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WORLD MARITIME UNIVERSITY
Malmö Sweden

**THE RELEVANCE OF MARITIME EDUCATION AND
TRAINING AT THE SECONDARY LEVEL**

By

SIMONE BRITANNA CUNNINGHAM

Jamaica

A dissertation submitted to the World Maritime University in partial Fulfillment of the
requirements for the award of the degree of

MASTER OF SCIENCE

In

MARITIME AFFAIRS

(MARITIME EDUCATION AND TRAINING)

2015

Declaration

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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Acknowledgement

“Withhold not good from them whom it is due, when it is in the power of thine hand to do it” Proverbs 3:27.

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Abstract

Title of Dissertation: **The Relevance of Maritime Education and Training at the Secondary Level**

Degree: **MSc**

The relevance of MET at the secondary level has been found to be necessary to increase awareness as well as to mitigate the trends and challenges influenced by the philosophical and sociological changes experienced in society and the Maritime Industry. Firstly, this study examines the purpose of secondary education, the secondary curriculum; factors that may require MET at the secondary level as well as the effectiveness of early awareness of maritime concepts to youth ages 11-18 years. Secondly, a mixed method approach was applied in collecting and analysing data through survey and interviews. Considering the objectives of the study the purposive sampling and random survey method was utilised to get a wide cross section of participants to be able to answer the five research questions. Thirdly, the findings reveal that the relevance of MET at the secondary level is weighted by geographical, economical as well as the country's interest in the industry, as well as to bring awareness and for career opportunities. The findings established that stakeholders in some cases lack awareness of the industry and therefore do not promulgate policies for implementing MET at the secondary level. Further, the literature has noted the lack of concentrated effort in promoting the industry to the youth. As such, there is a need for paradigm shift in the education system to reform the secondary curriculum to make it relevant to society in terms of exposure to the maritime industry.

Table of Contents

Declaration.....	ii
Acknowledgement	iii
Abstract	iv
Table of Contents.....	v
List of Tables	viii
List of Figures	viii
List of Abbreviations	ix
1 Introduction	1
1.1 Background	3
1.2 Problem Statement	8
1.3 Purpose of the study	10
1.4 Objectives.....	10
1.5 Research Questions:	11
1.6 Limitation.....	11
1.7 Scope/Delimitation:.....	12
2 Literature Review	13
2.1 Introduction	13
2.2 Historical Background of Secondary Education	13
2.3 Definition of Secondary Education	15
2.4 Psychology of Introducing MET at the Secondary Level.....	15
2.5 Framework of Secondary Schools	17
2.6 Purpose of Secondary Education	18
2.6.1 Education for Civic, Political Aims	19
2.6.2 Education for economic and work-related aims	21
2.7 Assessment of the Purpose of Secondary Education	25
2.8 The Secondary Curriculum	27
2.8.1 Curriculum Reform.....	30
2.8.2 Paradigm Shift	31
2.9 MET at the Secondary Level.....	33

2.9.1	Training the Human Element.....	33
2.9.2	Mitigating the Imbalance between the Supply and Demand of Seafarers .	35
2.9.3	Increased Maritime Awareness.....	38
2.10	Summary	41
3	Methodology.....	43
3.1	Introduction.....	43
3.2	Selection of Participants.....	43
3.3	Instrumentation	44
3.4	Research Ethics	44
3.5	Questionnaire Instrument	44
3.6	Interview Instrument	45
3.7	Data Collection.....	45
3.7.1	Quantitative Method	45
3.7.2	Qualitative Method	46
3.8	Data Analyses.....	47
3.8.1	Quantitative Analyses	47
3.8.2	Qualitative Analyses	47
3.9	Summary	47
4	Presentation and Analyses of Data.....	49
4.1	Introduction.....	49
4.2	Qualitative Data Analyses.....	50
4.2.1	Awareness	50
4.2.1.1	Level of awareness	50
4.2.1.2	Geography	51
4.3	Secondary Education System.....	52
4.3.1	Structure of Secondary Education and Curriculum	52
4.3.2	Human Resource.....	54
4.3.3	Sustainability	55
4.4	Stakeholders	56
4.4.1	Policy	56
4.4.2	Interest of the country	58
4.5	Benefits	60
4.5.1	Career Opportunities.....	61
4.5.2	Making Global Citizens.....	62
4.5.3	Agent of Change	62

4.6	Challenges	63
4.7	Strategies	64
4.8	Quantitative Analyses	66
4.9	Summary	69
5	Discussion of Findings	70
5.1	Summary of the Study.....	70
5.2	Discussion of the Findings	72
5.2.1	Research Question 1	72
5.2.2	Research Question 2	73
5.2.3	Research Question 3	75
5.2.4	Research Question 4	76
5.2.5	Research Question 5	77
5.3	Implication of the Findings	78
5.4	Recommendations	80
5.5	Conclusion.....	81
6	References	83
7	Appendix 1	90
8	Appendix 2	92
9	Appendix 3	94
10	Appendix 4.....	99

List of Tables

Table 1: Demographic Information.....	67
---------------------------------------	----

List of Figures

Figure 1: Officer supply and demand	37
Figure 2 Response to Secondary School with MET	68
Figure 3: Response by Position	75
Figure 4: Response by Gender	99
Figure 5: Response by Age Group.....	99
Figure 6: Response by Level of Education	100
Figure 7: Response by Region	100
Figure 8: Response by Category	100
Figure 9: Response by Maritime Affiliation.....	101
Figure 10: Response by Maritime Awareness	101
Figure 11: Response by Interest in Maritime Careers	101
Figure 12: Response to what motivates your interest in the maritime industry	102
Figure 13: Participants with Maritime Training	102
Figure 14: Response to would basic knowledge of MET helped at higher level of education.....	102
Figure 15: Response to MET at secondary level influences maritime careers	103
Figure 16: MET at the secondary level impacts sustainability of the maritime industry	103
Figure 17: Response to should government implement MET at the secondary level ...	103
Figure 18: Response to government initiative to increase maritime awareness	104
Figure 19: Response to maritime awareness in your country	104

List of Abbreviations

CMI: Caribbean Maritime Institute

IMO: International Maritime Organization

MET: Maritime Education and Training

WMU: World Maritime University

1 Introduction

The Maritime Industry in recent times has become extremely concerned about the human element. Importantly, the training and education of the human element is paramount for an effective and efficient global Maritime Industry. Provided that the concern of the human element is effectively approached with practical strategies, the end result will see a sustainable industry. Maritime education and training at the secondary level is one of the pragmatic approaches worth examining. Furthermore, education by all means and at all levels, is the most potent weapon to mitigate challenges related to the competence and commitment of the human element. Against that background the International Maritime Organization (IMO) has given careful attention to the need of attracting, retaining and training of qualified seafarers (IMO, 2013). To underpin a successful, influential and impactful industry that attracts the calibre of people capable to take the industry to the next level, early education and training is most crucial.

Maritime education and training at the secondary level has been deemed by some in the maritime circles, as a positive and potentially game changing strategy to resolve a number of present and possible challenges of the industry. Moreover, education and training in the wide context provides enhancement for growth, expansion and positive change. It provides knowledge and awareness as well as divergent choice to individuals for the industry. Furthermore, like most industries there is the need for qualified and competent human resources for continuity and sustainability. Targeting the youth at the secondary level facilitates a dynamic force for sustained positive change. However, in many jurisdictions maritime education and training at the secondary Level is yet to be a reality, or a concept to generate discussion at the policy level (Haun, 2014).

According to Haun (2014) secondary schools that provide maritime education teach subjects related to the training and skills required to work in the maritime sector,

whether it be as a crew member at sea or shore side such as in a marine shipyard or port facility. Maritime education and training provides knowledge and skill about the shipping industry, which can be appreciated at the secondary level once the pedagogical approach is applied in the appropriate context at the appropriate level.

The concept “maritime” is often used interchangeably with the term “marine”. This can be confusing as it relates to the type of training being referenced to in this research. For the purpose of clarity, it is important that the concept ‘maritime’ is understood. According to Hildebrand and Schröder-Hinrichs (2014) an understanding of maritime in the context of research, aims at finding technology and innovative solutions for better use of the sea and ocean resources related to human activity. Haun (2014) states that maritime education caters for the sea and shore side resources related activities. Against this background, the term maritime will be used in view of the human related activities. Among these are: vessels operations, training, technological aspects associated with naval architecture, navigation, port facilities as well as sea and ashore resources. In lieu of the definitions above the researcher has coined a definition of maritime education. Maritime education and training is the acquisition of the knowledge and skills related to subjects in the maritime field that enhance competence in the maritime context.

Additionally, the lack of maritime training and awareness during the secondary stage of education is one shadowed factors that may have contributed to incompetence as well as seafarer dropout. There is an acute deficit in the basic knowledge that is required to make a more practical and committed transition to a higher level of learning. Furthermore, citizens of the globe need an awareness of the global maritime industry. As such, there is a need for knowledge related to the maritime environment, career opportunities, and importantly the mutual benefit of engaging with the industry. The medium of accomplishing these targets successfully is through purposeful targeting the youth at the secondary Level.

Formerly, a number of maritime academies have been training mariners to man vessels at sea. However, this training has become more inclusive due to the expansion of the maritime industry. Commendably, the industry has reached far beyond just the need for mariners; hence, training has been extended to meet the emerging needs of the different spheres of the industry both ship and shore-based employment (IMO, 2013 & European Union Commission Report, 2008). The maritime industry is defined in general terms as “all enterprises engaged in the business of designing, constructing, manufacturing, acquiring, operating, supplying, repairing and/or maintaining vessels, or component parts thereof: of managing and/or operating shipping lines, and customs brokerage services, shipyards, dry docks” (“Maritime Industries”, n.d). Since the inception of maritime education and training, it has been predominantly offered mostly at the university and college level. Only a few known countries worldwide are offering the training at the secondary level according to the researcher’s informal inquiry. The expansion of the industry has given rise to new services and careers. This can be seen through the increasing growth of the seaborne trade that has resulted in the shortage of competent seafarers, the lack of maritime awareness, concerns of safety due to human element, coupled with technological innovation, are evidence for the need of new thinking and strategies in education and training to meet the demands of the industry. This research aims at exploring the relevance of maritime education at the secondary level, examining and assessing its possible effects on the future of the industry.

1.1 Background

The BIMCO/ ISF Manpower 2005 update showed a 10,000 shortage of marine officers for the global workforce. This represents a 2% shortfall since 2005 (BIMCO/ISF, 2005). During 2010 another short fall of 13,000 marine officers was reported (BIMCO/ISF, 2010). Drewry (2014) cited an alarming shortfall of 19,000 officers. Additionally, a further shortfall of 21,700 officers was foreseen by 2018. The continued reduction of

seafarer's number over time has portended potential detrimental effects on the shipping industry. Such statistics undoubtedly have raised the genuine concerns of all the actors in the industry. As such, a solution to the pending crisis is most desired. Baylon and Santos (2011) have found that a career in shipping requires committing oneself to a life at sea. This has discouraged many young people from considering shipping as a profession. In light of that, mental preparation and awareness is a simple but an effective remedy to start with. As such, the secondary level of education is the platform for such preparation. In addition to the general education it facilitates foundational knowledge of varied career options. Furthermore, it is open in allowing for the presentation of the challenges and benefits of careers. It can also be an effective sifting tool for suitable candidates for the industry.

Subsequently, the Center of Advanced Maritime Studies seeks to motivate young people towards a career in shipping as well as improving seafarers' welfare, this was a project of the Maritime Academy of Asia and the Pacific (Paiso, 2011). An important question at this juncture is: how will they motivate young people? A study done to ascertain student's motivation and expectation of studying maritime undergraduate programme in the three countries of Greece, Hong Kong, and China revealed that most of the students enrolled in the undergraduate programme came straight from the secondary school. "Students who have enrolled for an undergraduate programme in maritime studies have typically completed secondary level education in the previous academic year" (Athanasios & Adolf, 2011, p.373). The authors declared that the subject of student study of maritime programme is under-researched, and as such, the real motivation is unknown. However, most of the students they interviewed stated that the presence of a maritime history in their family and home town was what motivated them. This was further supported by M'Pherson, (2009) when he states, "except a young person comes from a family living near the sea or has a nautical tradition then the sea has no interest to him" (p. 237). Farthing, Brownrigg & Mukherjee, (2013) also allude to this cultural

trend in families that have careers or business in shipping for the younger generation to pursue a similar career. One possible question that must be answered is: should the future of the maritime industry be left to family or to community traditions?

Researchers in the field of maritime education so far have yet to zero in explicitly on the impact of maritime education and training at the secondary level. As such the aim of this research is to examine the possible benefits the industry may experience from implementing MET at the secondary level.

In assessing the United Kingdom as a maritime country, M'Pherson (2009) argued that "the school sector has no serious sustained study of ships or the sea. When investigated, students from the secondary schools that were taught navigation indicated that navigation was treated mainly as a "fun subject" (p. 237). The formal introduction of maritime training at the secondary level serves to strengthen existing systems, as well as, provide a platform for advanced level training in the maritime field. To illustrate the relevance of maritime education at the secondary level, attention should be given to what is commonly known in the industry that ninety percent of world trade is carried by ships and that "75% of the world's surface is covered by vast oceans" (Farthing, Brownrigg, & Mukherjee, 2013, p. 1). Shipping when compared to trucks, rail and planes is the most environmentally friendly and cheapest form of commercial transport. Additionally, it is one of the oldest industries in the world that is revenue robust when compared to other industries, (Shipping Facts, (n.d)). Furthermore, the industry is competence driven; it requires special technical skills on the part of the seafarer. It has a unique vocabulary, technical terms, and phrases often referred to as club language by Maritime English Lecturers because it is only spoken and understood within the walls of the industry. It is operated under international laws, with a consideration for its own code of conduct and regulations. Most humans everywhere are dependent on it in one

way or another. As such, a level of priority is worth giving to the maritime domain at the secondary level in any jurisdiction.

According to Gregory and Shanahan (2010) "education is aimed at widening and extending people's horizons, its goals are to increase the number of future possibilities for the individual, and to increase the number of potential ways that the individual can approach each of those possibilities"(p. 62). Implementing maritime education within the secondary curriculum increases the possibilities of more choices towards a maritime career, as well as, creating a maritime consciousness of the industry. Notwithstanding this, many may not choose the industry. Nevertheless, the industry should not be passive in providing an opportunity to increase maritime awareness to the younger generation. Many youth have not chosen a career in science. However, they have been made aware of the importance of the sciences to man's existence. Therefore, the same principle can be applied to maritime education, not only for career endeavours but for an awareness of the maritime environment and how to protect and preserve it. Opening the industry to all levels of learners was a highpoint of the International Maritime Organization (IMO) Secretary General's opening remarks on February 2, 2015 during the HTW sub-committee plenary. This, he communicate will create an awareness, as well as the promotion of the industry and its seafarers to school children, who may become motivated to be IMO ambassadors in member states. This can be highlighted as an idea or a new vision by well thinking stakeholders, of innovative ways of expanding, sharing and bringing awareness of what the industry has to offer to other levels of learners outside of colleges and universities.

Haun (2014) provides great insight on the benefits and purpose of MET at an early stage within the academic system.

Primary and secondary maritime schools are sprouting up across the US, inspiring K-12¹ students to learn about the exciting, yet sometimes obscured domestic waterfront. The goals of these maritime school programs are many and multifaceted, but at the core they motivate and engage students by bringing something new and exciting to the classroom while giving teachers an effective means for capturing the attention of their classes. And as new student audiences are being exposed — earlier, rather than later — to the maritime industry and potential career paths that could lie ahead, it's not only students and educators who stand to reap the rewards of these programs. The domestic maritime industry, spanning blue and brown water mariners, dock workers, operations, oil and gas and a dozen other sectors is starving for fresh, young talent to meet a shortage of qualified workers. What better way to work toward filling these gaps than to educate the nations' youth on the importance of its culture-rich maritime heritage (Haun, 2014).

In the case of Haun (2014) the US society stands to benefit from this implementation, the various classes of maritime workers, the environment, the communities, as well as the country. Moreover, this beneficial experience is not restricted to the US nor barred from other jurisdictions. It simply demands administrative and political will. Examining the importance of secondary education and what is included within the curriculum has to do with the needs of society and the role of the youth within the context of that need (Mitz, 2002). It therefore explains the constant revising of the curriculum in different jurisdictions and institutions to address a societal or an organizational need that may arise. In Canada, fisheries were added to the grade nine civics curricula after the Education Ministry saw the need for students to learn about the fishing industry (McLeod, 1989). Similarly, Wyner and Desalle, (2010) state that "if a conservation

¹ **The K to 12 Program covers** (six years of primary education, four years of Junior High School, and two years of Senior High School [SHS]). (See: <http://www.gov.ph/k-12/>)

perspective were taught in secondary schools, students who are not interested in biology could be influenced to pursue careers or live lifestyles that would reduce the negative impact of humans on the world” (p. 649). In like manner, a number of young people would gravitate towards the safe keeping of the harbours to preserve their beautiful beaches, and parks. Also an increased interest in maritime as well as marine-related research would be the key component in maritime governance. In addition, fewer people would become enticed to build their homes on river banks, as well as, in the coastal area. Furthermore, a number of other sectors may become influenced to participate in funding projects of the industry because they have learnt to appreciate the industry. The appearance of new studies, jobs creation, and new technology may emerge to resolve a number of the challenges faced by the industry.

The vision of developing maritime high schools in Eastern Cape in South Africa by the department of education, gave an insight behind this move. The envisaged Maritime High School is intended to provide knowledge about the maritime industry, the career opportunities available to examine the industry, with the prospect of pursuing further studies or higher maritime education, (The Development of High School in Eastern Cape, 2010). One Cognitive Psychologist advises that “during the early school years students develop what is referred to as a sense of industry” (Woolfolk, 1990, p. 84). The decision making process for any student or individual requires knowledge, and as such the department of education in the Eastern Cape was facilitating that process by providing knowledge to the students about the industry. An early awareness of a subject impacts the student and its effect will trickle down into the society.

1.2 Problem Statement

The lack of emphasis on maritime training within high schools is rather a dismal reflection on the industry (M’Pherson, 2009). According to Pilyugin (2012) the majority of prospective students cannot understand the disciplines because they have problems in

the formative stage. The challenges experienced by the maritime industry are worthy of a pragmatic approach. Among those challenges that requires a focused approach are the shortage of competent seafarers, capacity building, accidents due to human element, safety and security at sea, pollution, as well as the implementation of Conventions. The fact that the factors mentioned above are all human related supports that education and training is an important element for consideration in any amelioration efforts.

Current challenges may suggest that higher education could adequately resolve the challenges experienced by the industry. However, the challenges are yet to be resolved. Moreover, the implementation of MET at the secondary level is a possible solution that has remarkable potential. Furthermore, outside of the existing problems is the lack of awareness of the industry and the career opportunities available. As such, the limited or nonexistence of a maritime curriculum at the secondary level to create an awareness or consciousness of the industry, to provide knowledge of the various professions and to influence decision towards a career in shipping, necessitates maritime education at the secondary level. These, among other challenges, may eventually cripple or put the industry in a static mode, due to the lack of succession and sustainable planning for the future of the industry as well as the MET institutions. Additionally, awareness of maritime knowledge at an early stage is critical for the future development of the shipping industry. According to French (2013) training is required because of changes that have occurred and changes that will occur. With respect to the fact that the maritime industry has experienced a number of changes globally, education and training should appropriately reflect such changes. Among those changes is the evidence of globalisation in the industries, climate change, new services and careers, innovation in technology, smart communication, multi-national crewing, and changing trends in trading. The introduction of maritime education and training at the secondary level will inform new policy and decisions within the MET sectors at different levels to appropriately train the population to meet the changes reflected in the industry. As such

MET at the secondary level is a pragmatic approach to influence and motivate new ideas, talents and insight for the industry.

1.3 Purpose of the study

The purpose of this study is to contribute valuable insight into the relevance of maritime education and training at the secondary level. Against that background the research seeks to identify the potential impact that MET at the secondary level may have on the future of the industry. The challenges and changes experienced by the maritime industry globally since the 21st century are factors influencing this study. As a result, the researcher believes that the introduction of MET at the secondary level is worth examining. The result of this study may be useful in influencing discussion towards implementation as well as policy making within jurisdictions.

1.4 Objectives

The objectives of this research are to:

- Analyse the possible effects of maritime education and training at the secondary level on the maritime sector.
- Explore the policies and practices in different jurisdictions regarding delivery of maritime education and training at the secondary level
- Examine current trends and challenges of the maritime industry in relation to how they may be addressed through implementing maritime education and training at the secondary level.
- Explore how maritime education and training at the secondary level could influence sustainable development of the maritime industry.
- Assess the role of stakeholders in the implementation of maritime education and training at the secondary level.

1.5 Research Questions:

The research seeks to answer the following questions:

1. What are the merits and demerits of maritime education and training at the secondary level?
2. What are the national practices and underlying policies that inform the delivery of maritime education and training at the secondary level?
3. What are the current trends and challenges within the maritime industry that may warrant maritime education and training at the secondary level?
4. How can maritime education and training at the secondary level translate to sustainable development within the maritime industry?
5. What is the role of stakeholders in implementing maritime education and training at the secondary level?

1.6 Limitation

As mentioned by Athanasios and Adolf, (2011), not much research has been done on this particular topic. Therefore a number of challenges were encountered. In this regard easy access and sourcing of relevant information about MET at the secondary level have been a challenge. As such the research examines literature about secondary level education in general. Another limitation was that most of the literature interrogated secondary education based on Western philosophies, not much literature was found that interrogates secondary education from other cultures. Another challenge was the constraint of traveling to countries for collecting primary information. Consequently, the researcher uses the purposive sampling and random survey method which allows participants from different countries who serve in the maritime industries to participate. As such the size and scope of the sample that affects the reliability of the data was a challenge. The identification of key personnel from countries or educational institutions to provide crucial information was an initial setback in getting data. As a result, the researcher sought to address these challenges by taking a pragmatic approach in the

methodology. General inquiry through internet search, as well as web-based questionnaires and online interviews have been employed for collecting data from the different countries. These measures assisted in addressing a number of the limitations experienced during the course of the research.

1.7 Scope/Delimitation:

The scope that has been utilized in this research aims at getting a wide cross section of perspectives on the relevance of Maritime Education and Training at the secondary level. It is understood that limiting the scope to a few countries may not have provided sufficient evidence. As such numerous developed and developing countries were examined. The researcher believes that countries with very strong maritime activities are deemed as a priority because of the impact the findings may have on the future of their maritime economy. Therefore, education system as well as the governmental policy of targeted countries was analysed for relevance to the research topic.

2 Literature Review

2.1 Introduction

This chapter examines literature in the context of the secondary education system and the relevance of implementing maritime education and training at that level. The discussion examines the historical background of secondary education, the definition of secondary education; the psychology of MET at the secondary level, the framework of secondary education; the purpose of secondary education, the curriculum and MET at the secondary level. The chapter ends with a summary.

2.2 Historical Background of Secondary Education

The historical background of secondary education is relevant for deciding on an appropriate analytical framework. Kamens, Meyer, & Benavot (1996) have found that the influence of historical forces continues to shape secondary educational models, institutional structures, and curricula. Initially, the philosophical orientation of secondary education can be traced back to historical factors. According to Hadley (1902), in earlier centuries secondary education was driven by the status-quo of society. It was noted that in 1635 US secondary education was to prepare young men for college at Harvard, service in government, and the church (US department of education). Furthermore, “historically, secondary education was subsidiary to higher education, and this relationship has influenced policy, choice of providers, curriculum decisions, teacher recruitment and training, evaluation, accreditation, and certification” (Kamens, Meyer, & Benavot, 1996, p.2).

According to Holsinger & Cowell (2000), secondary education in Europe during the fifteenth century began with training in religion and philosophy but only to males. The unstructured curriculum was non-negotiable as priests gave strict instruction for the

curriculum content. By the eighteenth century significant changes were seen intellectualism became the new phenomenon. Bishop (2007), McFarlane (2003) and Kant (n.d) have found that the prevailing motto for the period provoked man to use his reasoning and mental capacity. This influenced the secondary education system; as a result, emphasis was placed on natural sciences, technology and experimental studies. Government interest and involvement in secondary curriculum increased progressively during this period.

It was not until the nineteenth century that secondary education took on a more technical-based approach to learning. Dewey (1934) and Johnson & Clark (2007) found that secondary education during the nineteenth century was deemed as progressive; learning was meaningful, active, involving and applicable to the learner. Holsinger & Cowell (2000) noted that curriculum emphasis was centered on practicality and social usefulness of learning by doing. Vocational subjects were introduced to the curriculum such as driving, family life, consumer economics, and mathematics for everyday living, graphic design, hair care, styling, automotive repair, carpentry, machine shop, and home economics. The launching of the sputnik satellite by the Soviet Union in 1957 increased the number of scientific topics that were taught. In the American context however, despite the addition of practical subjects many believed that the aim and purpose of secondary education was not meeting the demands of the society. The education structure was criticized by the business sector and affluent clergymen that the American youths were not appropriately trained to compete with the global landscape. According to Gary (2012) many believed that secondary schools were short changing the youth, the industry and the American society. Many argued that secondary education must be fit for purpose. The concerns raised by citizens influenced the addition of another set of subjects to the curriculum. Johnson and Clark (2007) mentioned that the threat of the Soviet Union propelled the United States in 1958 to fund secondary education for the purpose of including foreign language, mathematics, and increased science in the

curriculum. He continued to say that this was one of the strategies the country saw as an appropriate response to fortified security.

2.3 Definition of Secondary Education

According to Siegel (2014) “secondary education is the second stage traditionally found in formal education beginning at about age 11 to 13 and ending usually at age 15 to 18”. Hadley (1902) stated that it is a public education compulsory to all citizens not sufficiently specialised in their purpose but as a means of preparation for several callings in life. It is the second stage of education fitting the student to be a better person rather than an expert. Kamens, Meyer, & Benavot (1996) mentioned that a broad definition of secondary education includes lower and upper secondary levels and vocational education. At the upper level opportunities are provided for specialization; on the other hand subjects at the lower levels are general.

The focus of this research is centered on that category of learners according to the above definitions, in the context of age group and the level of education. It is those persons who are at the second level of formal education between the ages 11 and 18. The age group may differ from country to country depending on the education policy and structural framework. Nonetheless, the youth within that particular age demographic will be the focus of this research.

2.4 Psychology of Introducing MET at the Secondary Level

According to Salyers and Mckee (2005), “young people between 10-15 years are at a peak of forming values and making decisions that will impact them for the rest of their lives” (p.1). At this stage education that is meaningful will remain important for a lifetime as articulated in the following:

In recent research it has been shown that the early adolescent brain goes through a growth spurt just before puberty and then a period of pruning. The growth spurt and pruning are most noticeable in the prefrontal cortex, which is the part of the brain where information synthesis takes place. It is also the part of the brain that controls planning, working memory, organization, and mood modulation. This area of the brain does not mature until about 18 years of age. The process of “hardwiring,” which continues throughout adolescence, means that the intellectual activities given the most time, the most opportunity to strengthen the connections in the brain, will influence learning for the rest of the student’s life. (Horch & Irvin, 2002, p58)

Piaget’s theory of child development indicates that the operational stage ages 11-15 are characterized by increased abstract thoughts and hypothetical thinking. Such thinking concretized information in a more realistic sense. As a result, these schemata of cognitive thought process ultimately develop into lifelong learning. (Rust, 2008, and Swanson, Edwards, & Spencer, 2010). Slavin (2003) concludes that the learner during the early years process information more easily and increases their knowledge after learning new information.

Experts agree that cognitive skills are developing during the adolescence years; ideas are tested, while critical and analytical skills are developed. Since learning results in changed behavior through experience (Surgenor, 2010), the introduction of MET will result in change in awareness and more responses to career opportunities among other prospects. The youth during this period are open to new concepts, ideas and information. As such, engaging maritime concepts will concretize meaningful education as far as the sector is concerned. As articulated, the importance given to subjects during this stage stays with the youth for a lifetime. Scientific as well as psychological evidence

demonstrates a positive and lasting mental effect on the young learner. Therefore, the opportunities to strengthening maritime knowledge are best engaged during these years.

2.5 Framework of Secondary Schools

The expansion and diversity of the global landscape provides valuable insight into the applicability of maritime education and training at the secondary level. The building blocks that support the educational framework at the secondary level are a necessary element to discuss. On this point the philosophy that informs policy serves as an influencing factor of what is taught at the secondary level. According UNESCO Report (1970), the youth are entering a world which is changing in all spheres: scientifically, technologically, politically, economically and socio-culturally. On the back of that, there is need for policy, commitment and resources to prepare the youth for change. Knight (2014) has found that an education policy framework provides guidance for the development and implementation of national education plans.

The common threads that appear to inform the framework of secondary education and its offerings are entrenched in changes experienced in society. For example, the Canadian Council examining the statistics of those educated at the secondary and post-secondary schools concluded that the youth were not prepared for college entrance or the global market. Hence the question was raised; is our secondary education meeting the needs of society? As a result the education policy was reassessed. Following that discussion a number of changes were made among which was the adding of fisheries to the grade 9 civics curriculum (Kirby, 2009; McLeod, 1989). The 2013/2014 UNESCO report highlighted “basic education as a fundamental effect in resolving economic, health, social and political issues. However, the international community and national governments have so far failed to sufficiently recognize and exploit education’s considerable power as a catalyst

for development and change” (p.4). Fiqueredo and Anzalone (2003) found that the nature and scope of development in the context of secondary education is channeled through governmental policy.

When comparison is made with the shipping industry against the points articulated, there appears to be very low or non-responsive action in creating policies within the education sector to as proactive solution to challenges. Fundamentally, for the industry to influence youth at the secondary level, education policy is crucial. Education policy development in the maritime context is the responsibility of jurisdictions in identifying the relevance of adding that knowledge to the youth’s zone of proximal development.

2.6 Purpose of Secondary Education

Many authors in recent times have written extensively on education in general. However, not as much published work has been done on the purpose of secondary education. During the course of the research only a few articles were found with substantive information on MET at the secondary level and can be concluded that there is a severe lack in literature on the subject. Examining the purpose of secondary education underpins the aim for which youth are educated at this level. Mcculloch (2012) indicated that from 1972 to 2011, over 120 articles have been published on secondary education. Kamens, Meyer, & Benavot (1996) noted that secondary education models aimed at the creation of massive systems that emphasized open access and the universal coverage of education” (p. 2). According to Paquette & Fallon (2014) “secondary education that purports to be meaningful must be grounded in relevance to society and culture; it must consist of multiple and divergent knowledge. It must provide a reasonable degree of equal opportunity of content and quality of knowledge.”

Further to the discussion, Hadley (1902) articulated that the purpose of secondary education is to educate boys and girls for their calling in life. Hill & Rury (2012) found that in the 1800s one of the needs of society was to train domestic helpers as well as farmers; as a result the second level of education was targeted. On the other hand, Danna and Span (2008) stated that secondary education was seen by many as the medium of preserving the way of life through teaching and training the future generations of children in their ideals. According to Cohen (2006), in the early 20th century the America secondary education charter was to provide skilled labor associated with the industrial revolution. Additionally, Siegel (2009) found that high school education connects the youth to their current interests and stimulates the growth of new ones. A broader view was articulated by Ku (2013) that education at the secondary level was to liberalize and train for democracy.

Upon critical examination of the thoughts articulated by the authors on the purpose of secondary education, two main categories can be extracted. Firstly, education for political and civic duty followed by education for economic and work-related aims. A number of other factors can be drawn since an extensive coverage of almost all the facets of life is sprinkled within the perception of each author. Nevertheless, the two themes were mostly talked about. Furthermore, the themes are applicable to the objectives of this research. Against that background the categories are examined in the context of their effect and influence on the maritime sector when the learner is exposed to maritime education and training at the secondary level.

2.6.1 Education for Civic, Political Aims

Education's main role in society is to inspire citizens to be actively engaged in the public sphere and in their communities (Siegel, 2009). Human beings need awareness of their original culture, heritage, political systems, rights and responsibilities (Ministry of Education Jamaica, 2010). Civic knowledge informs learners about national views while

at the same time expanding global perspectives. Additionally, cultural studies afford students at the secondary level opportunities to develop national pride. They are able to develop distinct attitudinal as well as affective skills, such as patriotism, identity, appreciation and respect. Such skills contribute to the societal core value system which is engraved in the sociological and philosophical orientation of society. As a result education policies and curriculum are designed to reflect such ideals.

It was Fiqueredo & Anzalone (2003) who stated that for democracy to survive citizens must understand difficult issues and make informed decisions as well as holding officials accountable for their actions. Cohen (2006) has found that students at this level, having been introduced to subjects related to history and heritage develop the capacity to think critically about society and the world. Additionally, they develop ideas about transforming the world through active participation; thus governance, policy and leadership are influenced. In a similar context leadership in maritime matters can also be enhanced if maritime concepts are introduced. Kahne & Middaugh (2012) have found that “knowledge in civics increases support for future engagement among the youth” (p. 10). While MET is not directly related to civics, the maritime environment is civics-related in nature. Therefore, an appreciation of the maritime infrastructure will arrest their interest. Secondary education is progressive and futuristic; it is a preparation for the long-term goals and objectives of leadership and nation builders. The future leaders are trained at this level, the future policy makers, presidents, prime ministers, doctors, lawyers, maritime experts, principals, scientists, researchers and parents. Tomorrow’s world is today’s youth.

It can also be said that an appreciation for country and citizenship arouses the obligation to safe guard the resources of the land, sea, air, the natural habitat, and the people and by extension the planet. The transferring of maritime knowledge will enhance the interest in and care of the sea, and its environments. The youth cannot care for what they are not

aware of. They will not be very willing to ratify and implement conventions for safer and cleaner oceans when they are placed in positions of influence because maritime matters were not given importance at the stage that concretises lifelong learning.

According to Łopuski (2008) it was during the 19th century and the early part of the 20th century that many national legal systems started to develop a legal domestic maritime commercial framework. On the back of this, there is a safe assumption that quickly creating a policy for MET at the secondary level may be a significant challenge.

Jurisdictions are yet to find the appropriate place to integrate the maritime industry within government ministries. This was also noted during lectures on the maritime legal framework at the World Maritime University. In a similar fashion this was also observed among maritime universities. While most universities are represented under the Ministry of (Higher) Education, a number of maritime universities are under the Ministry of Transport. Maritime universities like all other universities educate and train students. Hence, to grapple with the distinction of ministries that maritime universities are represented under is admittedly ambiguous. Notwithstanding, it is assumed here that this state of affairs is certainly not by design. However, it is important that thought be given to the possible underlining factors that may contribute to the appropriate designation of MET universities, as well as the industry, in various jurisdictions.

2.6.2 Education for economic and work-related aims

No form of education is more engaging to students and more important to the economy than career technical education since it connects students to the greatest range of career possibilities (Siegel, 2009). It is an education strategy to provide young people with the academic and employability skills at the secondary level.

Nearly two thirds of jobs created in the United States by the year 2018 will require some form of postsecondary education. To meet these workforce needs, President Obama has set a goal of ensuring that every American has access to at least one year of postsecondary training or higher education to gain the skills needed to rebuild the economy and meet workforce demands. As such, greater focus on academic rigor, career-focused programs of study articulation between secondary and postsecondary schools was promoted by federal law (Carnevale, Smith, & Strohl, 2010 as cited by America Institutes for Research, 2010, p.1).

Kelly (2012) found that the governments of Australia and New South Wales have added career guidance to the secondary level curriculum as a measure of sustaining career opportunities. Jamaica in the late 1990s added career guidance within its secondary schools (Griffith, 2009). In 2001 the Organization for Economic Co-operation and Development (OECD) countries created a public policy of national career guidance to be taught in public schools. Countries involved in the process saw the move as a means to improve the efficiency of the labor market and education system within the OECD countries (Career Guidance Today, 2006).

Secondary education is the platform for exposing students to career options. The relevance of technical education has been noted as a strategy to rebuild the economy. Furthermore, MET at the secondary level creates awareness of the maritime sector as a valuable career option that is beneficial at the personal and national levels. It facilitates economic development, awareness, as well as psychomotor skills training. According to the America Institutes for Research, (2010) “ Career Technical Education is no longer just about teaching students a narrow set of skills sufficient for entry-level jobs; it is about preparing students for careers” (p. 2). The potential of MET at the secondary level fits perfectly within these characteristics of the benefits of technical education.

In Jamaica, career exposition is done yearly at the secondary schools. Ninety percent (90%) of the students across the country are engaged in detailed discussions of career options. Through this medium, the Caribbean Maritime Institute gets the opportunity to bring awareness of the maritime industry and its offerings. In most cases students had minimal levels of awareness of the industry as well as the career opportunities. It was well observed that other institutions offering programs in medicine, business, technology, teaching, agriculture, music, law, political science among others received far more responses. The Institute spent more time answering questions about the careers and the industry than collecting completed application forms. This case exemplifies the need of exposure to maritime career opportunities. “The main thing is getting the maritime training and careers out in front of younger folks early on so that they know that that’s an option that they have, especially when a lot of those skills can be developed outside of a formal college education” (Haun, 2014).

Yang & Wang, (2013) examining the post junior high schools of migrant children in Beijing, China found that “74.6 percent chose computer/internet technology and foreign language, while 13.5 percent chose blue-collar occupational areas such as repair technician and hotel services; 11.8 percent of the students chose health care, finance, sales, administrative/personnel/security, and beauty professions” (p.86). It is important to note that among the careers selected by the students maritime careers are absent. Furthermore, in that particular country, maritime education and training is an available option. The discussion here serves to justify how very few chose a maritime career as the first option.

Moreover, one of the troubling realities that have become a sore point in the discussion was articulated by Petersen (1983) when he iterated the needs for young workers in the merchant marine industry to take the place of the many men and women who are close

to retirement. He noted that many seafarers will be retiring by the time younger workers are ready to go to sea, hence new workers are needed.

The industry has been approaching crisis in seafarer shortage after examining statistics since 1995. Merchant marine by any definition is not exempted from making an assertive presence in educating the youth for an illustrious career in the maritime industry. While it is commendable and hopeful that many would become attracted to the uniform of a captain or an officer, in truth, that may not be the case. The uniqueness and interest of people makes the world an exciting place. As such, many youths may not embrace a maritime career. Notwithstanding, the industry should take the opportunity to introduce the cruise industry to the young people who are fascinated by entertainment and who are likely to pursue careers in bartending, beauticians, barbers, photographers, chefs, musicians, masseuses/masseurs, social director, youth activities coordinator, cruise director, dining room waiters, and dancers (Petersen, 1983). These are just a few examples of the numerous career opportunities awaiting the youth. The industry has been limiting its influence across the globe in settling in the populace's mind the unlimited opportunities available to the public. By comparison the industry has the capacity to offer almost equal career opportunities similarly to land based opportunities.

It is informative to mention a few careers on the marine side, even though the research is particularly examining maritime. Among them are atmospheric oceanographers, biological oceanographers, chemical oceanographers, geological oceanographers, physical oceanographers and oceanographic engineers (Heitzmann, 1988). These are not covered in this research paper. However, as it relates to the maritime side among the options is maritime law, naval architecture, maritime economist, seafarers, educators, and researchers, those serving in academies as well as the public on matters relating to the sea. Administrators are those who coordinate, plan and design policy, portside opportunities and those involved in foreign and domestic commerce. (Heitzmann, 1988).

Introducing such subject content at the secondary level is somewhat impossible. Moreover, the resource is inadequate. Nevertheless, the idea that is being researched is the possibility of creating such an influence through education to propel the youth at the secondary level to become engaged and aware of the industry. According to Heitzmann (1988) there is a genuine concern that there will not be sufficient personnel available to staff the expansion of the industry. Capacity building in essence involves thinking ahead of time, or preparing for the foreseen. The notion of who is to be trained as well as at what stage the training should commence should be informed by statistical data and information of the status quo of the industry of which information is abundantly available. Hence, there is no secret that the industry is suffering from personnel shortage. Career guidance at the secondary level is not just a mere insight that has accidentally pasted in the secondary curriculum. There was intelligence behind this strategic move that has enhanced capacity building for the global economy. Fittingly, it is one of the noteworthy tools that jurisdictions may consider at the secondary level.

2.7 Assessment of the Purpose of Secondary Education

The development of the secondary schools over the centuries demonstrated an expansion, inclusion and diversification of subject topic for the existing needs of society. Secondary education was indicative of the growing concern about the labor, security, leadership, economics, politics and socio-cultural factors. However, there has been a great lack of the maritime content at that level. Additionally it was found that

The motivation of undergraduate students leaving the secondary level to pursue a maritime program are mostly inspired by practical considerations, e.g., easiness in getting a job, better professional prospects, etc., rather than, say, self-interests and personal development (p.373). A very significant finding is the absence of any active role of the maritime industries, whether

companies or interest groups and associations representing them, in ‘pushing’ young people to pursue higher education by introducing relevant courses to them. Maritime industries seem to passively rely on the higher education system to attract the best of the potential graduates, whereas the higher education system does not market itself to potential candidates by any obvious means, at least from the perspective of students (Athanasios & Adolf, 2011 p.381).

The purpose of MET is to supply manpower to the shipping industry. It further aims to establish the fundamentals of the seafarer’s discipline in a multinational, multicultural and multifunctional environment. To facilitate working in such a high-risk environment, seafarers must be trained and if this training starts at the secondary education level it will have far-reaching results. The industry has increasingly become the focus of new environmental rules and regulations, and must now comply with a broad array of requirements in the areas of air and water quality, hazardous waste disposal, and aquatic species protection. Safety in the maritime industry also requires standards to be set at an international level, and maritime education and training at all levels should play a key role in asserting the need for consistent, uniform education and awareness.

The basic rationale behind secondary education policy is the belief that the provision of every child with a secondary education will enable each individual to increase their productive capacity and ultimately contribute to individual, societal, and national growth and development. The absence of particular knowledge content will ultimately lead to a lack of response of the youth in that field. The maritime industry, as a major global player in the world’s economic and the sociocultural facet of society is, therefore deserving of notable presence in the secondary education system. This area of maritime education and training at the secondary

level is yet to be examined. In recent times, Huan (2014) has written a detailed article on the subject looking specifically at one jurisdiction. However, there has not been any research on a general level of the benefit of implementing MET at the secondary level. The perspective is lacking within present literature and therefore needs wider scope of research. In light of the discovery, this study aims at looking at the topic with the aim of adding information to the field of study.

2.8 The Secondary Curriculum

It is imperative that the subject of curriculum development comes into sharp focus as the importance of maritime education and training at the secondary level is discussed. The underlying factors that influence curriculum development are addressed under three main domains: philosophical orientation, psychological consideration and sociological influences (Print, 1993). These principles are examined to analyse to what degree curriculum development is crucial in promulgating MET at the secondary level.

According to Print (1993) the philosophical orientation examines the aims and values of society. It provides clarification of concepts that examine the epistemology and ontology of the knowledge of the curriculum, for example, what particular knowledge is required to address societal concerns. Within that framework relevant questions are asked such as: On what grounds should the content be selected and taught? To what degree should the new reality of society be reflected in the curriculum? What is the status quo of the society that requires such knowledge?

On the other hand, the psychological consideration takes note of the pedagogical approach, the kind of learners, the learning environment, teaching methods, instructors, assessment and evaluation that may be employed to achieve the objectives of the curriculum. Another factor is the resources, financial and human as well as teaching

material. Important in the discussion is who to teach, what is to be taught and at what level should it be taught.

The sociological orientation of the curriculum addresses the cultural influences, social changes, societal ideology and societal structure which include technological changes and emerging trends. Altogether these factors encapsulate the scope of an integrated, systematic and systemic thinking that influences curriculum development.

Brady (2011) has found that the static state of many schools stems in large from a failure to understand the process of curriculum development. This process he refers to as “institutionalization” where the rubber meets the road. If it is poor, education will be poor no matter the state or national standards, no matter the level of rigor, no matter the toughness of tests, teacher skill, school size, market forces imposed length of school day or year, parental support, design or condition of buildings, generosity of budget, and sophistication of technology, administrator wisdom, or enthusiasm of students. A school can be no better than its curriculum allows it to be. Tanner (1990) is of the view that the heart of the school is the curriculum which greatly influences what is taught and what students should learn. Against that background Kridel (2010) made an appeal for curricula to be reconstructed and revolutionized to fit the manner in which society is progressing.

Against that background a quick view of some global trends was noted by Core (2015) Co-founder and chairman for investment management. Among them were

- Deepening income equality
- Persistent jobless growth
- Rising pollution in developing countries
- Increasing occurrence of severe weather events (Climate change)

In summarising the points he stated the following:

This year, two major concerns dominate this list, economic and environmental. These two areas of focus are inextricably linked. Long-term economic prosperity depends on environmental sustainability. Today, we see the consequences of short-term economic thinking and the reckless use of our planet's resources: water disputes between neighbouring nations, more frequent and powerful extreme weather events brought on by our warming climate, an on-going global deforestation crisis, a rapidly acidifying ocean, eroding topsoil and agricultural capacity, and an alarming biodiversity crisis unparalleled in modern history (Core, 2015).

Curriculum reform serves as the premier stage to enhance knowledge relevant for present and future generations. It is for most part the ultra-ultimate solution to educate on a global level of maritime awareness. Outside of awareness of the maritime industry and career opportunities, climate change is an important trend that requires global attention. It is a trend that has an implication on all members of society; fortunately, it is a trend that can be tackled at the secondary level through MET. However, it is the responsibility of the sovereign state to see the relevance of this education and mandate curriculum reform. The beginning of the process is to identify who informs and influences the philosophical, psychological and sociological domains of the curriculum.

Many curriculum developers are of the view that curriculum design and development are highly politicised. Pinto (2012) stated that there is a highly unprecedented political involvement in curriculum process and content. At times it becomes problematic for implementing because some schools do not always agree to the content. Chan (2012) agrees with Pinto in raising the point that since the colonial period, governments have strongly influenced curriculum where many schools felt that if they are not in agreement they may lose adequate funding from their governments. On the other hand, Print (1993) brought a wider perspective to the discussion suggesting that curriculum development

involves a number of persons such as teachers, parents, government and the industries. Therefore, curriculum development is not solely the responsibility of the government.

At this juncture, it is recommendable for the maritime industry and the MET institutions within jurisdictions to become involved in the secondary curriculum development process. As stated by Print (1993) the curriculum should address change and the social needs of society. In this case, the best persons to understand the philosophical and sociological changes in the industry and how secondary education may address these concerns are the industry practitioners. Additionally, the industry is best equipped to translate the benefit in a curriculum developer's team.

2.8.1 Curriculum Reform

An approach to the design and development of secondary education curriculum was put forth by Higham and Yeomans (2015), where they strongly advocate for an increased choice, diversification and a more flexible curriculum. Additionally, the authors reiterate that such reform provides breath and balance which better meets the needs for the economy and the individual. The curriculum of the 1940s to the 1960s was referred to as bureaucratic with traditional offering of compulsory subjects. Roques (1989) noted that "specialism is a key problem of secondary curriculum. We can't live without it. We can't live with it. We inherited it. There is a steady pressure from university and tradition to keep it; we haven't been able to market an alternative strong enough to get parents (and governors and teachers) off the specialist drug" (p.195).

In recent times educators at the secondary schools in America who teach history and social studies were required to have a passing knowledge of the holocaust. Most history curricula as a policy, added the subject (Pawlowicz & Grunden, 2015). It was noted that the vast availability of literature about the holocaust and the extent of media publicity have generated much interest in the subject. In contrast, many disagreed and questioned

the relevance of the holocaust in the secondary curriculum. In the mind of the researcher one possible answer could be awareness. The rationale for such inclusion may not have any significant economic benefit, perhaps none at all. However, the psychological orientation of the curriculum examines the affective domain. This domain teaches elements of the curriculum which evokes compassion and is value-ridden. Educating the youth of the atrocities of the holocaust is strategic in preventing future reoccurrences of such an act. Similarly at this juncture, it is worth noting that – though the depth of meaning a society links to the holocaust is certainly of much greater gravity than that given to the maritime industry – an appropriate awareness of the maritime domain can create an appreciation of the contribution of the industry both in cognitive and affective terms.

In a wider context there is no room for a static curriculum in a constantly changing global space. Moreover, students are not homogenous; their experiences, cultures and value systems are different. Therefore, curricula should offer choices that are fitting for all types of learners. Accordingly curriculum development should adapt to the reality of the environment. Maritime education and training at the secondary level exposes the youth to broader choices, skills and knowledge of the maritime industry inclusive of other subject matters. Not all benefits come out in dollars and cents. A society that values trust, integrity, honesty, kindness cannot count the economic benefit of such acts by the citizens. In 2007 the Caribbean Examination Council embarked on a Caribbean wide curriculum reform program. The aim was to transform the secondary education curriculum to be more responsive to the needs of the global Caribbean nationals (Griffith, 2009), and as a result more technical and vocational subjects were introduced.

2.8.2 Paradigm Shift

Ken Robinson in agreement with Paquette & Fallon (2014) criticizes the education system for its monolithic nature. Schools in their pursuit to educate sometimes kill

creativity, talents and a noble desire for knowledge (Robinson, 2010). He continues to elaborate that education is systematically structured on an economic utility philosophy. It is evident in the curriculum with a hierarchy of subjects, those that are deemed useful, for example mathematics and others that are deemed useless like the arts. The current education systems in many jurisdictions were designed for the enlightened and industrial revolution periods and not for this present generation. There are concrete views as expressed by Robinson that secondary education needs a paradigm shift. It is slow in changing to meet the present dynamics of society. Creating a security fence around what the future is going to be, and trying to prepare students for it, may close the door on potential discoveries. Perhaps an extreme position of indoctrinating students of what they must learn, and why other knowledge may not be appropriate at a certain level is a possible position taken by jurisdictions stakeholders.

Additionally, curriculum developers need to rethink what education is and what is the purpose of education. The three domains that influence curriculum development are not static elements; they are constantly affected by change. Therefore, the curriculum should also change overtime in parallel with the domains.

Unfortunately, conformance thinking is what the curriculum promotes at the lower level. Education at the secondary level must strive to advocate and promulgate change towards divergent and lateral thinking. Sustainable education is essential for knowledge beyond the present, it educates for all kinds of people, planet and economy. Facilitating that kind of approach will result in a number of emerging solutions to tackle challenges. MET at the secondary level is a principal opportunity for technical career options and knowledge to appreciate the maritime industry as a global industry. Nevertheless, the reform of the secondary curriculum in promoting multiple subjects is the ultimate platform to give youth access to such knowledge.

2.9 MET at the Secondary Level

2.9.1 Training the Human Element

The human element (HE) is an important factor in merchant shipping. Milhar Fuazudeen, Head of the Maritime Training and Human Element Section at the IMO, during a lecture at WMU on July, 16, 2015 stated that the human element comprises all persons involved in the maritime industry not just seafarers as popularly believed. The human element has been misnamed he stated. Gregory & Shanahan (2010) share their understanding of the human element, “the shipping industry is run by people, for people. People design ships, build them, own them, crew them, maintain them, repair them and salvage them. People regulate them, survey them, underwrite them and investigate them when things go wrong” (p. 1). Therefore, humans are at the epicenter of shipping in all dimensions. In shipping humans are like the weather that impacts the entire atmosphere of the industry. Moreover, humans are the hub of the industry’s success and/or failure. Humans are the anchor to the process from route planning to policy making. On the whole it can be concluded that the entire human race can be considered as the human element and therefore need an awareness of the industry. While that statement may be deemed too general, the fact is, everyone is a consumer of the industry and at some point has made an impact on the industry. Take for example the doctor who examines the seafarer, the farmer who provides produces for consumption, the spouse/family that contributes to the state of mind of the seafarer (positive/negative), the instructor who trains for competence, the media that influences positive or negative ideas of the industry which influences potential applicants, and policy makers or governors who ratify and implement conventions for safer and cleaner oceans. Against that background, the best place to capture all the categories of future players of the sector is at the secondary level. The implication of the human element on safety and security are far reaching. Furthermore, statistics indicate that eighty percent of sea-related accidents are caused by human error (Human Element, 2014). According to Sekimizu (2015) “799

lives were lost or missing last year. If you look at the statistics over the last decade from 2004-2014, 4,784 lives were lost on passenger transport by sea. Obviously the human element must have played a part in those accidents”.

Training of the human element is crucial. Efanga & Oleforo (2012) and Wei (2007) have found that a country that neglects the training of an effective human resource formation is doing so at its own peril; education is an investment in knowledge and skills which can yield economic and social benefits in the future. If such a necessity is neglected the economy in the long run may consequentially suffer greatly. A well-educated and trained workforce is necessary for a strong and successful maritime transportation system.

An important challenge facing the shipping industry today is how to attract and retain a sufficient number of adequately trained and qualified seafarers and qualified maritime industry professionals with the right motivation, knowledge and skills for the professional application of evolving technologies and procedures. This challenge will increase as world trade continues to grow and shipping activities increase accordingly (IMO, 2013).

The human element is a maritime industry systemic challenge. It is a global concern. Rao (2010) postulates that a long-term strategic plan is needful to limit the negative outcomes associated with the human element. A careful review of the purpose of secondary education could result in a relevant long-term strategic approach towards developing a committed professional workforce. In fact, the basic maritime concepts can be understood at this level as well as the pros and cons of the industry. As a result those who decide to take up a career in the future would have done so according to prior knowledge, hence an informed decision that would decrease the number of seafarers leaving the industry.

Zheng (2014) highlights that correct training and personal development serves to cultivate the right habits and attitude. An effective and competent seafarer is a “concept”. For instance, Usain Bolt, world champion 100 meter sprinter from Jamaica started training for events at the secondary level, then college level, then regional, then at the international level. The purpose of this example is to demonstrate that a competent seafarer climaxes on the job, but it is a process of training and educating. Therefore, the road to competence should not be an abrupt intervention procedure at the university level, instead, it should be deemed as a process across all levels in the education system. Early training will make a greater impact on competence as articulated by education psychologists.

Journalists and news reporters all need an awareness to propel more positive discussion in the media. Talk shows, parents and children need to start talking about the industry to heighten interest and education. If there is no need for trade, then there is no need for ships because shipping is a derived demand (Lan, Lai, & Cheng, 2010). Since people need shipping, they also need an awareness of shipping.

2.9.2 Mitigating the Imbalance between the Supply and Demand of Seafarers

Another contributing factor for MET at the secondary level is the imbalance between the supply and demand of seafarers. Firstly, the industry is facing shortages of well qualified officers primarily due to lack of interest in choosing a seafaring career. Secondly, many are leaving the seafaring career for land-based job opportunities. Therefore, constant recruiting strategies need to be optimized. The demand for seafarers was articulated by the IMO Secretary General at the Sub-Committee on Human Element, Training and Watchkeeping (HTW), 2nd session, 2-6 February 2015:

Take a look at 15 years ahead, 2030, what will the volume of trade be in 2030? Obviously nobody can tell, but amongst the approximately half million officers available today, probably 150,000 would have left by 2030 due to retirement. Just to maintain the current workforce of officers, 10,000 new officers must be trained and provided every year to fill the gap created by retiring officers. If seaborne trade expands by 70% by 2030 then we need to train and produce 40,000 officers every year. If seaborne trade expands just by 35% by 2030, we will still need to train and produce 25,000 new officers every year. Maritime training is absolutely fundamental for sustainable shipping (Sekimizu, 2015).

Considering the aging profile of the current seafarer, nearing an average of 45, require a radical approach by all concerned in the maritime industry. On the grounds that the shipping industry needs to be an industry of choice for the younger generation, shipping companies need to be recognized as employers of choice, in order to attract and keep the young generation in the industry (Cahoon and Haugstetter, 2008, as cited in Acar, Ziarati, & Ziarati, n.d.). The BIMCO/ISF 2005 estimated a lack of 270,000 senior officers by 2015 worldwide. Drewry (2014) reported a shortfall of 19,000 officers and projected an increased shortfall of 21,700 by 2018. Additionally, Drewry (2015) found that shipping will require an additional 42,500 officers by 2019. The graph below by Drewry Maritime Research demonstrates that the challenge of imbalance between the demand and supply of officers can be traced back to 1995. Consequently, the problem has increased exponentially due to the growth of the industry. The shortfall may vary from jurisdiction to jurisdiction nonetheless a global concern has been aroused because shipping is a global industry.

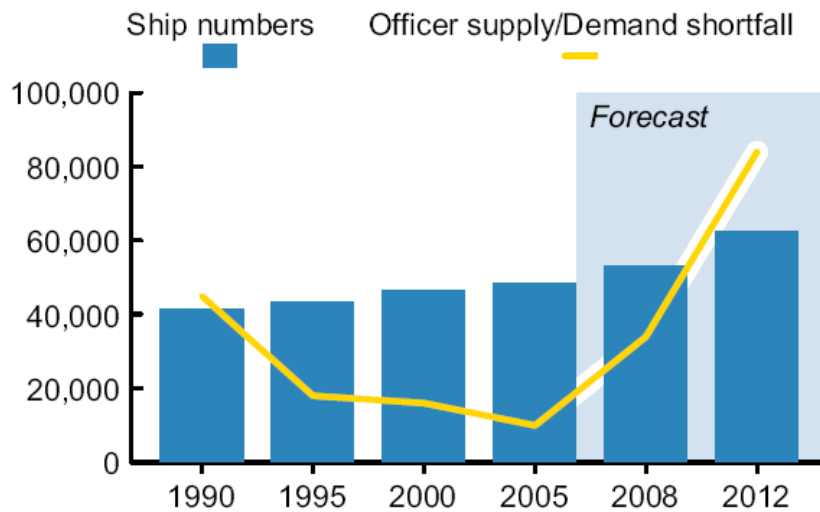


Figure 1: Officer supply and demand
 Source: Drewry, n.d.

In line with the reported statistics the following was articulated:

Employment of water transportation occupations is projected to grow 13 percent by 2022, as fast as the average for all occupations. As the economy recovers, the demand for waterway freight shipping will grow, increasing the need for these workers (Bureau of Labor Statistics, US Department of Labor, 2015).

According to the Bureau in 2012, 81,600 were employed in water transport. In 2022 there will be a demand of 13% increased employment opportunities. Therefore, 10,900 new employments will be available. Marine Engineers and Naval Architects employed 7,300 in 2012; following in 2022 there is a projected 800 available employments for more marine engineers and naval architects. As such, there is a 10% projected increase of new employment in those specific fields. In summary, the employment of captains, mates, and pilots of water vessels is projected to grow by 14 %. The employment of ship engineers is projected to grow by 8 %. Employment of sailors and marine oilers is projected to grow by 16 % in 2022. The outlook of employment appears prosperous for

those who are considering a career in the shipping industry. It is important to note that the statistics presented are reflective of the American economy. In other words, there is an enormous demand and career opportunity for new-comers to the industry.

In an effort to promote a seafaring career to attract young people the IMO embarked on ‘Go to Sea’ campaign in November 2008. During the discourse, statistics revealed that only 22.4% of seafarers purposefully wanted a seafaring career. 18.4% became seafarers just to see the world 15.8% because they wanted better wages, while 7.6% became seafarer because of family tradition (Life at Sea Survey, 2007/8). Recruiting for the seafaring career is not automatic; too many factors serve as a deterrent. Perhaps, if there was another career offering the same opportunities (to see the world) like that of the seafaring career the industry would have hastily changed their approach in addressing a number of its concerns. Nevertheless, the possibility of such a career may never exist in the near future; moreover, the need for transporting cargo will always be a demand. On the back of such assumption the supply and demand of seafarers is one of the major challenges that call for a creative and strategic long term approach in securing and sustaining the shipping industry.

2.9.3 Increased Maritime Awareness

In countries that do not produce essential commodities for example, ripe bananas, mangoes, potatoes, avocados, watermelons, oil or gas for energy and electricity should have some knowledge of how those items reached their country. The child should have an awareness of how the product gets to the store or market for it to be in the home. Additionally, they should know by what mode of transportation it arrived, as well as the key players involved in ensuring that there is always a banana or an orange on the breakfast table. The respect and appreciation for the committed and dedicated seafarers who submissively spent weeks and months away from their families and friends facing dangerous working conditions on the high seas, piracy, cultural conflicts and limited

resources for a comfortable life onboard vessels, needs far more respect and appreciation than they receive. Furthermore, the aspiration of the youth to become a doctor, nurse, lawyer, firefighter, teacher, police officer, carpenter and soldier are delicately wrapped around the talks given during secondary and primary schools. Therefore, the youth admire and desire those professions because those were the careers they were introduced to when the brain was making sense of what was important (Wilson, Horch, & Irvin, 2002). The parents in those professions are normally invited to speak about the professions. Hence an appreciation and awareness of the professions developed.

In 2009 a survey conducted in Sweden highlighted the lack of maritime knowledge among the population. Public actors view the sector as merely a transportation sector. As an intervention strategy in 2011 more effort was concentrated in increasing awareness. As a result, 1072 students were enrolled in one upper secondary school dealing with basic fishing education (Bressler & Legrand, 2012). Similarly, Kridel (2010) has found that authentic education must go beyond the ‘upliftment’ of children to promote an understanding of the world. If secondary education adopts such a philosophy, then, maritime education at the secondary level would not be such a mountain to climb to convince stakeholders of its importance. Moreover, the education system should feel responsible to educate the youth for the progressive dynamics of society.

An awareness of how shipping affects people, society and the ocean may result in better governance. Hasselov, Turner, Lauer, & Corbett (2013) stated that the oceans have become more acidic because the seas have absorbed 30-40% of manmade CO₂. Shipping emissions, a significant source of atmospheric pollution, annually release around 9.5 million metric tons of sulphur and 16.2 million metric tons of nitric oxides. Increasing acidity poses a threat to marine ecosystems, harming species such as coral and algae, commercial aquaculture species, such as shellfish. Kolieb (2008) has mentioned that emissions from ships can account for approximately 60,000 cardiopulmonary and lung

cancer deaths each year. The increase in carbon dioxide changes the very chemistry of the ocean, causing it to become more acidic, jeopardizing the future of coral reefs and other organisms that produce calcium carbonate shells and skeletons which could result in the breakdown of many important marine food webs including those upon which humans depend. Humans too will be directly affected by these changes as huge swaths of coastline will be lost, weather patterns will change and food production methods will be altered.

Case studies in recent years indicate that the populations of whales in certain areas, up to one third, have been found dead due to vessel strikes. There have been many reported sightings of whales and dolphins with deformed dorsal fins or flukes and/or wounds suggestive of propeller strikes. Many have died from infections resulting from the opening of previous ship strike wounds. (Dolman, Williams-Grey, Asmutis-Silvia, & Isaac, 2014). Additionally, the spread of alien and invasive species, harmful algae, black-band disease, and red tides to some extent is attributed to shipping activities.

It is necessary to mention that awareness at the secondary level does not serve as a solution to the death of whales and dolphins or the increase in acidity of the ocean. However, awareness can contribute to an increase in protection and governance of shipping activities through good governance and better shipping practices. Good governance is defined as

The sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and co-operative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements, that people and institutions either

have agreed to or perceive to be in their interest (Our Global Neighbourhood, 1995).

In light of the definition, governance is not only the responsibility of policy makers and stakeholders of the industry but in some respect the general public. Greater success in governance can be achieved by involving the human element, which is everyone. Present and potential future players, route planners, policy makers, tourists, community members and global citizens all have a part in maritime and ocean governance. The thought that people are aware of possible negative effects associated with shipping leads to conscious efforts to minimize risk. Secondary education is an open stage for introducing such awareness to the general populace in a formalized concentrated effort.

It is arguably that the ocean will always have relevance to humanity, some may disagree. Nonetheless, maritime transport has been in existence for many decades. Therefore, an absence of notable recognition at the secondary level may be indicative of a general lack of forward thinking. Many people living on the coastline have no idea of their environment, many wear clothes and shoes and have not a basic idea of how they were transported and who are the special people in the process. As such maritime awareness is necessary in the 21st century.

2.10 Summary

In summarizing, firstly, there are high expectations in secondary education. The training of the human element for philosophical and sociological changes in society is a part of the purpose of secondary education that is embedded in the secondary curriculum. Policy-making is the link to bridge the gap between a competent workforce and the global labor market. As such a significant interest in sustaining the industry demands a clear understanding of the implication of supply and

demand, the human element as well as the lack of maritime awareness of the industry.

Secondly, career training has been a part of western education for decades, little evidence of maritime career education can be found at the secondary level. Moreover, education psychologists have articulated that the young learner is more receptive to concepts and if given valuable time and exposure will cultivate attitudes, views, passions and action that will impact lifelong decisions. Consequently, the under-representation of MET at the secondary level necessitates national and global intervention to mitigate the imbalance of supply and demand of seafarers. As a result, the IMO has been intervening through projects such as the “go to sea” campaign. However, legal supremacy of sovereign states is the ultimate solution for reform and rethinking of the purpose of secondary education.

Thirdly, it is important that measures be taken from a national standpoint to establish convincing arguments based on fundamental evidence of the relevance of MET at the secondary level. Furthermore, curriculum reform is a paradigm shift from the monolithic secondary education culture to strategize for a long-term sustainable solution.

3 Methodology

3.1 Introduction

The main goal of this research is to seek answers for questions related to the Relevance of Maritime Education and Training at the Secondary Level. As such, the questions that required answers are:

- What are the merits and demerits of MET at the secondary level?
- What are the policies and practices that influence MET at the secondary level?
- What are the trends and challenges that warrant MET at the secondary level?
- What is the role of stakeholders in the process? Then finally,
- How does MET at the secondary level translate to sustainability?

The mixed method approach was used in answering the research questions. “Mixed-methods research helps in complementing one method with another even where these methods are derived from different methodological positions” (Manuel, 2011 p. 75). The chapter will be examined in four sections firstly, the selection of participants, secondly, the instrumentation, thirdly, the data collection, fourthly, the data analyses. Then, the chapter ends with a summary.

3.2 Selection of Participants

The researcher used the purposive sampling and random survey method in selecting participants (Lunenburg & Irby, 2008). As such, no geographical area was exempted from the study. The researcher in seeking a wide cross section of views has targeted maritime professionals, and persons who have studied and affiliated with the sector such as educators, seafarers, administrators and policy makers who were willing to participate. The target starting age group was twelve years, male and female students from the secondary school level.

Against that background students from the World Maritime University were selected, as well as other respondents from many other jurisdictions. Individuals were also selected using the criterion sample method on the basis that they had some knowledge of the maritime industry, for example individuals employed in maritime related fields such as the maritime administration of the different jurisdictions. Further, snowball sampling was another of the strategy selected where a few persons were asked to identify other persons within their jurisdiction to participate in the research.

3.3 Instrumentation

The research instrument describes the particular tool the researcher used to measure the variables specified in the research questions (Rudestam & Newton, 2007). This research has utilised the mixed method approach using both qualitative and quantitative methods. An electronic questionnaire and a semi-structured interview instrument were constructed. The instruments are discussed independently.

3.4 Research Ethics

It is important to note that the research instruments were approved by the University's Research Ethics Committee. All participants gave approval for the content of the interviews to be used in the research. In keeping with the assurance of confidentiality fictitious names are used for the reporting of data.

3.5 Questionnaire Instrument

The electronic questionnaire (see appendix 3) consisted of twenty-five (25) items, twenty (20) mandatory questions and five (5) open-ended. In testing the validity and reliability of the instrument a pilot test was done using eight (8) participants from the Maritime Education and Training (MET) specialisation group at the World Maritime University (WMU) and the Caribbean Maritime Institute (CMI) in Jamaica. As a result items eleven (11) and sixteen (16) were amended.

3.6 Interview Instrument

The semi-structured interviews (see appendix 2) used open-ended questions to allow participants freedom in responding to the questions (Sowell & Casey, 1982 as cited by Lunenburg & Irby, 2008). The instrument consisted of eleven (11) items directly related to the research questions. Six participants were selected and interviewed from six different jurisdictions according to the following three categories; countries that have implemented MET at the secondary level, countries that have not implemented MET at the secondary level and countries that had implemented MET at the secondary level but had discontinued. Questions were designed to give participants an opportunity to assess the merits and demerits of implementing MET at the secondary level as well as the policies and practices to enact implementation.

3.7 Data Collection

3.7.1 Quantitative Method

In seeking samples for the research a number of contacts were made during field studies to IMO in London, the Philippines, the Netherlands, Portugal and Norway. Additional contacts were made during the MET symposium held at WMU in May 2015. Thirty-five (35) business cards were collected from delegates representing seventeen countries. Following the approval of the instruments steps were taken to email copies of the questionnaire to over 50 participants of the Caribbean Maritime Institute. After two days 6 responses were received. Another group of participants from the MET specialization were sent copies of the questionnaire however only two responses were received. Those eight responses were used as the pilot sample. In addition to the previous groups, the thirty-five delegates were also sent electronic copies of the questionnaire. In two weeks (60) responses were received on the Google spread sheet. Furthermore, the researcher was given a master list of all the heads of the maritime administrators within the Caribbean region and all sixty administrators were sent electronic copies. Participants

were advised to forward copies to relevant personnel within their departments or ministries, however only a few responded. Further strategies were employed where the 107 students of WMU were also sent copies of the questionnaire. The researcher deemed the sample appropriate since all students were aware of the maritime industry and were pursuing a Master's Degree in maritime related fields from over forty (40) countries. Once again only a little over 20% responded. Copies of the questionnaire were sent to three of the maritime academies in the United States but no response was received. Participants were given adequate time to respond as well as timely reminders. Due to time constraints the instrument was closed on August 10, 2015 at 3:26 pm.

3.7.2 Qualitative Method

The qualitative method of data collection strategy incorporated making contacts. Approximately sixteen participants were contacted for interview, consequently only six responded. Firstly, the interview consent form was sent through electronic mail to participants. Secondly, all six were interviewed. The countries the participants represented were: Norway, the Netherlands, the UK, Egypt, Guatemala, and the US. Two were interviewed during the Norway field studies. Two were interviewed at the WMU while the other two were interviewed using the ZOOM meetings online platform. Interviews were recorded with participant's permission. Thirdly, all interviews were then transcribed. The selected sample is consisted of three males and three females. Moreover, interviews were scheduled according to the interviewee's availability. However, those on the field studies were not scheduled in advance. The interviewees were professors at maritime universities, Assistant Dean for Libraries at the University in South California who had started researching on maritime careers and the shortage of library material in maritime education, the Head of Maritime Training and Human Element section at the IMO and the final participant was a student specializing in MET at WMU. The interviews lasted within an hour. The participants were encouraged to share their institutional as well as personal view on the subject of MET at the secondary

level. One of the benefits of the semi-structured interview was that questions are formed to get thorough responses as well as to allow probing of answers for more depth.

3.8 Data Analyses

3.8.1 Quantitative Analyses

Quantitative analyses of the data from questionnaire responses were analysed by examining the demographic information of participants using comparative analyses of male-female responses, age group responses, responses as per jurisdiction as well as region. Pie charts, tables and graphs were capitalised on to display descriptive statistics. The Statistical Package for Social Sciences version 19 (SSPS) was used for data analysis, specifically for Chi-square analysis for association and relationship between categorical variables (Dewberry, 2005). Further, graphics for descriptive statistics were generated from Google Spreadsheet.

3.8.2 Qualitative Analyses

The Atlas.ti² qualitative analyses software was used to analyse the transcribed interviews. After that, responses were coded in themes according to repetition of particular sayings. Then, interviews were analysed on a comparative basis in terms of geographical location and experiences of participants as well as the involvement or influence of the participant at a national level.

3.9 Summary

The purpose of the methods chosen was to validate answers to the relevance of MET at the secondary level, through purposive and random survey sample selection. The mixed-method was deemed suitable for employing qualitative and quantitative instruments of questionnaire and interview. Concerted efforts were made in data collection to ensure

² <http://atlasti.com/>

wide cross sections of jurisdictions were represented in the study. Finally, data was analysed using Atlas.ti, and SPSS (version 19). The findings and results of the data are presented in chapter 4.

4 Presentation and Analyses of Data

4.1 Introduction

This chapter presents the results and analyses of the study examining the Relevance of MET at the Secondary school Level. The specific questions guiding the study are:

- What are the merits and demerits of MET at the secondary level?
- What are the national practices and underlying policies that inform the delivery of MET at the secondary level?
- What are the current trends and challenges within the maritime industry that may warrant MET at the secondary level?
- How can MET at the secondary level translate to sustainable development within the maritime industry?
- What is the role of stakeholders in implementing MET at the secondary level?

With reference to the tools described in chapter 3 particularly Atlas.ti (qualitative data analyses software) a number of codes (20) were initially generated. Upon reviewing the codes some were combined forming sub-code groups; some were deleted, while others were renamed. As a result, the end product of the coding process led to six (6) main themes namely: awareness, secondary education system, stakeholders, benefits, challenges, and strategies. The main codes were supported by ten (10) sub-codes. Results of the qualitative data analyses are presented first using the five main themes followed by the quantitative results using descriptive and inferential statistics.

4.2 Qualitative Data Analyses

4.2.1 Awareness

4.2.1.1 *Level of awareness*

The relevance of MET at the secondary level within any jurisdiction lies in how much is known about the industry. Awareness is to know about something, whether through primary or secondary experiences (Collins, 1995). One of the buzzwords articulated frequently by participants was ‘awareness’. The level of maritime knowledge depended on various factors such as geography and the jurisdiction’s interest in the industry. Therefore MET at the secondary level is motivated by the jurisdictions’ interest in the industry and geographical proximity to key places. Awareness appears to be one of the main initiating factors in the process of recognising the relevance for implementing MET at the secondary level. The following was articulated by participants. All statements were transcribed and are shown below verbatim.

Jean, Female, Assistant Dean at Southern California University in the US

I do not think maritime education is exposed to our kids as a viable career option in the US. This sparked my interest because worldwide it is a huge employer so having such a big industry that is not going away. With job security low, especially when we are in a recession, it is very odd that this field is not being promoted.

Bob, Male, Senior Manager, International Organization

Younger people are unaware of this industry at that age. The only time they do become aware is when they are looking for employment. They find this field as one of the ways to try and find employment but quite often the percentage of drop-out is quite high because they find that this is not what they wanted and that is a loss of investment.

Drop-out is an important point mentioned by Bob. There is a need for discussion in regards to factors leading to the drop-out of seafarers. A number of possibilities are worth examining, however providing pros and cons of the industry at an early stage is fitting for youths making an informed decision for their career path.

Sillia, Female, Professor at Maritime University in Egypt

Maritime education at the secondary level is under-represented [as regards to curriculum at the secondary level].

Kelvin, Male, Professor, the Netherlands

The long history of this domain where everybody knows what ships are is not automatic anymore. In Netherlands our generation said if your uncle, grandfather, cousin brother and you have been in the business there is no need of introducing this education at the lower level.

4.2.1.2 Geography

In a number of jurisdictions' awareness seems to be linked to geographical factors. The location of ports and MET institutions within communities contributes to the citizen's interest and understanding of the industry. The knowledge of maritime domains signifies the possibilities of being employed in the port or studying at the institution(s). Furthermore, the youth are targeted as possible candidates for matriculation within programmes as well as for employment; hence the level of awareness in those communities appears to be relatively higher.

Tania, Female, Professor at Norwegian Maritime University

It depends on where you are from. If you are from the coast of Norway, you will have a very high degree of knowledge because it is very important to that coast. If you are from the inland or capital areas, then you don't know much. A lot of

persons know that there are ship owners, but not so much of the Maritime Industry (maritime industry) so there is a knowledge gap of the industry.

Andre, Male, MET Student at WMU from Guatemala

We started maybe 5 years ago with a local campaign but we did not have enough resources to cover all the national territories. The ministry of national defense designated some quantity of money to create local campaigns around our ports because these persons are connected with this kind of environment.

Jean, Female, Assistant Dean at Southern California University in the US

The US has just a handful of university level of maritime training so I'm trying to figure out who in those schools are in charge of the outreach so we can get first hand as to what it is that they do and how broad it is. I suspect that it is very narrow and aimed at schools that are geographically close to the universities.

The recognition of the low level of maritime awareness on a global scale has propelled the IMO to create strategies to mitigate this knowledge gap. One of the initiatives was to appoint 'IMO Ambassadors' in member states.

We are also considering the idea of 'IMO Ambassadors' to be appointed in IMO Member States to carry out a serious campaign for the promotion of international shipping and the maritime industry, for example an open day at IMO for school children and a symposium in September on maritime education and training (Sekimizu, 2015).

4.3 Secondary Education System

4.3.1 Structure of Secondary Education and Curriculum

The influence of the philosophical, sociological and psychological domains that defines the fundamental infrastructure and development of secondary education is rooted in the

heart of the curriculum. (Tanner, 1990) These are the factors that may mandate a paradigm shift in the structure of secondary education. Participants agreed with arguments made by Kridel, (2010), Pinto (2012) Chan (2012 and Print (1993) for the Secondary school curriculum to be reformed.

Betty, 50-year-old Female, manager - Belize

The Education sector is too traditional bound. There is a lack of understanding that education need to be more relevant to the opportunities.

Sillia, Female, Professor at Maritime University in Egypt

Technical education is one of the branches of education that need improvement over the years. First of all, we need to look at the secondary level schools, the trainers as well as the curriculum. Another problem is getting qualified maritime trainers, if there are qualified trainers and a good curriculum then there will be qualified students.

42-year-old Female, advisor –Australia

The Australian curriculum has lost focus on delivering vocational training, rather focusing on subjects that schedule people for universities than trade and professional careers.

Kelvin, Male, Professor, the Netherlands

The curriculum in the secondary school is not highly defined by the government such as history, geography and other subjects. It has evolved, and now there is information computer training (ICT). This is as far as the government used to go, but it is now up to the educators to make the curriculum. They would now include maritime aspects if they considered it important.

A situational analysis of the secondary education curriculum in fulfilling the civic, democratic and job-related objectives of society is indicative of an intervention. In illustrating this point a number of the participants expressed that the design of the secondary curriculum must fit the purpose of society. As such curriculum reform is needed for an increased maritime awareness at the secondary education.

4.3.2 Human Resource

In a more realistic context the lack of maritime awareness at the secondary level shows, firstly, that human resource is important for capacity building as well as to train the students. Participants shared that having qualified human resource informs the decision making process of implementing MET at the secondary level. Secondly, it informs if the required resources (instructors) are available to undertake the implementation. The participants articulated the following:

Bob, Male, Senior Manager, International Organization

Every country should encourage the maritime education frame work. Part of the teachers training or career development could also look at the option of maritime trainers. You cannot take an ex seafarer and turn them into a trainer overnight. You need to get that training aspect within the teacher framework and blend that with the maritime expertise. If you don't take an initiative to create an awareness of this industry then this industry cannot have a sustained [supply of] competent human resource. That is the importance of creating the awareness. Like in any other industry, you create the advantage. You don't expect a 100% bargain. If you can get 50%, where you did not have 50% before, you are expected to win. The problem globally is that, those that leave are not replaced by persons that are equipped fully to carry out the work. One of the primary reasons is that industries don't have people to run the industry. People are hesitant to dialogue mainly because of money. This needs a sustainable solution. This starts from the lowest

level, secondary school. This is a long-term plan and solution that needs committed people

Kelvin, Male, Professor, the Netherlands

Getting the teachers to understand the maritime industry is important. The teachers of geography should understand what the maritime profession is all about. The mathematics teacher should know how mathematics is applicable to the navigation field. In this way the maritime concept and awareness can increase not only to the students but to parents, society, and teachers within secondary schools.

Andre, Male, MET Student at WMU from Guatemala

The increase in the number of ship means that we need more seafarers. We need more officers, more managers more operators and more people to work in the activities of these vessels. For example cruise; the cruise business is trying to open new areas to explore for the tourist industry such as the polar region. That is why IMO is developing the Polar Code because there is an increase in the number of vessels that are visiting this area. Therefore there is going to be a necessity for people.

4.3.3 Sustainability

For the continuity and preservation of the maritime industry the concept of a sustained industry was voiced by a number of the participants. Importantly, the rates of change that has been experienced in the industry globally, as well as unpredictable changes, were concerns expressed by the participants. As a result, secondary education was highlighted as one of the lasting strategies that jurisdictions could use as a mitigating

approach to enhanced sustainability for resilience, maintenance, improving and adapting to changes within the industry.

Bob, Male, Senior Manager, International Organization

I think it is an investment for the future than a profit in the shorter, quicker term. We are talking about a resource here for the long term sustenance; for this industry's sustainability. And to have that sustainability, companies or the industries need to invest in people and that investment should begin at a younger age and the return from that investment is not tomorrow but in the long run.

Jean, Female, Assistant Dean at Southern California University in the US

In teaching the 13 and 15 years old children, the future of the industry is guaranteed. One may not see the need now but it is necessary for the future. So, it's better to educate the population for what is coming in the future. I'm sure all the stakeholders want to be in business the next 20 years.

4.4 Stakeholders

4.4.1 Policy

Crucial to the implementation of MET at the secondary level as expressed by participants, is the role of the stakeholders. They are the core and epicentre for propagating the need for awareness, for curriculum reform and for creating MET policy framework. Łopuski (2008) as found that domestic commercial legal framework of maritime policy was more evident in the nineteenth century. Participants also shared similar arguments. Much mention was made of the lack of policy in stirring the implementation of MET at the secondary level and the general development of the local industry. Furthermore, stakeholder's interest in the maritime industry appears to be stifled by lack of knowledge. Meanwhile, political will in some jurisdictions were

muzzled by the definition of who were the stakeholders and who had authority to determine the actions to be taken in the interest of the industry.

Kelvin, Male, Professor, the Netherlands

Who are the ship-owners nowadays? In the old days it was the seafarer's family. They had a feel for the profession. Nowadays the ship-owners are the banks, the medical surgeons who have a lot of spare money. They purchase a few ships and let the crew agent manage the ships. Part of the problem in the industry is to identify who the ship-owners are. Sometimes they are not knowledgeable of the shipping industry. In the past, shipping was a family business and they wanted to maintain the fleet for the future. But now it is quick money and then the money is gone which today is an interesting mechanism.

Andre, Male, MET Student at WMU from Guatemala

The country has to learn how other countries develop this kind of policy, countries such as Japan, UK, and Denmark. Each country is different and each culture is different so we need to learn what they are doing and try to implement this in our society if we can implement it. Hopefully, we will have to do some changes but I think that is the first step in order for us to know what we can do. Also I think we can ask international experts in education to come to our country and to find out what we have to do. My country has only developed a maritime policy in 2014.

50 years old, Female, Manager, – Belize

The lack of understanding of the policy makers as to the opportunities available in the Maritime Sector is a barrier in promoting the industry to cultivate an interest. Perhaps those in the field want to keep the industry exclusive.

Tony, 49-year-old, Male, Supervisor- South Africa

The main area of the maritime industry is not run by the governing political party and they don't want to assist this province for political reasons. Politics!!!!!! Got to love it!

Sillia, Female, Professor at Maritime University in Egypt

What is needed is for the national authority to look into the policy and deficiencies of the technical schools and the secondary schools. Also the policy makers do not have any national policy over the years to encourage a set of strategies towards students joining the maritime field at the secondary level.

Bob, Male, Senior Manager, International Organization

It comes down to the national policy makers of the country to show how widely important shipping is and for the maritime industry to enhance for the next generation.

4.4.2 Interest of the country

It has been found that the stakeholder's interest in the industry was motivated by their dependency and benefits from the industry. Jurisdictions that depend on the industry economically appeared to be more committed in developing policies to educate at the secondary level e.g. Norway as indicated by Tania below. On the other hand, those that do not see much economic benefit were less likely to promulgate MET at the secondary

level for e.g. Kelvin. The following are articulated in context of countries that implement MET at the secondary level, countries that had implemented but discontinued and countries that had not implemented MET at the secondary level.

- **Country that Implemented MET at Secondary Level**

Tania – Female, Professor at Norwegian Maritime University

The maritime authorities in Norway tell us how they want MET to be implemented. They are the ones that approve the study plans. The national maritime policy was developed in 2006. However, it is the ministry of education that governs the schools. We are basically governed by two laws. If you do not choose as students, at the secondary level, to be taught the maritime education, then you will not be introduced to that area. The maritime industry is our second largest exporter after gas so it creates large revenue for the country. The industry employs about 120,000 people so it is extremely visible. We are also one of the world's only complete maritime clusters. We also have another track in Norway to raise awareness to the young people; it is called ocean talent camp. We also have something called ocean space race but those are for secondary education students who haven't chosen maritime courses. So, we have several things that we do in Norway to raise awareness.

- **Countries that have not Implemented MET at Secondary Level**

Mark, 51 year-old male, Marine Surveyor - India

Currently the major focus in India is [more] on the information technology sector than on the maritime sector; more publicity at the secondary level may pave the way for students who are trying to pursue an education in maritime training.

Peter, 44 year-old Manager, male - Guatemala

The Guatemala government is not interested in creating and developing maritime policy or laws in favor of MET or the sea. "Fish do not give votes during the presidential elections."

- **Country that had Implemented MET at Secondary Level but had discontinued**

Economics was a dominant factor for the starting and the continuation of MET at the secondary level. A participant from one of the jurisdictions that have implemented MET at the secondary level but had subsequently stopped articulated the following.

Kelvin, Male, Professor, the Netherlands

Netherlands had stopped offering MET at the secondary level because there was hardly any interest of the youths for that. The ratings from Philippines were more economical than from Netherlands so they were not employing Netherlands ratings anymore. And so the interest for rating type training went down. So there was hardly any interest there in making the system to educate them.

It is noteworthy to mention that the Netherlands did not implement MET at the secondary level as a means to introduce a maritime career option but as a certification for ratings. Also, there were a number of other countries that had not implemented Met at the secondary level. However, India and Guatemala were used as examples.

4.5 Benefits

Evidently, the presence of a basic maritime background at the secondary level serves as a promising professional career. Jurisdictions predominantly and profoundly embraced the relevance of such a choice having expressed the numerous benefits that may be experienced from implementing MET at the secondary level. It is noteworthy that the

purpose of secondary education to prepare youths for job-related duties was one of the forceful factors that were articulated by participants.

4.5.1 Career Opportunities

Bob, Male, Senior Manager, International Organization

The merit of an introduction to MET at the secondary level is for the overall advancement of this industry itself and the potential for younger people to choose this as an avenue for future employment. The positive impact also is that those that choose to enroll in this program would be the beneficiaries that serve the mature part of the industry in the later stages of their lives. The benefit will be as a result of the initial initiation and that message will stay with them.

Kelvin, Male, Professor, the Netherlands

Children at that level are still making up their minds of what they want to do. Introducing it will give the awareness so that they can decide if they want such a career. This is the system that we had for many years where we go to high schools to bring this kind of awareness. For example, the students were able to hear from the shipping companies and students that were enrolled in the maritime programme as well as lecturers. The parents who were there at the school are able to hear about what the maritime business is all about.

The point made by Kelvin is a perspective shared by Athanasios & Adolf, (2011) of the lack of push by the industry and relevant actors in getting young people to pursue maritime careers. It is at the secondary level that career education is introduced to the youth. At this level career exposition is done where schools introduce options (Haun, 2014). Therefore, there is a platform where the maritime

industry can be considered as a viable career option. Parents are more involved in their children's lives during this stage; as such education outreach can expand itself beyond the classroom into the homes.

4.5.2 Making Global Citizens

Jean, Female, Assistant Dean at Southern California University in the US

My dissertation was on global citizenship and education. I believe education is an equalizer. We are becoming a globalized world. Any industry that is global has an inherent value because people going in the field are going to be global citizens. You cannot be in maritime field and not understand the cultural differences of the people on the boat with you. This field will breed better global citizens.

The key points of 'Global Citizen' and 'Education is an Equalizer' made by Jean are good examples of providing equal opportunity to the youth in career choices across all professions and industries. In a global industry such as the maritime industry, cultural awareness is an important element in developing tolerance as well as an appreciation for other cultures. This was also articulated by Danns and Span, (2008) as one of the strategies used by the USA at the secondary level in mitigating cultural differences during the peak of influx of nationals from different countries.

4.5.3 Agent of Change

Andre, Male, MET Student at WMU from Guatemala

These young people will be the agents of change in the society to open our eyes to the sea and see what we are losing with the resource that we have. They are going to spread this information to the society. I think that would be one of the main points for us to show how important the sea is. These young people can be this change in our society.

4.6 Challenges

A number of challenges were foreseen as barriers in implementing MET at the secondary level. The following were expressed.

Jean, Female, Assistant Dean at Southern California University in the US

The biggest challenge is presenting this in an economically easy way for our schools to adopt it. I think we should use means that are free to overcome our challenge. The second challenge is showing that there are jobs available in this field. The Bureau of Labour Statistics in the US provides this information. These clusters may not all agree on how work should be done. They may not agree on what part of the industry should be shown in the outreach program. There also might be some conflicting interest among the stakeholders that have to be dealt with delicately. How do we get both the stakeholders to be happy and buy in? In order to solve any problem we have to ask the persons having the problem how do they believe it can be solved. We are then able to develop solutions around that.

Marcus, Male, Mariner -South Africa

Few realize the importance of the maritime industry/shipping to the country's economy. While its importance is recognized in some quarters, the implementation of maritime education is poorly planned, and those with experience are largely ignored in favour of quick-fix "grand" schemes that do not work. Little attention is given to the proper and thorough training of teachers in the maritime field. This is such a complex industry with its own ethos, jargon

and work ethic - and teacher training is of paramount importance. Sadly, that has been neglected.

Bob, Male, Senior Manager, International Organization

The biggest challenge - which has been a challenge before - is to engage with the managers. Everyone needs to talk to each other. Administrations have the responsibilities for putting in regulations and rules. Companies have the duty to implement and adhere to rules. One cannot work without the other; if the rules aren't there then no one has any rules to follow. These rules govern how operations should be taken out. Without making and implementing them companies will have nothing to follow or even know of anything to follow. This may cause chaos when the roles are questioned. Therefore communication with all factions is an important and key.

4.7 Strategies

As highlighted, the strategic approach in implementing MET at the secondary level varies from jurisdiction to jurisdiction. There is no single policy to fit all. However, the bottom line as expressed by participants after examining the shortfall of policy and political will comes down to networking/collaboration and an understanding of the importance of the industry. The IMO, in a view that validates the proposed strategies expressed by participants states “there will be a distinct role for governments, for industry, for international organizations and for all actors to collaborate with the aim of achieving the three dimensions of sustainable development across the Maritime Transportation System - the economic, social, and environmental dimensions” (IMO, 2013, p. 10). The following points were voiced by participants.

Kelvin, Male, Professor, the Netherlands

To get this into policy for countries that see the need, the educators in this respect play a very vital role [together with other stakeholders]. [For example] the move from mono training to dual training in the Willem Barentsz Maritiem Instituut (Dutch spelling) in Netherlands was a collaborative effort from the Ministry of Transport, the education sector, the shipping associations and the seafarers' association. All these four together were at the table and they all agreed to alter the traditional seafaring education system from mono to dual purpose.

Bob, Male, Senior Manager, International Organization

A part of the national policy is to send the message out. It should be part of the administration's duty to roll out some kind of national program of awareness and supported by MET individuals. The providers are the experts in this subject. e.g., managing directors as well as the trainers should have knowledge of the functioning of the MET and the importance of the MET.

Tania – Female, Professor at Norwegian Maritime University

If we ought to raise awareness we cannot leave this to the secondary students or institutions. We have to give it to someone who has the outreach of people; Social media and going into lower levels and talking about the industry. It must not be the education system responsibility only. I don't think they have all the resources to do that. The awareness that we are doing is getting persons to know that we have a maritime industry. Many persons still don't know how valuable this industry is. So, we are promoting the values and importance of the industry.

Jean, Female, Assistant Dean at Southern California University in the US

We would probably not be successful at the federal level because we would be saying that the federal government has to provide this outreach service. We should start around the cities that have major ports and maritime universities because those cities would most likely want to work with us. We could use application to universities; we would work with some important school districts, assembly, and career day. This would spread naturally by outreach programs.

Sillia, Female, Professor at Maritime University in Egypt

The work of the ministry and the head of state are to do their best to propagate the industry. I have organized conferences and workshop as a part of my role in bringing awareness. This too can be done through conferences and national media to bring awareness of the implementation of the maritime industry at the secondary level. They have a role to play in the optimization of the maritime industry.

Awareness is one of the benefits of MET at the secondary level. While there are other strategies that can be utilized to bring awareness, the secondary level is where a far-reaching impact can be made.

4.8 Quantitative Analyses

In administering the survey instrument a total of 98 participants answered the questionnaire. Of the 98 respondents 8 were used as a pilot test and are not included in the analyses. As a result, the final data count for analyses is N= 90. The data was coded for inferential analyses (Chi-square analysis of categorical variables) using the Statistical Package for the Social Sciences (SPSS) software (v.19) (Dewberry, 2005).

The average age of 42.4 of the sample's demographics for age, gender ratio, region and level of education is shown in figure 1. The percentage indicates rate of participation.

GENDER	Male: 54 60%		Female: 36 40%			
AGE GROUP	20 yrs.- 13%	30 yrs. 28%	40 yrs. 31%	50 yrs. 22%	60 yrs. 6%	
EDUCATION	Doctorate: 3%	Masters: 47%	Bachelor: 29%	Dip./Ass: 8%	Secondary: 2%	Other: 11%
REGION	Africa 19%	Caribbean 29%	North & South America 3%	Europe 20%	Asia 29%	

Table 1: Demographic Information

Analysing the quantitative data from survey it was found that 76% of the sample were employees. From the 76%, 33% were managers 19% were supervisors and 10% were directors. 73% of participants were aware of the maritime industry in comparison with 81% who were affiliated with the maritime industry. Majority of the participant's interest in the industry was motivated by economic benefit at 43% while 36% were motivated to pursue maritime careers and 33% wanted to travel the world. It should be noted that the related motives were found in the literature (life at Sea Survey 2007/8). An important finding was that only 34% said that MET was offered at the secondary level while 54% said there was no MET exposure at the secondary level in their jurisdiction while 13% did not know. 78% of participants who had MET at a higher level stated that having MET at the secondary level would have helped.

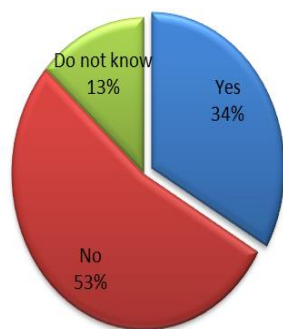


Figure 2 Response to Secondary School with MET

A number of dependent and independent variables were tested for association using Chi-square. However there were no indications of substantial relationship among those tested. One could intuitively assume that variables would have mapped for statistical significance however results were unexpected. For example: chi-square was used to examine the age of participants with those that had maritime awareness. The relationship between age group and awareness was not statistically significant, chi-square (8, N=86) =8.094, $p = 0.424$. In spite of an absence of statistical significance a different view can be interrogated from the finding. It should not be assumed that those who are older are more aware of the maritime industry; age seemed not to be a factor in how much people know about the industry. Therefore intervention to increase maritime awareness should target all age groups. Secondly, it was found that the participant's position in the organisation was not related to their awareness of the industry. As this relationship was also found to have no statistical significance, it appears that position in the organisation is not an indication of maritime awareness. Hence as it related to stakeholder and policy makers they should not be overlooked as a target group for awareness creation. It would also imply that the lack of maritime policy could be related to lack of awareness by those in authority to create policy. Chi-square also showed that 27.7 % of the African and Caribbean regions agreed that MET at the secondary level would sustain the maritime industry, compared with 23% Asian region, 14% European region and 6.4%

of the North and South America region agreed that MET at the secondary level could sustain the maritime sector (see appendix for 4 graphs).

4.9 Summary

Chapter 4 have shown that

- Participants articulated the need for awareness in the context of the jurisdiction's interest.
- Numerous benefits for MET at the secondary level were indicated.
- However, there is a need for collaboration and the creation of policy for the implementation of MET at the secondary level.

The discussion of the findings is done in chapter 5.

5 Discussion of Findings

The presentation and analyses of the data were reported in chapter four. As such, the structure of this chapter consists of a summary of the study, discussion of the findings, implications for practice, recommendations for further study and a conclusion. Further, an understanding of concepts and ideas that were studied will be expounded on in context of the research questions and objectives on the relevance of MET at the secondary level. Discussion will be undertaken in respect of the literature, linking the impact of introducing maritime concepts to the learner during the early years. Data that has been reported will be examined to extract support as well as connection to ideas.

5.1 Summary of the Study

The purpose of this study was to substantiate answers to the relevance of MET at the secondary level. The guided questions were: What are the merits and demerits of MET at the secondary level? What are the national practices and underlying policies that inform the delivery of MET at the secondary level? What are the current trends and challenges within the maritime industry that may warrant MET at the secondary level? How can MET at the secondary level translate to sustainable development within the maritime industry? What is the role of stakeholders in implementing MET at the secondary level?

Maritime education and training does not have a visible presence at the secondary level. Moreover, literature in this domain is significantly lacking as such the effect of MET at the secondary level on the maritime industry is not known. As a global industry it is important to educate the youth about the critical role of the industry on the global economy and society in general. As such, the theoretical framework of this study is to link the impact of early education on the maritime sector and in a general sense the society at large. Additionally, the lack of awareness of the industry's existence limits the

viable option of increased entrance to the industry as well as the creation of a sustained entry of high-calibre of human resource to the maritime workforce. Against that background the study was employed to add information to the domain.

The study included 102 participants. Of the 102, 98 participated in the survey, 6 were interviewed, and 2 of the 6 that were interviewed participated in the survey and were counted in the 98. Eight (8) of the 98 participants were used as a test which resulted in N=90 as the final count for data analyses. Of the category of participants interviewed, three were professors of maritime colleges/universities, one was a student at WMU, another was a Dean at the University of South California, and finally the sixth participant was the Head of Training and Human Element Department at the IMO.

The sample participants came from 34 countries and were selected on the basis that they had some knowledge of the maritime industry. However, those who were chosen on the basis of snowballing may not have fitted those criteria. 60% of the participants were male while 40% were female. The education background ranges from secondary to doctorate degree and the average age of participants was 42.4.

Research questions were predominantly answered using qualitative data. Atlas.ti (qualitative) and SPSS (chi-square –quantitative) data analyses software were employed in analysing the data by creating thematic codes as well as reporting on statistical significance of categorical variables. The qualitative answers provided a wider range of views that are significant in addressing the research questions in practical and theoretical ways. The inferential statistical analysis provided possible views that are worth examining for further studies as well as possible policy intervention strategies. Further discussion on findings is found in the next section.

5.2 Discussion of the Findings

Researchers Kamens, Meyer, & Benavot (1996), Paquette & Fallon (2014), Hadley (1902), and Cohen (2006) among others have written on the purpose of secondary education. They have outlined substantive reasons why secondary education is important. Experts in education psychology have demonstrated the effectiveness of educating the youth for changed behaviour and lifelong learning. The goal of the discussion is to provide the findings for the relevance of MET at the secondary level from the data for each of the five research questions.

5.2.1 Research Question 1

What are the merits and demerits of maritime education and training at the secondary level?

Results for research question 1 have found that the merits and demerits of MET at the secondary level can be categorised in three areas: jurisdiction's geography, economic benefits and the interest of the government.

- ***Geography***

As indicated by (Tania, Andre and Jean in their interviews) the proximity of ports and MET institutions in communities are contributing factors to the relevance of having MET in the secondary school in particular locations. In essence the awareness of the industry is informal. The hidden curriculum appears to be very active in providing awareness, hence formal education is not deemed necessary. Another finding related to geography is that efforts in the structural plan to increase awareness are done in areas where maritime activities are concentrated. As a result, less interest is displayed in educating the youth in general especially if they are not within range of the area.

- ***Economics***

It was found economic benefit was a major player for implementing MET at the secondary level. It is worth noting that 43 or the 90 participants indicated that economic

benefit was their motivation for joining the industry. Kelvin explains that training of ratings by his jurisdiction was not economically viable due to the affordability of ratings in other jurisdictions. Additionally, one of the challenges was the affordability of resources for implementing MET at the secondary level as indicated by Jean. On the other hand, it was found that the training of more professionals for the workforce to sustain the industry with the right calibre of people was also a notable economic factor. This was also stated by Carnevale, Smith, & Strohl (2010) and Siegel (2009), that secondary education is a strategy to provide young people with employable skills.

- ***Interest of the Country***

Another finding was the interest of jurisdictions in the industry. It was noted that countries that have no interest in the industry do not see the relevance of adding maritime content to the secondary level curriculum. The philosophical orientation of society that influences curriculum development, as articulated by Print (1993), bears no weight towards changing the curriculum.

The findings could imply that for secondary education to be meaningful economic benefit must be attached. However, the literature highlights Paquette & Fallon, (2014), Ku, (2013) where they indicated that secondary education goes beyond mere economics, for example, it provides awareness of culture. As such, jurisdictions need to understand the purpose of secondary education. Additionally, the informal curriculum of the proximity of the port and MET institutions is not targeting the youths, who may have no business in the port or MET schools; hence there is a need for purposeful education.

5.2.2 Research Question 2

What are the national practices and underlying policies that inform the delivery of maritime education and training at the secondary level?

National policy is indicative for the implementation of MET at the secondary level.

- It was found that maritime policy was lacking in promulgating MET at the secondary level. As mentioned in the review of literature UNESCO Report (1970) and Łopuski, (2008), education policy framework is lacking to effect change, while maritime domestic policy was late in its development.
- Policy for implementation requires multiple involvements across ministries or departments within jurisdictions. Tania and Andre indicated that the Ministry of Education, Ministry of Transport and in some cases the Ministry of Security were involved in the process.
- It was found that one of the jurisdictions had developed its maritime policy in 2014, another in 2006 while another is yet to develop any policy as reported by Tania, Andre and Sillia in their interviews. It was observed that 33% of the participants were managers, 10% were directors (see fig.3). As such it can be assumed that a positive representation of policy makers was among the sample.
- Another important finding was that policy makers were not as knowledgeable as they should be about the industry. Inferential analyses showed no relationship with those in position and their awareness of the industry. Therefore, maritime policy is not necessarily informed by stakeholder's knowledge of the industry.
- Political instability, were noted as a barrier to create policy for implementing MET at the secondary level. One jurisdiction mentioned that each time there is a change in government the process of creating policy starts all over.
- Another finding showed that collaboration between relevant stakeholders was lacking for joint effort in developing policy. As such, policy was indicated as one of the underlining barriers for the implementation of MET at the secondary level.

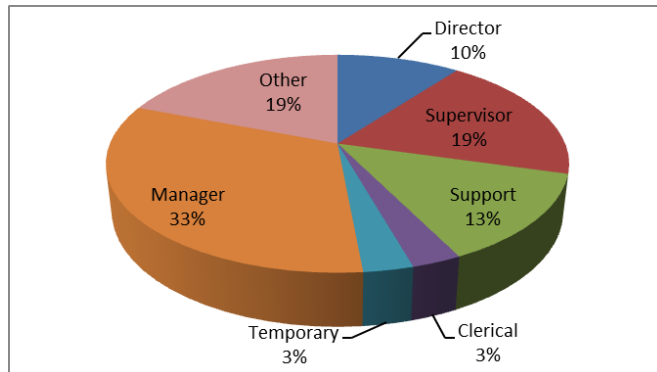


Figure 3: Response by Position

5.2.3 Research Question 3

What are the current trends and challenges within the maritime industry that may warrant maritime education and training at the secondary level?

The study found the following as trends and challenges that warrant MET at the secondary level.

- The increased number of vessels and shipping activities in new found areas such as the polar region was found to be a new trend. As such, new business in the tourist industry will generate the need for an increased workforce. The IMO Secretary-General mentioned the need for new officers and maritime professions each year due to the projected 35% increase in seaborne trade and shipping by 2030 (Sekimizu, 2015) as previously cited in the literature review. The Bureau of Labor Statistics, US Department of Labor (2015) has noted the need for additional human resources, followed by Dewery (2014) who indicated the projected shortfall of officers.
- Another finding was the constant dropping out of seafarers to land-based employment as mentioned by Bob in his interview, which was viewed as a waste of investment. As such there is a need for early education as a means of sifting those who are committed to work in the industry.

- The noticeable age of seafarers who are moving towards retirement has been found as a trend that needs a long-term strategy (Bob and Kelvin interviews).
- Attracting younger people to the industry was found to be one of the challenges. Evidence was seen in the literature where Athanasios & Adolf (2011) found that there was an absence of any active role of the maritime industries, companies or interest groups and associations in ‘pushing’ young people to pursue higher education in maritime careers by introducing relevant subjects to them. The response of youth in accepting an idea earlier is deemed more positive than later hence the theoretical framework of the study for early awareness. It is worth noting that only 34% of participants had MET exposure at the secondary level. The IMO Youth Ambassador program was cited as a strategy to attract youth to the industry (Sekimizu, 2015).

5.2.4 Research Question 4

How can maritime education and training at the secondary level translate to sustainable development within the maritime industry?

- Descriptive statistics found that 47 of the 90 participants agreed that MET at the secondary level sustains the industry. However, inferential statistics (chi-square) found the African and Caribbean regions with 27.7% compared with the Asian region with 23% agreeing that MET at the secondary level sustains the maritime industry. However, the European region with 50% disagree that MET at the secondary level is a sustainable strategy.
- Additionally, it was found that investing in educating the youth was a long-term sustainable plan. The following was articulated by Bob: “This needs a sustainable solution, and it starts from the lowest level, secondary school. This is a long term plan and solution that needs committed people” – a position reinforced by Kelly (2012) who indicates that secondary curriculum reform is a measure of sustaining career opportunities.

5.2.5 Research Question 5

What is the role of stakeholders in implementing maritime education and training at the secondary level?

- The role of stakeholders has been found to be the epicentre of implementing MET at the secondary level. It was noted that policy and curriculum reform rests with the stakeholders within jurisdictions.
- It was found that one of the challenges of implementing MET was the conflicting interest that may arise among the stakeholders; conflicting interests that have to be dealt with delicately. It was noted by ‘Jean’ that the stakeholders need to be happy in order to buy into the process. This finding can be connected with the finding for research question 1 where the implementation of MET at the secondary level is influenced by economic factors.
- Another finding was the uncertainty of who the stakeholders were, as well as their role. Kelvin articulated that in his jurisdiction the understanding of stakeholders were not clear whether they were the ship owners or the government. The idea of stakeholder was found to be well used but is not clearly understood. Additionally, in another jurisdiction the government was not deemed as the stakeholder as such; the authority to influence policy to promulgate MET at the secondary level did not rest with them. “The ship owners ‘they call the shot’”, as articulated by Tony.
- A number of the respondents felt that, government ministries and heads of governments could do more to propagate the industry (assuming they were themselves aware of the need to do so) and to organize conferences and workshops as a part of their role in bringing awareness. It was found that educators as stakeholders need to play a vital role by collaborating with the relevant parties in the process to encourage implementation (Kelvin and Sillia interviews).

5.3 Implications of the Findings

Many findings have been reported indicating the relevance of MET at the secondary level. Similarly, many challenges and barriers were also reported. The findings of the study speak to the lack of maritime awareness by the youth and perhaps surprisingly by stakeholders/policy makers. It is crucial for those who inform policy and make interventions to have an understanding of the industry. The relevance of MET at the secondary level must be informed by those who are knowledgeable of current trends in the industry to influence curriculum reform and development. As discussed in the literature review, an education policy framework provides a guide for the development and implementation of national education plans (Knight, 2014). The implications of the findings have relevance to those persons who are advocating for an increased awareness of the industry as well as introducing more youth to maritime career opportunities, such as the IMO. There is also relevance to stakeholders, policy makers, educators and publishers.

The findings suggest that youth joining the industry is not automatic. Therefore, strategies of engaging the youth should not be left to extra-jurisdictional efforts/strategies alone, such as those of the IMO. While IMO has implemented a strategy (the “Go to Sea Campaign”³) there is the need for member states to underpin this campaign with unique and national specific strategies for creating awareness for their youth to attract them to the industry. The appointment of Youth Ambassadors by the IMO to increase awareness should also target the general public including policy makers and stakeholders. Importantly, the findings noted that many policy makers are themselves unaware of the industry and need to be a

³ The IMO’s “Go to Sea Campaign” was initiated in 2008 (see <http://www.imo.org/en/OurWork/HumanElement/GoToSea/Pages/Default.aspx>)

part of the intervention plan of the IMO Youth Ambassadors because they could help develop policy to promulgate MET at the secondary level.

There are also implications for companies that write magazines and journal articles for the industry. An assessment of the target audience needs to be re-examined, there is the need for literature at the lower level for the youth, for example, cartoons, comics, videos, social media, advertisement in the media to attract the youth audience. It has been found in the data that strategies as mentioned above, are needful to target the youth in bringing awareness and can be used as learning resource.

Additionally, there is an implication for educators. One can also say that the relevance of MET at the secondary level is informed by qualified instructors to impart knowledge. On the back of that, there is a need to have workshops and seminars to educate secondary level teachers. In addition to this (or perhaps for some time, in lieu of this) secondary teachers should be a target group established by the Youth Ambassadors. It was found that MET at the secondary level is a long-term strategic plan, therefore educating the educators should be part of the long-term strategy.

Finally, the relationship between the level of education and the category of the worker has no significance in terms of maritime awareness. It was also found that the level of education and place in organization (level/rank/authority) do not necessarily correlate with knowledge/awareness of the industry and the need for secondary level MET exposure. This could therefore mean that all levels and categories of employee/people need to gain awareness since the industry is not particularly influenced by position or the level of education. Therefore, stakeholders may not always agree to the implementation of MET at the secondary level. Nevertheless, this should not signal the end of laudable efforts in this

direction. A rigorous strategy for jurisdictions to develop maritime policy to promulgate secondary education in the domain is therefore necessary. There is a need for governments to collaborate and coordinate with the industry on how they can implement MET at the secondary level in an economical way. Additionally, educating the public of the local industry, the stakeholders, and their roles should become an urgent agenda.

5.4 Recommendations

Given the scope and practical limitations, exhaustive statistical analyses were not undertaken. It is recommended that future research (with greater time scopes and sample sizes) seek to use more rigorous statistical approaches to establish more clearly correlations between relevant variables such as sea-experience and views of MET at the lower educational levels.

Future research could further interrogate the role of stakeholders in promulgating maritime education and training at the secondary level. It was found that one of the challenges in implementing MET at the secondary level rests with stakeholders in their capacity as policy makers. Furthermore, it was also found that stakeholders sometimes are not aware of the industry and their role in the process was not easily identified. Therefore, this area of study would provide information on their role in the process and the extent that they affect the process. Another study could examine the impact of maritime awareness on the maritime industry. It was found that awareness of the industry was lacking even though it has the potential of increasing entrance to the industry. As such the study could inform whether awareness has any relationship to the development of the industry and perhaps that may be a determinant for MET at the secondary level on a global scale for global awareness.

5.5 Conclusion

The study has adequately demonstrated, through its findings that there is relevance for MET at the secondary level. It has been shown that the merits and demerits are influenced by the jurisdictions' interest, the economics as well as geographical factors. Evidence in findings indicated the need for awareness to tackle the trends of seafarer attrition, the aging population of seafarers, and to attract youth to the industry for career opportunities. Another key element was the response of jurisdiction to the philosophical and sociological changes of the society that warrants the relevance for MET at the secondary level. This therefore, influences curriculum reform and development. However as was found, on the back of such need there is the requirement of a policy framework. Consequently, a number of other factors as mentioned in the results chapter for example political will and collaboration as being crucial for developing policy.

In addition, the study reveals that awareness has no hierarchical relationship with the category of people, therefore the human element at all levels and categories should be targets of awareness campaigns/strategies. This finding is underpinned by the observation that increased shipping activities connote the need for sustaining a qualified calibre of professionals who should be targeted at the secondary level as a long-term strategic objective.

The literature has provided psychological evidence that the introduction of concepts during the youthful age 11-18 years concretises lifelong learning that influences changed behaviour and attitude about the maritime industry. It also outlines a clear understanding of the purpose of secondary education, which emphasises an open access and universal coverage of education that is fit for purpose and has relevance to society and culture in preparing boys and girls for civics, political and work related aims (Paquette & Fallon, 2014; Kamens, Meyer, & Benavot, 1996). In spite of the findings, Athanasios & Adolf

(2011) and Huan (2014) have found that the industry and relevant interest group are passive in finding strategies to ‘push’ or attract young people to pursue maritime careers.

As such, the researcher therefore concludes that maritime education and training at the secondary level is relevant and has been found as a needed paradigm shift befitting a global industry to educate global citizens for a sustained calibre of professionals as well as to increase awareness and importantly to mitigate the imbalance of supply and demand of competence seafarers. As such I end with this quote:

“It is the work of true education to develop this power, to train the youth to be thinkers, and not mere reflectors of other men’s thought” (White, 1903).

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7 Appendix 1

Interview Consent Form



Informed Consent for Research Interview

I volunteer to participate in a research being conducted by Ms. Simone Cunningham from the World Maritime University. I understand that the interview is designed to gather information about the relevance of Maritime Education and Training (MET) at the secondary level. I will be one of the participants being interviewed for this research.

1. My participation in this research is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty.
2. If, however, I feel uncomfortable in any way during the interview session, I have the right to decline to answer any question or to end the interview.
3. I understand that the interview may be done personally or either by audio, video conference or skype or by writing down answers to questions sent to me. The oral interview will last approximately 30-45 minutes. Notes will be written during the interview. An audiovisual recording may also be made with my permission.
4. I am aware that the data will be used for a dissertation paper. I have the right to review, comment on, and/or withdraw information prior to the paper's submission and presentation.
5. All data gathered in this study is confidential and anonymous with respect to my personal identity unless I specify/indicate otherwise. I grant permission for the use of this information for dissertation. I also grant permission to use one of the following (*please click one*):

My full name My first name only Just a pseudonym

6. I understand that if I desire, I will be given a copy of the (*please click one*):

paper audiotape videotape transcribed interview
 photograph(s)

7. I understand that this research study has been reviewed and approved by the Research Ethics Committee (REC) of the World Maritime University, and that I may contact the research supervisor with any queries I may have.

8. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

9. I have been given a copy of this consent form.

My Signature

Date

My Printed Name

Signature of the Researcher

8 Appendix 2

SEMI-STRUCTURED INTERVIEW QUESTIONS

TOPIC: RELEVANCE OF MARITIME EDUCATION AND TRAINING (MET) AT THE SECONDARY LEVEL

1. How aware do you think the population (*of the respondent's country*) is about the maritime industry?
2. Are there any secondary schools in your country that offer maritime education and training?
3. How relevant is the implementation of maritime education and training at the secondary level to the development of the maritime industry (if it is already being implemented/ if not how relevant would it be)?
4. In your view what are the merits and demerits of maritime education and training at the secondary level, nationally and globally?
5. What are the national practices and underlying policies that inform the delivery of maritime education and training at the secondary level (if any)?
6. What are the current trends and challenges within the maritime industry that may warrant maritime education and training at the secondary level?
7. What do you think could be the inhibiting factors for implementing MET at the secondary level in a (your) country?
8. Who are the stakeholders when considering MET at the secondary level
9. What is the role of the stakeholders in implementing maritime education and training at the secondary level?

10. What are some of the possible solutions and /or strategies for overcoming the barriers indicated in implementing maritime education and training at the secondary level?
11. What is your input on the subject of maritime education at the secondary level to tackle the challenges of the shortage of seafarer?

9 Appendix 3

QUESTIONNAIRE

The Relevance of Maritime Education and Training (MET) at the Secondary Level

QUESTIONNAIRE

* Required

1. What is your gender? *

Mark only one oval.

- Male
 Female

2. What is your age?

.....

3. What is the name of your country? *

.....

4. What level of education do you have? *

Mark only one oval.

- Secondary
 Diploma
 Bachelor
 Masters
 Doctorate
 Other:

5. To which category do you belong? *

Mark only one oval.

- Student *Skip to question 7.*
 Employee *Skip to question 6.*
 Other: *Skip to question 7.*

6. What position do you hold in your organisation? *

Mark only one oval.

- Director
- Manager
- Supervisor
- Support
- Clerical
- Temporary
- Other:

7. Are you affiliated with any maritime organisation or institution? *

Mark only one oval.

- Yes *After the last question in this section, stop filling out this form.*
- No
- If yes please describe the affiliation
- Other:

8. Are you aware of the maritime industry and the career options available? *

Mark only one oval.

- Yes
- No
- To some extent

9. Do you have an interest in the maritime careers? *

Mark only one oval.

- Yes *Skip to question 10.*
- No *Skip to question 11.*

10. What motivates your interest the most in the maritime industry? *

Mark only one oval.

- Economic benefit
- Opportunity to travel to see other places
- Pleasure and entertainment
- Cultural exchange and meeting other people
- Protecting and preserving the heritage of the sea
- Educational purposes
- The desire to pursue a maritime career
- Other:

11. Are there any secondary school in your country that offers maritime education and training? *

Mark only one oval.

- Yes Skip to question 12.
- No Skip to question 14.
- Do not know Skip to question 14.

12. How many secondary schools in your country offer the training? *

.....

13. What is the nature of the training and the subjects offered?

.....
.....
.....
.....

14. Have you had maritime education and training? *

Mark only one oval.

- Yes Skip to question 15.
- No Skip to question 17.

15. At what level? *

Mark only one oval.

- Secondary Level
- Diploma/Associate Level
- Bachelor Level
- Masters Level
- Management Level
- Operational Level
- Support Level
- Other:

16. **Would having a basic knowledge of maritime related subjects helped you during your studies at the higher level?**

Mark only one oval.

- Yes
- No
- Maybe
- Not sure

Please indicate your level of agreement with the following statements

17. **The subjects taught at the secondary level influenced my choice of career. ***

Mark only one oval per row.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. **The introduction of MET at the secondary level will influence students to pursue maritime careers. ***

Mark only one oval per row.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. **The implementation of MET at the secondary level will develop the maritime industry in your country. ***

Mark only one oval per row.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. **MET at the secondary level will impact the sustainability of the maritime industry in your country. ***

Mark only one oval per row.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. **The government of your country should implement MET at the secondary level. ***

Mark only one oval per row.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. **The initiative of the government of your country to increase maritime awareness is satisfactory. ***

Mark only one oval per row.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. **How would you rate the level of maritime awareness in your country? ***

1 is Lowest - 10 is highest

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Lowest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Highest

24. **What factors in your opinion could prevent the implementation of maritime education and training at the secondary level in your country?**

.....

.....

.....

.....

.....

25. **What are some of the possible solutions and/ or strategies for overcoming the barriers for implementing maritime education and training at the secondary level in your country?**

.....

.....

.....

.....

.....

10 Appendix 4

Descriptive Statistics

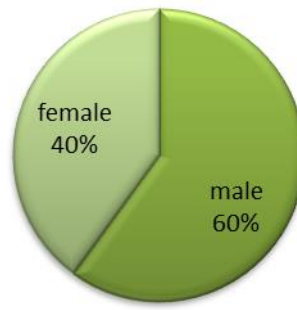


Figure 4: Response by Gender

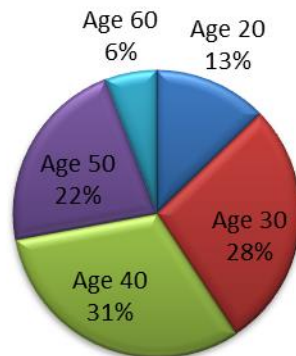


Figure 5: Response by Age Group

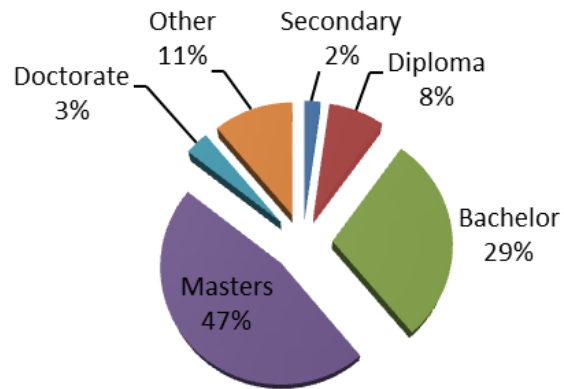


Figure 6: Response by Level of Education

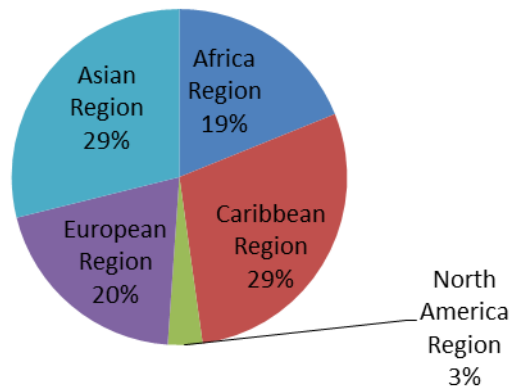


Figure 7: Response by Region



Figure 8: Response by Category

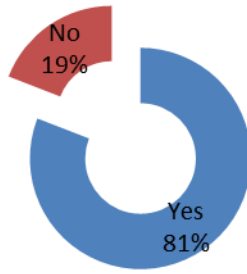


Figure 9: Response by Maritime Affiliation

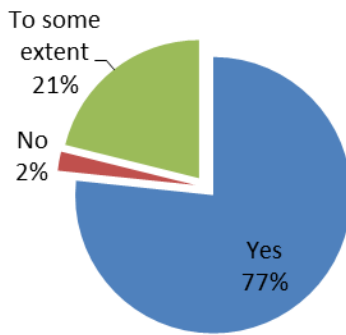


Figure 10: Response by Maritime Awareness

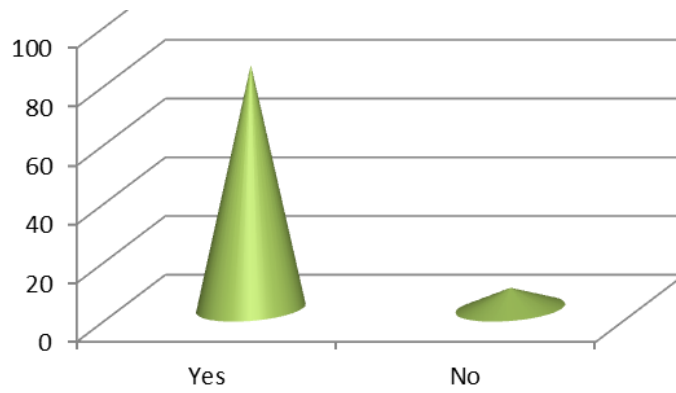


Figure 11: Response by Interest in Maritime Careers

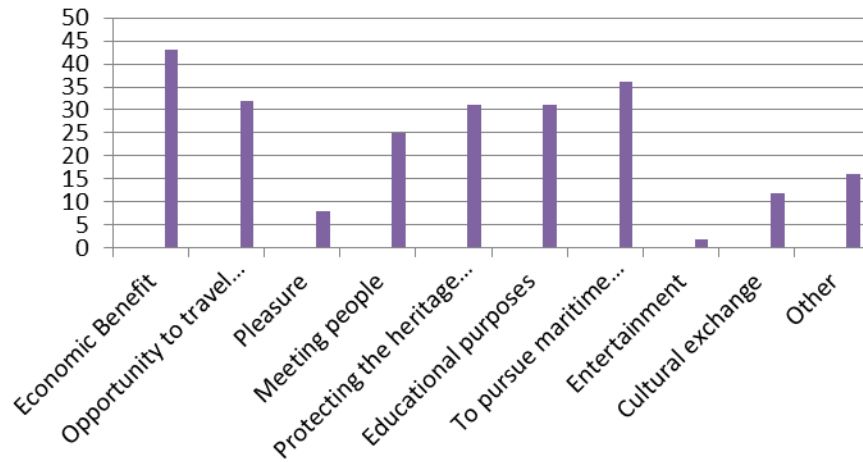


Figure 12: Response to what motivates your interest in the maritime industry

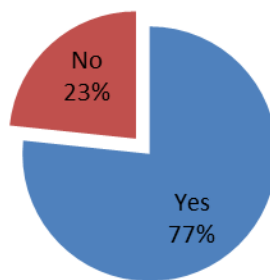


Figure 13: Participants with Maritime Training

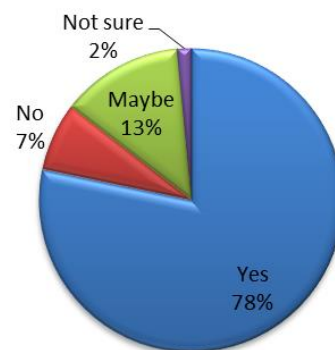


Figure 14: Response to would basic knowledge of MET helped at higher level of education

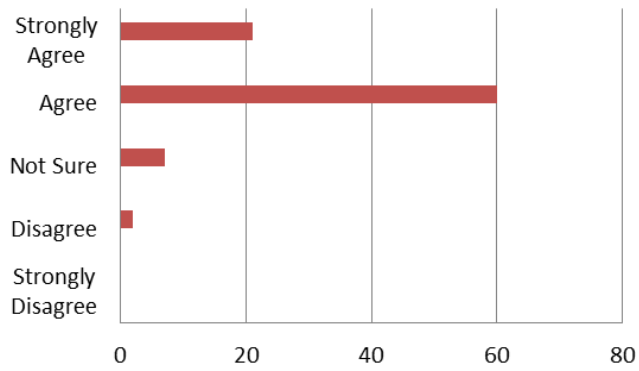


Figure 15: Response to MET at secondary level influences maritime careers

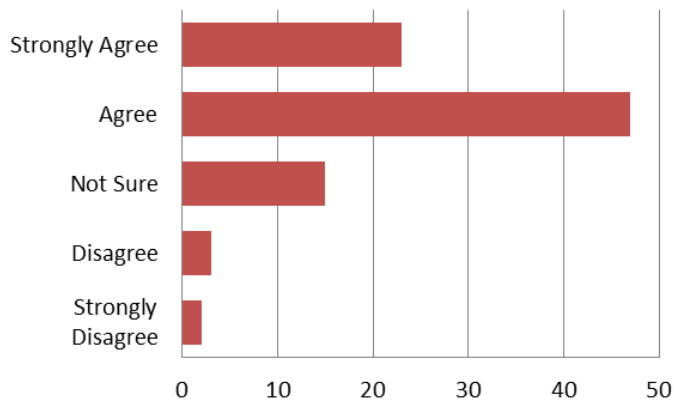


Figure 16: MET at the secondary level impacts sustainability of the maritime industry

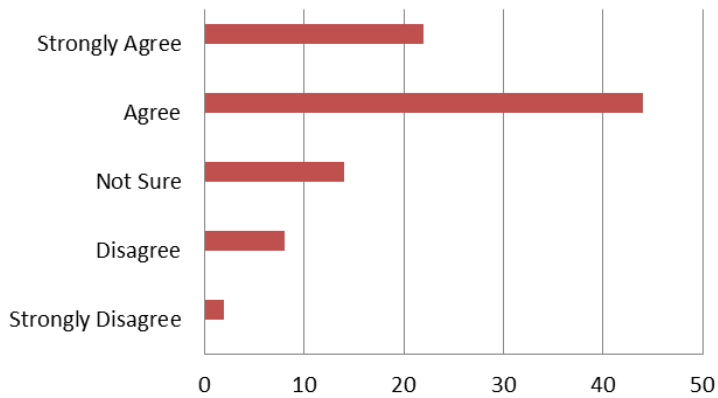


Figure 17: Response to should government implement MET at the secondary level

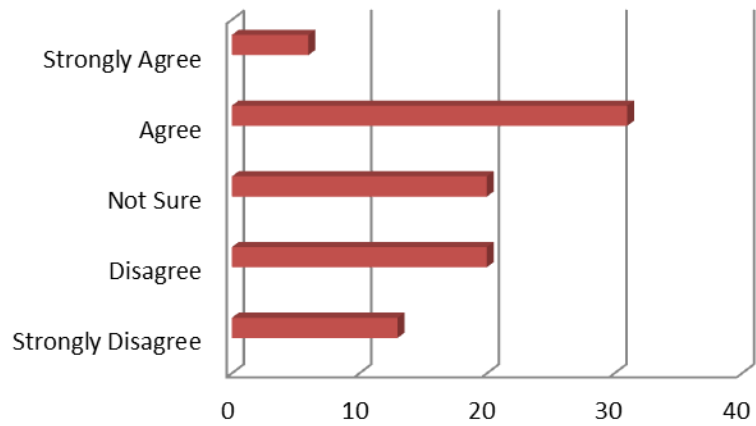


Figure 18: Response to government initiative to increase maritime awareness

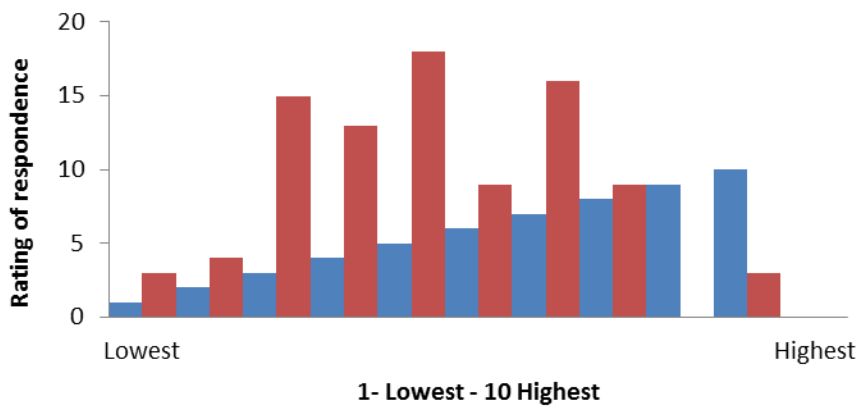


Figure 19: Response to maritime awareness in your country