

## Preparing Gen Z for the Demands of the Marine Engineering Technology Workforce

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### Abstract

Generation Z students—those born around or after the turn of this century—learn, socialize, and interact with authority figures in a significantly different manner than students of previous generations, including those students of the most recent Millennial Generation (Gen X). Gen Z students have unique expectations of programming and academic choices and may seem somewhat impatient or irreverent to those groomed in a more traditional maritime manner with strong sense of responsibility and chain of command structures. Life at sea and in other maritime venues has also changed and continues to do so.

This paper reviews the attributes and skills desired by university stakeholders—industry, accreditation, International Maritime Organization—and compare them to the strengths and expectations of Gen Z students entering and studying at the university today. The author provides conclusions as to how the university can better prepare our graduates for positions in this demanding and exciting field.

### Gen X, Gen Y, Gen Z – What’s Everybody Talking about?

In 1963, the term “baby boomer” was first published in a *Salt Lake Tribune* article. It referred to those born during the baby boom, mostly in the US and UK, immediately following the end of WWII. By most accounts, 1963 was the time of transition to what would eventually be known as Gen X, those born in about 1960- 1980. Since then, generations have been given names or identities that tend to try to define them or at least group them together. These names and year ranges are given and accepted by sociologists, psychologists, and academics, and while the birth years tend to vary a little by differing authors and speakers, the tendency is to use dates that are tied to real world situations such as economic crises, significant world events (World Trade Center collapse), and/or advances in technology such as the smart phone. These events had impacts on the daily lives of families, and thus to some degree or another on parenting styles and family structures.

Those born prior to the Baby Boomers, many being the parents of the boomers, are often referred to as “The Greatest Generation.” These are the men and women who fought and struggled through both world wars, the Great Depression, and the Spanish Flu pandemic.

Following Gen X came Gen Y, often referred to as the Millennials, since they were entering college and the workforce at about the turn of the century. It was not uncommon to hear Baby

Boomers begin to complain about the millennials for various reasons, while others looked to them as a different and exciting type of potential leader.

### **Who is Gen Z?**

Generation Z students—those born around or after the turn of this century—learn, socialize, and interact with authority figures in a significantly different manner than students of previous generations including those students of the most recent Millennial Generation (Gen X). Gen Z students have unique expectations of programming and academic choices, and may seem somewhat impatient or irreverent to those groomed in a more traditional maritime manner with strong sense of responsibility and chain of command structures. Life at sea and in other maritime venues has also changed and continues to do so.

### **Who Comes Next?**

The long-term societal effects of this pandemic may not be known for some time. Most research indicates that the next named generation—likely to be Gen Alpha—will be those who “grew up” during this time and missed significant aspects of what would be considered a normal time in school at whatever level they were (and still are) in. Both the workplace and the educational environment have evolved considerably for better or worse and will not return to some sense of normal for a while. And we just do not know what that new normal will be.

### **Why Is This Important?**

Technology, politics, and social norms are changing faster than at any time in our lifetimes. Individuals from different generations grew up, went to school with, and spent most of their time with others of their own generation. But once in college, and certainly during internships and upon graduation, students and graduates are put in the mix of a workforce with potentially widely varying expectations. It behooves a university to prepare its graduates for this workforce but also to help our industry and stakeholders better understand the driving forces of our graduates.

### **What Are the Demands of the Marine Engineering Technology Workforce?**

Universities preparing college graduates to enter the Marine Engineering Technology workforce have numerous stakeholders and demands on the educational outcomes expected. It seems everybody wants a piece of the curricular pie. As we look through these briefly, it is important to ask ourselves who wrote them? While it is true that they have changed slightly over the years, the reality is that these are likely the ideas of Baby Boomers—those now retiring from the workforce—and we must ask ourselves about true relevancy in today’s world.

Unless one is teaching in a private non-accredited trade school, these are some of the demands on marine engineering technology graduates that must be met:

*The university and the university system if part of a larger system.* Most comprehensive universities will have expectations of the coursework and outcomes that graduates of any major will have upon graduation. These will generally be grounded in the basic math and sciences as well as the humanities and social sciences. Some of these may be campus specific, systemwide, or even state mandated.

*Accrediting Agencies.* Colleges and universities running engineering programs typically are regionally accredited, and, of course, most strive to be accredited by ABET. Both these agencies have requirements for outcomes for graduates, either from the university at large (regional) or from the specific program (ABET).

*Industry Demands.* There are numerous studies on what employers in general expect from college graduates entering the workforce, and, of course, engineering and maritime professionals have their own additional lists. Many of these expectations cross over from list to list, but some are much more specific.

*International Standards.* The International Maritime Organization (IMO) has adopted the “Standards of Training, Certification and Watchkeeping for Seafarers” as the expectations for those engineers entering the marine engineering field aboard sea-going vessels. These are unique and very structured sets of proficiencies in which graduates must show competency.

### **The University’s Role in Bridging the Gap between Gen Z Graduates and Industry Demands**

It might be tempting to tell students that “this is what industry demands, so prepare for it.” However, if we pay attention to the strengths and attributes of the students of this generation, we can better prepare the students to meet those demands and expectations, as well as prepare those in the industry to get the best out of our graduates by understanding what they bring to the workforce.

Research shows that most facets of maritime and related industries require professionals who can communicate in a global environment and work well on multi-faceted teams. Gen Z students seek professional organizations that operate with these parameters. It is our responsibility to both our graduates and our industry stakeholders to provide that learning environment for our students. To do that we must

*Create a student focused and student-centered organization.* The university, and particularly the engineering technology faculty, must adapt the numerous external requirements placed on our curriculum to best focus on the needs of the student with his/her graduation and career in mind.

*Include students in decision-making processes and teams.* Campus decisions made that affect the students (and all decisions ultimately affect students) should be made with the

students, not simply on behalf of the students. Ideally these teams would include industry stakeholders as well.

*Reflect the image we want our students to emulate.* Students learn outside the classroom as well as inside the classroom. We must maintain a professional demeanor in all our interactions on and off campus, as students are watching and learning from our actions as well as our words.

Understanding that our students want – and need – to be part of the decision-making process, as well as knowing that industry wants and needs graduates who work collaboratively, we must provide those learning experiences for them. Doing so also provides us the opportunity to better understand and appreciate the strengths that these students can bring to an organization and to adjust our curricular outcomes if necessary. The campus must be willing to be flexible and adapt to a changing environment (economic, political, social, or environmental) or we run the risk of being irrelevant to our internal and external partners.

## **Biography**

STEPHEN J. KRETA serves as professor emeritus at Cal Maritime and is currently teaching courses in Steam Power Plant Simulation. He retired after serving for 35 years as vice president for Student Affairs, AVP for Academic Affairs, academic dean, department chair and professor of Engineering and Technology. He holds the following degrees and licenses: B.S. Marine Engineering Technology; M.S. in Industrial and Systems Engineering; chief engineer, Unlimited Horsepower, USCG; professional engineer, mechanical, CA; certified plant engineer.