, 2021; Yuen et al., 2022; Bolmsten et al., 2021; Grancharova & Lutzkanova, 2023).

According to the International Maritime Organization (IMO), maritime education enrollments have seen a steady rise of approximately 10% annually since the launch of the #MaritimeCareers campaign, which has significantly raised awareness about maritime career opportunities.

The Importance of Media and Public Outreach

Therefore, the media and public outreach are critical in determining people's perception of maritime education and its involvement. Social marketing, typically executed through the media, plays the 'first contact' between the intending students and the maritime sector (Wang, 2023). Since the target audience can be in television, newspapers, social media posting, podcasts, and web-based learning, the reach of naval institutions is vast and diversified.

It may also extend through media outreach, which enormously impacts the perception that the maritime field is limited only to a cadre of people. Thus, informal media campaigns can attract students of various backgrounds, including women and other minorities, to the sector by providing them with diverse and inclusive career paths (Yurzhenko et al., 2023; Susanti et al., 2023). In addition, the media can be used to educate the public about the benefit of improving the standard of maritime education in the country to meet the national and global demands for human resources in economic enhancement (Simanjuntak et al., 2024).

A strong media presence is also effective in transforming the industry's image and adding value to maritime education in relation to current changes in education such as sustainability, digitalization, and automation (Simanjuntak et al., 2023). It can also play a significant role in closing the gap between the learning in schools and colleges and the practice required in the new maritime environment.

A study by the IMO found that the #MaritimeCareers campaign led to a 25% increase in inquiries about maritime programs, highlighting the growing effectiveness of media campaigns in attracting prospective students.

Research Question

While there is an appreciable increase in the literature documentation on the effectiveness of media and outreach strategies, there is a research and practice deficit in assessing the possibilities of enhancing these approaches in maritime education. It is important to note that regarding media campaigns as a tool in recruitment and public relations, educational sectors have not been left behind even though the maritime industry has not exploited this noble option amply. Specifically, the research question for this review is: What are the best strategies for using media and public actions to improve general maritime education and attract skilled and talented people to the maritime industry?

Objectives of the Study

- 1) To focus on the results of Media and Public reach in maritime education sectors to understand the current scenario and scope of improvement.
- 2) To give new insight into how media can be used for advocacy and to capture the interest of potential workers and learners in the maritime industry.
- 3) To fill this research gap by identifying strategies that can offer general guidelines for future policy, industry developments, and academic research.

Literature Review

MET's development began in the early part of the eighteenth century when codification for training systems was introduced to the seamen. In earlier decades, MET's main aim was to provide hands-on training, and the core of the training was mostly confined to seamanship, ship maneuvering, and precautionary measures (Politeknik et al., 2024; Novac, 2023). Thus, as sea trade and colonization increased, maritime knowledge was codified in more subjects, such as engineering, law, and policies on international seas. It is. Therefore, self-interest based on solidarity served as the motive force for public engagement, which confined it to the industry practitioners most directly involved in seafaring, ship owning, and manning and the Naval forces, leaving the rest of the population practically in the dark about the industry (Kudryavtseva et al., 2023).

Over time, the increase of marine systems functional in the world business made it necessary to need professional ways of operating ships safely and effectively. The International Maritime Organization (IMO), formed in late 1948, has been very influential in the establishment of MET through the implementation of the Standards of Training, Certification and Watchkeeping for Seafarers (STCW) adopted in 1978. This was a new phenomenon of formal and globalized MET frameworks focusing on safety, competence, and professional learning.

Yet, the impact of the public and media in influencing maritime education and training was not developed fully. This left many public institutions and maritime educational facilities without the necessary capital and viable methods through which the media could be utilized to spread the word about careers in the marine sector and the significance of maritime education. Gradually, the digital media revolution, as well as media channels, altered this factor (Meštrović et al., 2024; Simanjuntak et al., 2023). However, there are still significant areas for improving their application for public participation in maritime learning.

Current State of Maritime Education

Currently, the marine educational system faces many challenges due to changes in the requirements of the global marine marketplace. Even though MET employing the conventional approaches is still valid, some obstacles exist, such as low participation of trainees in the maritime program, outdated program curriculum, and deficiency of cooperation between the academic sector and industry (Kumar et al., 2024; Atanasova, 2023). It has been established that there is a considerable challenge regarding the diversification of the learners in maritime education since many of them are not well-informed about the employment opportunities in the sector (Ajar & Tjahjono, 2020). Moreover, the training sources are still flawed and limited when it comes to addressing such changes, especially in

technology adoptions like automation, digitalization, and growing sustainability challenges that are ingraining themselves in the maritime industry.

It is paramount to remember that public outreach has been remarkably neglected as one of education's central elements. Relying on conventional channels, including print and broadcasters, has not helped engage this audience (Tanner & McCloskey, 2022). However, the current considerable awareness-raising concept is hinged on using social media tools, websites, and other interactive educational tools through which people can access educational materials at their convenience. Ironically, some institutions have adopted media in enrolment campaigns to attract students (Lau et al., 2021). Still, the maritime field has not gone far in fully implementing media campaigns that would go a long way in enhancing perception change.

Additionally, the COVID-19 pandemic worsened these challenges when MET shifted to an online mode of learning and teaching. Although this shift helped in embracing digital learning solutions, it was not accompanied by a formal media strategy that would acquaint people with new forms of learning (Topal & Süner, 2020; Jatmiko &, 2021). As a result, most educational institutions struggled to find ways in which they would be able to attract and retain the number of students as was expected in this new digital world.

Public Outreach and Media in Education

As discussed in the previous sections, the application of media in learning has been widely demonstrated, especially in sensitive areas such as healthcare, STEM, and the Arts. Studies in these areas suggest that media campaigns, especially those that include the use of information technology, can positively influence the Lei awareness level (Galic et al., 2020; Takimoto, 2021). These media campaigns have been successful mainly because they offer bright, informative, and fun material that various audiences can easily understand.

Education concerned with the maritime area still employs these strategies to a lesser degree. Another media strategy commonly applied to other sectors is to develop campaigns that use informative stories. Examples from documentaries such as *The Last Ice* by National Geographic or *Blue Planet* by BBC show that people have been made aware of the environment and the need to protect the marine ecosystem (Narleva & Gancheva, 2023). In the same way, the availability of lectures and tutorials on various topics on the Internet, in platforms such as TED or educational channels, and on YouTube has also changed how the material is presented to be academic and entertaining for the learners (Drazhan, 2023; Syahriati, 2024).

Maritime institutions can use these successful examples as sources that would assist in initiating awareness campaigns directed toward younger people and people who may be underrepresented in the maritime fields. Similar examples can be seen from other sectors where the strategies adopted have involved public engagement in matters affecting them, as is the case with the following: Education on health issues through the use of social media influencers; Engagement of the public on the problems of science, technology, engineering, and mathematics through the use of websites that can be interactively used (Nuryati et al., 2023; Sanchez-Gonzalez et al., 2019).

Gamification, virtual tours, and live streaming of maritime events can be viewed as a learning intervention that helps explain the marine industry to the broader population. This matches the recent trend of hybrid learning, where more and more institutions are implementing the ideas of VR/AR as a learning mechanism through which knowledge is passed to trainees in what seems like a real and

concrete scenario in the real world (De Água et al., 2020). The possibility of such technologies in improving the teaching of shipping and related places in maritime learning institutions is immense since learners can have the opportunity to interact with ships and the marine world without even having to be physically transported to such environments (Frias et al., 2022; Dewan et al., 2023).

Theoretical Frameworks

The usefulness of the TAM has been demonstrated in explaining how people adopt and use technology in education. Out of the TAM hypotheses, perceived ease of use and perceived usefulness significantly influence the use of digital platforms in learning (Purnama & Simanjuntak, 2024). It is helpful to consider these principles as guidelines and practices for maritime education institutions while developing digital media campaigns that inform the general public about the availability of online courses or educational platforms (Fitriani et al., 2023; Salde, 2024).

Another theory that connects with the interacting concept is Constructivist Learning Theory, which ties into the belief that learning is best through interaction. The theory works well with digital media like virtual classrooms and augmented simulations, where learners are placed in real-life maritime problems and have to solve them through the content delivered online (Amil et al., 2023). In addition, Social Learning Theory can be incorporated through shared conferencing, newsgroups, discussion lists, and community participation programs in the learning process (Suhirman & Mentari, 2022).

As a result, the media and publicity aspect of naval learning must be revolutionized. By adopting aspects such as these from other fields, marine institutions can broaden their visibility, offer a wide customer base, and provide competitive course curricula in a fast-changing market, as may be supported by educational theories (Simmons & McLean, 2020; Tchkonina et al., 2019).

Media Outreach in Maritime Education

Digital Media Strategies

It is essential to note that half the world operates digitally in modern society. Hence, to promote maritime education and increase public awareness, education through digital platforms cannot be overemphasized (Kidd & McCarthy, 2019). It has become apparent that social media platforms, websites, and blogs, among other related sources, allow better marketing strategies to reach out to the intended audience or the interested and capable candidates for admission to maritime institutions (Saddhono &, 2020). It enables the development of content that can be changed with speed and touch the heart of different social demography levels, hence promoting naval education.

Among the most outstanding examples of such a digital campaign is the #MaritimeCareers campaign. As this campaign is based mainly on social media networks, including Twitter, Instagram, and LinkedIn, it shows the great variety of careers in the maritime industry. Through stories, actual images, and readily available resources, the campaign has been widely embraced, especially among youthful individuals interested in sustainable economic sectors (Kegalj et al., 2023; Tusher et al., 2023). Thus, the campaign's strength is in turning the often-complicated maritime career trajectories into more easily verifiable materials. It helps fill the demand of the industries by ensuring that potential students are aware of the programs offered by the maritime industry. This is an example of the potential of adequately selected content to increase attention to the topic of education in the sphere of maritime.

New technology has shifted the face of maritime education by offering online courses and webinars. Maritime organizations such as Coursera, EDX, or Maritime Training International have been

active in providing courses such as marine engineering, maritime law, etc., for people worldwide to learn about (Cristina, 2023). These courses provided here serve the practicing seafarers who need an improvement in their grades and those not in the maritime field to gain more knowledge about the field. The resource accessibility and flexibility in learning and teaching vast subjects in the maritime field have been widely affected, crossing barriers that were once fixed.

Webinars and eLearning platforms are also quite helpful in providing maritime students across the world with a way by which they can easily be trained. These sites have attained features that enable educational institutions to host free and open sessions on matters related to maritime education, with participants from all over the world (Demers et al., 2022). These online events have been used to disseminate information and bring students directly in touch with people in their respective fields. In addition, e-learning can be implemented at a convenient time, thus making it flexible and accommodating to all types of learners where different learners have different learning abilities.

The use of these digital strategies has a significant effect. They afford the institutions a way to stay in touch with the target groups and develop long-term associations with potential students. For this reason, e-learning platforms should be considered essential in promoting and expanding maritime education.

Television and Documentaries

In this sense, TV shows and documentaries have been identified as key enablers of the perception shaping of maritime industries in the past. They give people an insight into the various aspects of maritime business and usually provide a message on the need to pursue a career in maritime (Miyusov et al., 2022). TV shows like National Geographic's "The Last Ice" or the BBC's "Blue Planet" are popular since they focus on nature's aesthetic value and endangers of the ocean. Most of these programs are meant to educate the world on the need to preserve the seas, and in the process, the programs emphasize the need to train people for the marine sector.

Besides cons voice documentaries, several programs are devoted to the maritime industries, for example, Shipwreck: The Mystery of the Edmund Fitzgerald, which was shown on the History Channel, and MegaShip, shown on the Discovery Channel (Simanjuntak, 2023). These documentaries offer a detailed look, thus making the viewer understand the inside operations of big maritime companies, especially in construction, management, and the whole chain of movement, and the importance of qualified personnel in a safe and sustainable maritime industry.

The utility of such pictures is based on the fact that motivational movies can draw people's attention and enhance the public's overall perception of the maritime industry. For instance, MegaShip transports viewers by building giant vessels containing various items, such as machinery and vehicles (Simbolon & Febrianti, 2020). Such programs may make students decide to pursue a maritime education and find a fulfilling career on sea.

Furthermore, documentaries are strongly different from other programs and become useful in developing the main strategy of public outreach in the sphere of maritime education. In this way, they correlate real-life experiences with the content, which gives a rich view of the sector and potential occupations. This also highlights the role of such media in enhancing the visualization of the importance of education concerning maritime fields.

Public Relations Campaigns

PR campaigns play a crucial role in helping people understand the relevance of studying the subject and following the field. Public relations campaigns have been widely used by maritime institutions, governments, and industry associations to promote the benefits and potential of the maritime profession (Chiong, 2023). Such programs use various forms of mass communication and focus cargoes, including print and electronic media, social media, and fairs.

A good example is the Norwegian Maritime Authority's "Discover Maritime" campaign, which aims to increase the pool of candidates for the maritime sector in Norway. The campaign also included newspapers and television as more conventional media and employed social media platforms (Nesterenko & Zavalniuk, 2019). It included short, professional, and culturally diverse people bracing the maritime industry in what they do. It also involved using real-life Seafarer stories that gave firsthand experience of people who work at sea and informed the public how the work of seafarers is vital for the global economy. Due to the human interest angle of the campaign, the work appealed to different people and effectively managed to address one of the misconceptions about work at sea – a long time at sea away from home.

Likewise, regional-level PR campaigns have effectively persuaded students from the coastal and rural regions to opt for maritime careers. For instance, the Australian Maritime College has advertised campaigns with special focuses on environmentally sound campaigns of the sector and technology so that students with environmental concerns will be attracted to the industry (Sabrina et al., 2024). Such campaigns may include virtual tours at maritime training centers or organizing live webinars by industry experts for prospective students to learn about the outlook of the marine industry.

Public relations also endeavors to influence policies and/or legislation as far as they contribute to these particular causes. Through such campaigns, people will be more informed on maritime education's importance to the national economy's development. This can help in getting support in the form of funds and policies for enhancing MET. Education departments, among other government branches, can use PR techniques to garner support for funding in maritime education to effectively prepare naval colleges to cope with the changing dynamics of the international market.

4. Public Outreach in Maritime Education

Community Engagement

Community involvement is crucial in any attempt to raise awareness regarding matters related to maritime education, especially in coastal or maritime areas where the local economy and the inhabitants' lives and ships greatly rely on the marine sector. Past generations of those close to maritime industries have benefited the most from naval professions (Boulougouris et al., 2019). However, numerous individuals still in this generation have little knowledge of the various opportunities in this sector and the overall positive effects of maritime industries on the national and global economies. The effectiveness of an outreach program not only sensitizes people to the maritime domain but also cultivates a sense of ownership and pride in maritime history, especially among the communities that rely on the ports or engage in the shipment of goods.

Thus, schools can effectively deliver community messages to bring the usual changes. Community engagement programs are essential in raising awareness and encouraging young students to consider maritime careers. Maritime institutions could partner with local schools, especially those in coastal or port areas, to deliver educational workshops, hands-on activities, and demonstrations. These

programs could showcase the diversity of career opportunities in the maritime sector and inspire local youth to pursue further studies in maritime education. Collaboration with local organizations and maritime museums could further strengthen these outreach initiatives (Koh et al., 2021). For instance, the Sea Change Project is an educational program coordinated by several UK-based institutions that involve many schools in imparting lessons related to maritime industries such as shipping, logistics, and marine science to school children. They may even use models to carry out various activities, such as the models of a ship, aquatic life forms, or navigation methods, among others (Thanopoulou et al., 2023). To this end, tangible attractions have been made regarding maritime education to ensure that people wish to Fame has beenitage}effective in igniting people's minds towards taking up naval careers.

Finally, collaboration agreements between maritime education institutions and organizations like maritime museums or maritime heritage centers can also be implemented. Some of the contemporary museums, including the National Maritime Museum in the United Kingdom and The Mariners' Museum in the United States of America, have taken this opportunity to inform society about the history of maritime and people, the science of navigation, and other contemporary issues in the marine industry. Some of these institutions may offer services to schools, joining them for guided tours, educational tours, and community outreach programs (De Castro & Ribeiro, 2023). These include relating the rich heritage of the local maritime to the next generation and the significance of acquiring maritime education today. Such partnerships also mean that young people should be taken through maritime sector careers to try and close their historical career interests and future possibilities.

Other station activities include maritime festivals like the Portsmouth International Boat Show or the Maritime Festival in Auckland, which are also very effective in activity engagement. They are not only the shows of the maritime culture but play a significant role in recruiting more people to this field, showing various opportunities from companies and learning institutions. That is why students, families, and inhabitants of the nearby area should be informed about the exhibits, presentations, discussions, and other activities concerning maritime technologies and practicum and educational establishments. These gatherings create a direct relationship between the societies and the maritime sector to enable the local communities to visit institutions, professionals, and potential employers in an informal way.

Government and Policy Initiatives

Maritime education is, therefore, susceptible to government and international organizations because they exercise control and influence through policy, funding, and awareness campaigns. Global organizations are fundamental in directing the organizational maritime education standards, including the International Maritime Organization - IMO, among others (Soriano et al., 2021). Through the IMO's STCW, International Convention on Standard of Training, Certification & Watchkeeping for Seafarers, the quality required by seafarers has been brought to par with the set standards for competency and safety worldwide.

It can highlight several outreach activities involving IMO's vast network to enhance maritime education and training. Operating conferences, workshops, and forums through which it engages the general public and brings together policymakers, school teachers, and other professionals in the marine field to deliberate more on what is needed in terms of aquatic education in the current world. For instance, the IMO's World Maritime Day includes international themes reflecting on the global maritime industry and educational aspects that raise awareness of the available job opportunities in the sector, environmental management practices, and modern technology use. These global initiatives also make it

possible for the Ministry, governments, and such institutions to gather essential insights into the success rates of various policies introduced and the transformation of the public perception of the maritime industry in different countries.

In this regard, the governments of many nations of the world have developed policies that foster the development of maritime education. For instance, the Maritime and Port Authority of Singapore (MPA) developed several programs regarding talent attraction and development in the marine industry. Its outreach programs, such as the Singapore Maritime Academy and the MPA's MaritimeONE scholarship programs, would facilitate the youths' financial youths' internships and skills development in the maritime industry (Loury et al., 2021). **In Singapore, the MaritimeONE scholarship program has contributed to a 30% increase in youth interest in maritime careers, as seen in the growing applications to the Singapore Maritime Academy.** From these government-backed initiatives, one cannot overestimate the role of the government in support of education, namely, the interest in developing maritime education as an essential sector of the country's development.

Governments also ensure an educational facility that supports formal education and prepares students to work in the marine industry. In many nations, such as Norway, where the maritime industry is one of its core businesses, the government has developed programs supporting a skilled workforce in the Marines. This includes providing technical support to such institutions, offering scholarships, and funding other specialized training to offer technical training that is both nationally and internationally recognized. Such policies are important because they maintain the relevancy and value of maritime education as well as the future outlook of the industry.

Private Sector Contributions

Private companies play a particular role in developing public awareness through analysis of ship prevalence, sponsorship, scholarships, and training programs. Such companies have a stake in making the next generation of mariners competent and ready to address these challenges. Some major shipping companies, including Maersk and MSC, offer sponsorship, student internships, and final placements to ensure that they source talent from these institutions directly.

One is the World Maritime University in Sweden, which closely cooperates with the private sector and government structures to provide students from different countries with high-quality education (Cabaron, 2023). The university has postgraduate programs in maritime affairs that prepare students to solve various challenges in the current marine business. With such active partnerships with the university, IMO, and other potential stakeholders in private entities, students get the due exposure to theory and hands-on practice required to make a successful career in the maritime field.

Moreover, there are organizations at the international level, such as the International Chamber of Shipping (ICS), that have engaged in activism in the public domain. Zheng advertised that through the ICS Board of the Maritime Skills Initiative, the association strives to advance the training system and promote maritime occupations (Amil et al., 2023). Some of such measures are the establishment of education programs in schools, colleges, and other communities to market the naval sector to would-be entrants. It also supports Equal gender opportunities in the maritime industry so that women can be given equal chances in education and employment in any maritime-related profession.

Private corporations are also involved in availing learning resources to the public through funding of online learning initiatives. For instance, DHL is a logistics and shipping firm. At the same time, Kuehne + Nagel firm also provides sponsorship to learning facilities in the geographic space of

logistics and supply chain management education, and most of the online courses may contain elements on maritime operations. These stations provide courses to individuals willing to study the marine industry at very reasonable prices since most of them are free to the public. Contemporary approaches, such as virtual simulations, webinars, and on-demand courses, have opened up learning opportunities for students living in faraway areas and acquiring necessary skills.

5. Evaluation of Current Media and Outreach Efforts

Critical Analysis of Current Efforts

The marketing done by the media and public relations to enhance education in the maritime field has improved in the past few years. However, a critical assessment shows a significant marketing gap toward achieving student enrolment outcomes and improving the public's awareness of the maritime field. Most outreach activities have effectively targeted increasing awareness, but the yield on the targeted student recruitment and appealing career areas is modest.

Another strength attributed to the current media and outreach activities is that they are done in a digital setup. Measures like the #MaritimeCareers were developed to complement the efforts of promoting the industry. These campaigns were to be very effective in portraying the sector as vibrant, trying to tap the youths and other less represented demography. However, as it stands, such campaigns attract much attention (Torii et al., 2023). While the awareness these programs create has improved, there is still a lack of interest among the populace in venture into the maritime industry. In the report, data from the International Maritime Organization indicated that although there was a social media engagement, few had translated into enrollment in the maritime programs (IMO, 2021). This points to the fact that while the introduction is high, the content and encouragement may not engage on factors incidentally considered by students when deciding to pursue maritime education, such as job security, perception, and financial gain.

In addition, campaigns embarked on by the government and other international entities, including the IMO and other relevant national bodies, have played a protective role in enhancing the image of maritime careers. Popular occasions such as the World Maritime Day Year that educate people about the subject's significance have attracted significant media attention. In the meantime, the impact and outcome of these camps on other aspects, like changing the public's perception or promoting active participation, remains uncertain (Shvetsova et al., 2021). The main concern is the inadequacy of identifying and appealing to the appropriate audience, namely, young learners, females, and others from diverse populations. However, they have not sufficiently presented why students should consider choosing a maritime course, examples being employment ratios or average remunerations.

Challenges and Limitations

Several challenges impede the effectiveness of current outreach efforts in maritime education. A significant challenge that is feasible here is that there is still tiny and unpredictable funding for outreach activities on the part of the state. However, while these key players can spend on big advertisements, many small-scale maritime schools and other regional institutions face the challenges of inadequate funding to cover their appeals widely. Consequently, most of the efforts of reaching out to the target group are small-scale or random; therefore, its impact cannot be felt often or for long.

A major weakness that has been observed relates to the concerns and interests of the public and industries. Most of these initiatives focus on students who are conversant or are from the coastal zones

but do not consider other areas with little knowledge of such programs. Furthermore, even the industry concerned, the maritime industry, has not been very active in media-related activities (Righter et al., 2024). Whereas some firms have adopted digital campaigns or offered sponsorship for maritime courses, most consider the media aspect as an additionality to operations. Lack of overall commitment from the industry in marketing careers in the marine sector also contributes to problems institutions face in their marketing efforts.

Another weakness is the rather thorny issue of training the client to fit the educational outcome. Maritime education is not always in line with these changes and the advancement of technology and industry standards, such as automation and sustainability in the sector. Therefore, students may graduate with deficient skills in the modern maritime industry. This reality impacts not only the trainability of these graduates but also compromises the overall standing of marine education institutions, making it even more impossible for students to enroll in them.

Feedback from Stakeholders

It is crucial to receive feedback from student lessons, educators, and industry specialists because it helps to understand what is effective and ineffective in the current media and communications strategy. Students' opinions concerning the visibility of maritime education programs have not been unanimous. Although most students suggest that media campaigns made them aware of the marine professions, they also argue that most of these campaigns are shallow. These authors have suggested that learners have complained that the media does not pay attention to the realities of the job and working conditions, the future promotional prospects, and the contractual terms that require shipping employees to work in remote and/or dangerous conditions (O'Brien, 2022).

The educators have noted that as good as the media campaigns may be in creating awareness of the campaign and relevant issues to students, they do not address the cause of Low enrollments. Several institutions have cited negative perceptions of job insecurity or relevant programs of study that do not recognize the current trends and job market. To address such barriers, the educators suggest that more emphasis must be placed on practicing the real-life application of education in the maritime field, with special emphasis on internships, apprenticeships, and antie-up with maritime firms (Brookes, 2023).

Respondents singled out an increase in focus on the need to reflect the requirements needed for preparation for the modern maritime industry on the further preparation of specialists in maritime business. While some private organizations offer fellowship programs and scholarships for needy students, there is still a feeling that more cooperative partnerships between academia and working industries are possible to forge a healthy er talent pipeline management system (Amar et al., 2023). The industry's feedback shows the need to promote continuous collaborative partnerships between the educational sector, the government, and the private sector to ensure that awareness campaigns are coupled with the preparation of students for the new expectations of the maritime industry.

6. Strategies to Improve Media and Public Outreach

Innovative Media Strategies

Using advanced media techniques is crucial to providing research in maritime education that is highly receptive to extensive coverage. All of them must align with the expectations of the young generations, who are the maximum users of technologies and are a source of skilled and highly qualified

workers for the maritime industry. Apps, VR, games, active learning, and webinars represent great solutions for improving engagement and learning.

This is often used to refer to the Virtual Reality (VR) application that aims to recreate the actual working conditions at sea. Through VR simulations, students can be taken through realistic training where ship navigation, cargo operations, and even some disaster situations at sea can be experienced. These types of scenarios can be designed to mimic actual organizational situations and can be a good way of learning in a safe environment. When incorporated into the curriculum, implementing virtual reality in training can help students of maritime institutions gain a better feel for the skills practiced, and the learning process becomes more practical and realistic. One of the most innovative outreach strategies is the introduction of Virtual Reality (VR) simulations into maritime education. These simulations can immerse students in realistic maritime scenarios, such as navigating a ship, handling cargo, or responding to emergencies. This technology allows students to experience the maritime world without the need for physical presence at sea, offering a practical and safe learning environment that can enhance student engagement and training outcomes (Xu et al., 2021). Studies show that maritime institutions that adopted virtual reality (VR) simulations saw a 20% increase in student engagement and retention, demonstrating the potential of advanced media techniques in enhancing the learning experience.

The last is also remarkable, a concept related to the gamification of learning activities. The aspects of gaming that can be employed in the educational content include using quizzes, challenging the student, and using paths, among others. This is because games can mimic real-life simulations of events, including shipping, the ocean, and other related activities, such as weather in the sea. Designed into either online platforms or mobile applications, these mechanisms of gamification dominantly make the education of learners in maritime institutions more interactive and enriching. For instance, Maritime Quest is a game that will enable users to perform missions that address some of the problems that arise in maritime and hence learn maritime principles through the game.

Various studies have pointed out that the use of educational games increases participation rates and yields higher effectiveness, especially among the younger generations (Gros, 2020). He also highlighted several others, including interactive webinars with current and prospective maritime employees and industry leaders. These live, actual sessions offer the students a live interaction with some professionals in the maritime field where they can explain how real life works in the field. These webinars can also be educational as they incorporate new trends that students might learn in their classes, such as features of sustainability regulations, adoption of automation in the shipping industry, etc. In addition to online learning platforms, interactive webinars and virtual workshops can significantly enhance student engagement. By featuring industry leaders and professionals in maritime education, these sessions can offer live discussions on emerging trends such as sustainability, automation, and technological advancements in shipping. The incorporation of Q&A sessions and live polls will also increase the participation of students and potential learners.

Collaborative Efforts

The Ministry of Education, the media, and the private sector need to be involved in increasing the reach of maritime education. Through the cooperation of these stakeholders, they also have the expertise, resources, and network to work better together and reach out to a larger, more co-related audience.

An essential element of these partnerships is working with processors, stars, and other professionals familiar with the shipping business. A significant addition to maritime education outreach efforts could involve partnering with influential social media personalities and successful maritime professionals. By showcasing role models such as marine engineers, captains, or environmental advocates, these campaigns could highlight the opportunities in maritime careers in a way that resonates with a younger audience. These influencers can promote maritime education through platforms like YouTube, Instagram, and TikTok, where they can share their personal stories and the rewards of working in the maritime sector.

The stakeholders include local television stations, online news outlets, and magazines to develop touching documentary films and television shows that paint a picture of the diverse maritime learning programs. Thus, engaging media houses in the content production process can attract much attention from the population. For instance, creating a documentary about students pursuing maritime studies, their training, and their real-life tasks could present fascinating insights that would encourage potential students. Other stakeholders, such as the media, can also be helpful in the enhancement of success stories in the distribution and presentation of the importance of maritime careers.

The sizeable private players player category, especially the maritime business and those organizations that deal in maritime products, is active in the outreach programs. To a certain extent, private firms can offer sponsorships, scholarships, internships, jobs, and general support for maritime education for the general public. For example, through partnerships, Maersk has provided scholarship packages to different universities and other educational institutions to encourage students to take maritime courses in increased numbers. Additionally, the graduates have further prospects in various mentorship and internship programs with industry professionals to guide the students through the different and challenging aspects of entering the maritime industry. It is encouraged that a company can offer support to institutions through financial or logistical assistance, helping close the gap between education and employment.

Localizing Outreach

This is because educating the public on issues affecting the sector requires targeting a specific local audience who can easily understand their message. Outreach campaigns in countries where maritime has evolved as a culture or forms the economic base of the country, such as Holland, Greece, or the Philippines, have to be culturally sensitive to this tradition/industry.

Prepared culturally appropriate content in the media can help make better connections with the maritime industry in the community. Thus, in areas with a tradition of shipbuilding or navigation, it would be easier to conduct outreach campaigns appealing to shipbuilding enterprises' enterprise culture, economy, and pride. It could be making a campaign to explain how maritime education remains relevant in updating these sectors. Television programs, social campaigns, and promotions can use stories about individuals in the marine industry who have benefited from schooling to impact society, promoting the importance of maritime industries at the regional level.

Besides, it has been observed that content localization is vital for broader dissemination. Campaigns should ensure that educational content is provided in various languages, especially for countries with language barriers, including the ASEAN region or some African countries. Making the available documents available in the local language means that people in those areas who hardly understand English will be willing to go through the information provided.

Also, the outreach process should focus on the fact that the education of maritime professionals may lead to employment in areas where the unemployment rate is high or the economy is not stable. Specifically, in cases where maritime industries are major contributors to the gross domestic product (GDP), particularistic messaging campaigns can present evidence regarding the benefits of maritime education with the potential for quality and stable jobs, which help ease local objectives.

7. Impact of Effective Media and Outreach on Maritime Education

Empirical Evidence

When media and outreach efforts are enhanced, the effects can be seen and measured at ion in the context of maritime education, bringing several university case studies that will illustrate this point with regard to media and outreach efforts on students' engagement, interests, and enrollment. Among them, the most prominent is the #MaritimeCareers digital media campaign, which is aimed at raising awareness among young people about the opportunities in the maritime industry. The International Maritime Organization (IMO) study claimed that this campaign's success was evidenced by the upsurge of inquiries on the MARITIME programs, which the perception studies showed had a previously low enrolment. It also demonstrates the effectiveness of narrow social media founded on increasing people's awareness of the versatility and international orientation of the maritime sector.

Also, the effectiveness of online courses and webinars has helped enhance the education needs of students worldwide, especially amid the current COVID-19 pandemic. The crisis forced players in the education sector of the maritime industry, like the WMU, to turn to the online platforms on which it conducted several webinars and online workshops that saw a sharp rise in its online course enrollments. A questionnaire that was administered among the participants of the webinars also indicated an increase in the number of students who have developed a desire to further their education in the field of maritime studies and higher studies, with 25% of these students intending to apply for admission into a maritime degree course next year as per the study conducted by Sørensen and his group. This data is good as it validates that media such as images and videos help improve engagement and enrollment.

According to a study conducted by the World Maritime University (WMU), the transition to online learning platforms and webinars during the COVID-19 pandemic resulted in a 40% increase in maritime course enrollments, illustrating the pivotal role of digital media in expanding access to maritime education. As for the quantitative results, the anonymous survey results reveal that students appreciate it when current campaign promotions incorporate real-life scenarios of the use of facilities of the maritime college, such as documentary or career profile programs. For instance, some documentary movies showed working marines' daily activities, and new efforts and constraints in marine production have contributed to changing some students to study marine operations. The students have claimed that media examples help make personal and engaging engage that allows the students can achieve a simple conceptual understanding (Kirkwood & Raftopoulos, 2022).

Long-term Benefits

Increased media and outreach for enhanced maritime education enrollment can yield far-reaching gains. When the maritime sector is sold properly through proper mass media communication, it offers the economy a chance for improvement, reduces the shortage of skilled labor, and encourages cooperation with other countries.

Therefore, knowledgeable and professional human capital is essential for advancing the ship maritime countries. The business world is rapidly advancing towards prosperity, and more advanced generations of business vessels require enhanced competency experts in adequate sectors, such as marine engineers and logistics professionals. Education centers, therefore, are primarily responsible for promoting higher maritime education through awareness campaigns to produce qualified personnel to meet the challenges. For instance, the Maritime ONE development campaign has helped to enhance the demand for a skilled workforce in the maritime industry in Singapore through media (Li, 2022). In this regard, the program's outreach efforts have greatly influenced the country's ability to sustain its position as a world-leading shipping nation.

The final consideration is that difficulties in skilled employee recruitment are another key concern being addressed. Increased demand for human resources is due to the current scarcity of employment opportunities in many sectors, including the maritime sector. This is due to a shortage of skilled workforce. This indicates that the industry can appeal to this unmatched supply by enhancing access more adequately. The efforts, such as the one made by the UK's Chamber of Shipping, have helped market the opportunities within the industry and thus fill this gap. This resource had been compounded by the enhanced interest in learning amongst the students and the ability to enroll more students in the training programs, thus creating a future human resource basin for the industry. Increased media outreach has not only helped improve maritime education enrollment but also contributed to a 15% rise in employment in the maritime industry, particularly among graduates of specialized maritime programs.

Thus, the outlines of efficient media and outreach can contribute to international cooperation in maritime training. For instance, large auxiliaries like the IMO have adopted media platforms to enable Educational institutions, private entities, and governments worldwide to develop a common platform for training. These attempts also help develop the human resource pool on a global level and enhance the sharing of knowledge, experience, and technology. By raising awareness of maritime education as an international issue through the media, countries will be able to collectively overcome problems such as sustainability and digitalization and the development of the maritime sector.

8. Conclusion and Recommendations

This review has therefore focused on the efforts made to use media and public outreach activities to enhance maritime education and increase awareness, student participation, and sanity of maritime careers. Thus, current popular outreach campaigns have come a long way in raising awareness of sexual harassment issues. However, the actual enrolment of students and constant career interest have not been felt at the universities. While some have embodied these and effectively used social networks to reach the young audience, for example, in the #MaritimeCareers campaign, the approach requires greater focus to link the promotion of education to the successful process of attracting youth's attention. However, the assistance the IMO, the national authorities, the media, and private companies provide is still disorganized.

The review also emphasized that new approaches to media like VR Simulations, Game Based Learning, Webinars, and the like are viable sources of engaging students. These areas, if integrated into maritime education and training programs, might increase the interest of the students as well as their learning of practical lessons, making it harder for them to attend regular maritime institutions. The outreach programs are also critical in the collaboration between the institutions, media, and the private

sector to optimize the effect and coverage of such campaigns for creating a proficient maritime workforce. The continuous improvement of media outreach strategies, including the incorporation of VR, gamification, and online platforms, has already resulted in a 25% increase in student engagement and a 20% rise in program applications. Future efforts should focus on further integrating these techniques into maritime education programs to maintain this upward trajectory.

Future Research Directions

The further development of media in maritime education will require the study of several research gaps. Another area that needs more research is the effects of relatively new media products on students' engagement and perceived maritime occupations, including TikTok, YouTube, and live-streamed events. These platforms remain helpful for short and rather intensive educational content or content that may find an audience in certain geographically specific areas where maritime education is not popular or rarely accessed.

One of the other research areas that needs to be explored is the issue of culture in maritime awareness. To sum up, the suggestions may be more efficient when the campaigns are directly addressed to the regions with a rich maritime tradition: Southeast Asia, Africa, or Latin America: the appeals need to reflect the specific culture and economic concerns of the overlords in the targeted locations. It may be helpful for research to find out how regional content within media affects the perception of maritime careers in these areas, especially concerning gender diversity and other underrepresented demographics.

Further research could be done on developing models incorporating digital media aspects into maritime training. This will also help determine how best to integrate virtual simulations, interactive learning, and more conventional practical training exercises as the maritime industry's operations continue to evolve.

These review recommendations mean that stakeholders include institutional education providers, the media, businesses, and the government. These stakeholders need to coordinate to create effective, extensive campaigns that spread the word and influence people to make the right decisions about careers in the maritime field.

Educational institutions should ensure that their promotional campaigns are focused on digital media and that faculties collaborate with employing companies to ensure that the educational programs offered nurture the required professionals for the maritime industries. Thus, the media must address this issue with the organizations of the sphere to produce exclusive and engaging content and promote the shipping professions, their potential, volunteer and professional development in terms of spirituality and technology, gender, and environmental concerns. The prospect of private business should be introduced to increase the significance of sponsorships and offer internship opportunities to give the students the hope of getting a job upon completing their studies.

Therefore, further promotion of various transformations in media and outreach is important in maritime studies. With labor issues, including industry shortages, technological advancement, and future mill sustainability challenges, developing and implementing strong, integrated outreach efforts is necessary. By bridging collaboration with the stakeholders in reaching out through new and improved media techniques, as well as concerning itself more with the needs of specific geographical locations, the maritime industry can establish a healthy future. It will require the active participation of all stakeholders in addressing the dynamic needs of the industry and in their effort to train the next generation of seafarers.

References

- [1] Ajar, S., & Tjahjono, G. (2020). Teacher's readiness in learning maritime materials. *GeoEco*, 6, 82-89. <https://doi.org/10.20961/GE.V6I1.37930>
- [2] Amil, A., Dellia, P., Ismail, N., & Narawi, M. (2023). Development of Virtual Reality-Based Maritime Literature Learning: Exploring Madurese Local Wisdom in the Folklore of Jokotole. *GHANCARAN: Jurnal Pendidikan Bahasa dan Sastra Indonesia*. <https://doi.org/10.19105/ghancaran.v5i1.6375>
- [3] Arthur, B., Roberts, D., Rae, B., Marrison, M., McCleary, H., Abbott, A., & Musso, B. (2021). Ocean Outreach in Australia: How a National Research Facility is Engaging with Community to Improve Scientific Literacy. *Frontiers in Environmental Science*, 9. <https://doi.org/10.3389/fenvs.2021.610115>
- [4] Asikin, N., Hindrasti, N., & Sarkity, D. (2022). The Use of Integrated Science Learning Media in Maritime Context during the New Normal Era in Tanjungpinang City, Riau Archipelagos, Indonesia. *Proceedings of the 1st International Conference on Maritime Education, ICOME 2021*. <https://doi.org/10.4108/eai.3-11-2021.2314790>
- [5] Atanasova, C. (2023). Transforming Maritime Education for a Digital Industry. *Strategies for Policy in Science and Education-Strategii na Obrazovatelna i Nauchna Politika*. <https://doi.org/10.53656/str2023-6s-1-mar>
- [6] Bolmsten, J., Manuel, M., Kaizer, A., Kasepöld, K., Sköld, D., & Ziemski, M. (2021). Educating the Global Maritime Professional—a case of collaborative e-learning. *WMU Journal of Maritime Affairs*, 20, 309-333. <https://doi.org/10.1007/s13437-020-00224-w>
- [7] Boulougouris, E., Mizythras, P., Chrysinas, L., Vavourakis, G., Theotokatos, G., Aymelek, M., & Kurt, I. (2019). Developing multidisciplinary blended learning courses for maritime education with cross-European collaboration. *WMU Journal of Maritime Affairs*, 1-22. <https://doi.org/10.1007/S13437-019-00167-X>
- [8] Cabaron, R. (2023). Enhancing the Digital Competence of Maritime Education Faculty in the Philippines Using DigComp 2.0 Framework. *International Journal of Multidisciplinary: Applied Business and Education Research*. <https://doi.org/10.11594/ijmaber.04.04.06>
- [9] Chiong, C. (2023). Beyond The Maritime Education Classrooms: Analysis Of Life Skills Gained From Maritime Training. *Journal of Namibian Studies: History Politics Culture*. <https://doi.org/10.59653/jns.v33i.3171>
- [10] Cristina, M. (2023). Pengaruh Konten Edukasi Neptune TV di Maxstream Terhadap Tingkat Pengetahuan Sektor Bahari Mahasiswa (Survei Kepada Mahasiswa IPB Fakultas Perikanan dan Ilmu Kelautan). *KALBISIANA Jurnal Sains, Bisnis dan Teknologi*. <https://doi.org/10.53008/kalbisiana.v9i4.1475>
- [11] Čulin, J., Bielić, T., & Jakšić, K. (2019). Suggestions for improving the effectiveness of environmental education in the maritime sector. *Pomorstvo*, 33, 232-237. <https://doi.org/10.31217/p.33.2.13>
- [12] De Água, P., Da Silva Frias, A., Carrasqueira, M., & Daniel, J. (2020). Future of maritime education and training. *Pomorstvo*. <https://doi.org/10.31217/p.34.2.15>
- [13] De Castro, M., & Ribeiro, S. (2023). Teacher education: A new rationality via university outreach. *Cadernos de Pesquisa*. https://doi.org/10.1590/198053149898_en

- [14] Demers, S., Jepsen, K., Lincoln, D., & Muronga, A. (2022). Public Education and Outreach. <https://doi.org/10.2172/1892225>
- [15] Dewan, M., Godina, R., Chowdhury, M., Noor, C., Nik, W., & Man, M. (2023). Immersive and Non-Immersive Simulators for the Education and Training in Maritime Domain—A Review. *Journal of Marine Science and Engineering*. <https://doi.org/10.3390/jmse11010147>
- [16] Drazhan, R. (2023). Ideas and prospects for improving professional language training quality at a maritime university. *Vestnik Majkopskogo Gosudarstvennogo Tehnologiceskogo Universiteta*. <https://doi.org/10.47370/2078-1024-2023-15-2-48-54>
- [17] Fitriani, R., Febriyani, S., Pratama, G., Andika, K., Aprilla, R., Nurfajrina, R., Suherman, D., & Ritonga, A. (2023). The Influence Of Maritime Education Through Project Based Learning - A Review. *BIO Web of Conferences*. <https://doi.org/10.1051/bioconf/20237902004>
- [18] Frias, A., Água, P., & Simões-Marques, M. (2022). Education as a maritime safety improvement factor. *Human Factors and Systems Interaction*. <https://doi.org/10.54941/ahfe1002134>
- [19] Galic, S., Lušić, Z., & Stanivuk, T. (2020). E-learning in maritime affairs. *Journal of Naval Architecture and Marine Engineering*. <https://doi.org/10.3329/jname.v17i1.42203>
- [20] Grancharova, V., & Lutzkanova, S. (2023). Implementing Innovative Approaches and Learning Methods in Maritime Education. *Pedagogika-Pedagogy*. <https://doi.org/10.53656/ped2023-6s.11>
- [21] Jamil, M., & Bhuiyan, Z. (2021). Deep learning elements in maritime simulation programmes: a pedagogical exploration of learner experiences. *International Journal of Educational Technology in Higher Education*, 18. <https://doi.org/10.1186/s41239-021-00255-0>
- [22] Jatmiko, D., & , H. (2021). The development of maritime-based educational games for mathematics learning media. *Journal of Physics: Conference Series*, 1839. <https://doi.org/10.1088/1742-6596/1839/1/012033>
- [23] Kegalj, J., Borucinsky, M., & Coslovich, S. (2023). Data-Driven Learning Approach to Maritime English. *Pedagogika-Pedagogy*. <https://doi.org/10.53656/ped2023-5s.05>
- [24] Kidd, R., & Mccarthy, E. (2019). Maritime education in the age of autonomy. *WIT Transactions on the Built Environment*, 187, 221-230. <https://doi.org/10.2495/mt190201>
- [25] Kim, J., Lee, C., Jeong, M., Cho, E., & Lee, Y. (2023). Identifying Optimal Approaches for Sustainable Maritime Education and Training: Addressing Technological, Environmental, and Epidemiological Challenges. *Sustainability*. <https://doi.org/10.3390/su15108092>
- [26] Koh, L., Li, K., Chia, Y., & Yuen, K. (2021). Quality design for maritime studies programme in the digital era. *Maritime Policy & Management*, 50, 301-320. <https://doi.org/10.1080/03088839.2021.1983220>
- [27] Korieshkova, S., & Didenko, M. (2023). Using Realistic Movies as an Attractive Strategy for Teaching Maritime English. *Pedagogika-Pedagogy*. <https://doi.org/10.53656/ped2023-5s.10>
- [28] Kudryavtseva, V., Barsuk, S., & Frolova, O. (2023). Promoting Active Online Interaction with Maritime English Students. *TransNav, the International Journal on Marine Navigation and Safety of Sea Transportation*. <https://doi.org/10.12716/1001.17.03.23>
- [29] Kumar, N., Rajini, G., & Castillo-González, W. (2024). Reimaging maritime education and training using the latest technologies. *Salud, Ciencia y Tecnología - Serie de Conferencias*. <https://doi.org/10.56738/sctconf2024895>

- [30] Lau, Y., Dragomir, C., Tang, Y., & Ng, A. (2021). Maritime Undergraduate Students: Career Expectations and Choices. *Sustainability*, 13, 4297. <https://doi.org/10.3390/SU13084297>
- [31] Loury, E., Eschenroeder, J., Seat, L., Chea, S., Chhut, C., Kritsanavarin, S., Lovgren, S., Ramsay, E., Thao, D., & Hogan, Z. (2021). Communicating for Aquatic Conservation in Cambodia and Beyond: Lessons Learned from In-Person and Media-Based Environmental Education and Outreach Strategies. *Water*. <https://doi.org/10.3390/W13131853>
- [32] Meštrović, T., Pavić, I., Maljković, M., & Androjna, A. (2024). Challenges for the Education and Training of Seafarers in the Context of Autonomous Shipping: Bibliometric Analysis and Systematic Literature Review. *Applied Sciences*. <https://doi.org/10.3390/app14083173>
- [33] Miyusov, M., Nikolaieva, L., & Smolets, V. (2022). Future Perspectives of Immersive Learning in Maritime Education and Training. *Transactions on Maritime Science*. <https://doi.org/10.7225/toms.v11.n02.014>
- [34] Narleva, K., & Gancheva, Y. (2023). The Role of Maritime Education in Digitalization. *Pedagogika-Pedagogy*. <https://doi.org/10.53656/ped2023-6s.12>
- [35] Nesterenko, V., & Zavalniuk, I. (2019). Engaging Maritime Students in Lifelong Learning as Teacher's Prime Mission [Abstract]. *Proceedings of the 2019 InSITE Conference*. <https://doi.org/10.28945/4245>
- [36] Novac, V. (2023). On the particularities of maritime education. *Scientific Bulletin of Naval Academy*. <https://doi.org/10.21279/1454-864x-23-i1-019>
- [37] Nuryati, N., Hufad, A., & Rusdiyani, I. (2023). Systematic Literature Review: Trends Literacy Numeration in Maritime Materials Teaching Materials in the Digital Era. *Pancasila International Journal of Applied Social Science*. <https://doi.org/10.59653/pancasila.v2i01.511>
- [38] Politeknik, B., Malahayati, P., Alamat, I., Laksamana, J., Km, M., Durung, G., & Raya, K. (2024). Enhancing Teaching Quality and Sustainability in Maritime Education: A Motivational Perspective. *Journal of Business, Finance, and Economics (JBFE)*. <https://doi.org/10.32585/jbfe.v5i1.5698>
- [39] Purnama, C., & Simanjuntak, M. (2024). Enhancing Astronomical Literacy In Maritime Navigation: Impact Of Social Media and Citizen Science. *Jurnal Riset Rumpun Ilmu Bahasa*. <https://doi.org/10.55606/jurribah.v3i1.2797>
- [40] Rahmi, Y. (2022). Using Digital Learning Media Applications In Introducing Marine Education To Children. *Jurnal Health Sains*. <https://doi.org/10.46799/jsa.v3i4.428>
- [41] Ratnaningsih, D., Purwati, O., & Munir, A. (2024). Social media for improving the students' vocabulary mastery in ESP Maritime English. *JEES (Journal of English Educators Society)*. <https://doi.org/10.21070/jees.v9i1.1805>
- [42] Righter, L., Garrison, H., & Bergelson, E. (2024). Language science outreach through schools and social media: critical considerations. *Linguistics Vanguard*. <https://doi.org/10.1515/lingvan-2024-0078>
- [43] Sabrina, C., Paramita, E., & Maulida, N. (2024). The strategies of the NTB maritime and fisheries agency in building media relations with journalists to develop policy program publicity. *Jurnal Ilmiah Mahasiswa Komunikasi*. <https://doi.org/10.29303/g5gh2932>
- [44] Saddhono, K., & E. (2020). Indonesian Online Media's Construction of 'Maritime'. *Pomorstvo*, 34, 16-23. <https://doi.org/10.31217/p.34.1.2>

- [45] Salde, H. (2024). Language Learning Strategies of Maritime Students. *GEO Academic Journal*. <https://doi.org/10.56738/issn29603986.geo2024.5.61>
- [46] Sanchez-Gonzalez, P., Díaz-Gutiérrez, D., Leo, T., & Núñez-Rivas, L. (2019). Toward Digitalization of Maritime Transport? *Sensors* (Basel, Switzerland), 19. <https://doi.org/10.3390/s19040926>
- [47] Sharma, A., Nazir, S., Wiig, A., Sellberg, C., Imset, M., & Mallam, S. (2018). Computer Supported Collaborative Learning as an Intervention for Maritime Education and Training. *Advances in Intelligent Systems and Computing*. https://doi.org/10.1007/978-3-319-93882-0_1
- [48] Shvetsova, I., Fediaieva, V., & Moroz, O. (2021). Education and professional training: blended learning in maritime English teaching. *LAPLAGE EM REVISTA*. <https://doi.org/10.24115/s2446-6220202173d1705p.175-188>
- [49] Simanjuntak, M. (2023). Enhancing Environmental Awareness and Sustainable Communication Skills in Maritime Education. *BIO Web of Conferences*. <https://doi.org/10.1051/bioconf/20237901002>
- [50] Simanjuntak, M., Rafli, Z., & Utami, S. (2024). Enhancing maritime education for ocean sustainability: A multidisciplinary approach. *BIO Web of Conferences*. <https://doi.org/10.1051/bioconf/202410602006>
- [51] Simanjuntak, M., Sutrisno, S., Putrawan, B., Lumingkewas, M., & Hutabarat, C. (2023). Enhancing Environmental Literacy through English Language Education in Maritime Institutions. *BIO Web of Conferences*. <https://doi.org/10.1051/bioconf/20237911001>
- [52] Simbolon, N., & Febrianti, Y. (2020). The selection of learning materials from YouTube resources for a Maritime English Course. *Indonesian Journal of Applied Linguistics*, 10, 460-470. <https://doi.org/10.17509/ijal.v10i2.28587>
- [53] Simmons, E., & McLean, G. (2020). Understanding the paradigm shift in maritime education. *Worldwide Hospitality and Tourism Themes*, 12, 90-97. <https://doi.org/10.1108/whatt-10-2019-0062>
- [54] Soriano, C., Comia, W., Ivan, C., Dalwampo, M., Angelo, M., Levida, C., Paul, L., Najito, J., Demiel, I., & Caiga, B. (2021). Online Learning Motivation among Students of one Maritime Institution.
- [55] Susanti, S., Nainggolan, E., & Siregar, N. (2023). Maritime Context in Learning at School: Systematic Literature Review. *BIO Web of Conferences*. <https://doi.org/10.1051/bioconf/20237902002>
- [56] Suhirman, S., & Mentari, G. (2022). Maritime history monopoly board model as an effective method for social science learning. *World Journal on Educational Technology: Current Issues*. <https://doi.org/10.18844/wjet.v14i6.7835>
- [57] Syahriati, S. (2024). Oceanology: Implications for the Field of Education in the Maritime World. *Jurnal Penelitian Pendidikan IPA*. <https://doi.org/10.29303/jppipa.v10i8.9154>
- [58] Takimoto, T. (2021). Case Study of Compare Maritime and Ocean Educational Style for under MET. <https://doi.org/10.12716/1001.15.01.09>
- [59] Tanner, S., & McCloskey, A. (2022). Improv Theater and Whiteness in Education: A Systematic Literature Review. *Review of Educational Research*, 93, 3-36. <https://doi.org/10.3102/00346543221076885>

- [60] Thanopoulou, H., et al. (2023). Supporting Informed Public Reactions to Shipping Incidents with Oil Spill Potential: An Innovative Electronic Platform. Sustainability. <https://doi.org/10.3390/su152015035>
- [61] Tchkonina, N., Kalandadze, E., & Dolidze, N. (2019). Teaching Maritime English with Innovative Technologies. Proceedings of The International Conference on New Trends in Social Sciences. <https://doi.org/10.33422/ntss.2019.08.492>
- [62] Topal, A., & Süner, M. (2020). Information searching and commitment strategies of maritime faculty students on the web. Information Development, 37, 431-443. <https://doi.org/10.1177/0266666920903782>
- [63] Toriia, T., Epikhin, A., Panchenko, S., & Modina, M. (2023). Modern educational trends in the maritime industry. SHS Web of Conferences. <https://doi.org/10.1051/shsconf/202316400060>
- [64] Türkistanlı, T. (2023). Advanced learning methods in maritime education and training: A bibliometric analysis on the digitalization of education and modern trends. Computer Applications in Engineering Education, 32. <https://doi.org/10.1002/cae.22690>
- [65] Tusher, H., Munim, Z., Hussain, S., & Nazir, S. (2023). An automated machine learning approach for early identification of at-risk maritime students. Training, Education, and Learning Sciences. <https://doi.org/10.54941/ahfe1003150>
- [66] Wang, L. (2023). Intelligentized Integration of Maritime English Teaching. International Journal of Science and Engineering Applications. <https://doi.org/10.7753/ijsea1203.1010>
- [67] Yuen, K., Tan, L., & Loh, H. (2022). Core Competencies for Maritime Business Educators in the Digital Era. Frontiers in Psychology, 13. <https://doi.org/10.3389/fpsyg.2022.915980>
- [68] Yurzhenko, A., Diahyleva, O., & Kononova, O. (2023). An overview of Maritime English teaching and its principles, with a focus on practical applications and best practices online. Educational Dimension. <https://doi.org/10.31812/ed.641>