ONBOARD
MARITIME

Cadet Development: Delivering Value and Impact for the Maritime Industry

An evaluation of the online Cadet Development Programme designed and delivered by Onboard Maritime

Executive Summary

This report has been produced to publish and share feedback from cadets regarding their motivation to engage in online learning, and their perception of the effectiveness and usefulness of the 'Cadet Development Programme' offered by Onboard Maritime.

Using the Music® Model of Academic Motivation Inventory introduced by Jones (2022), cadets who followed the programme and those who recently completed it were surveyed. A mixed methods approach was employed to analyse the data through the Linkert survey and thematic analysis of secondary data from training providers.

Analysis of the captured data indicates that the 'Cadet Development Programme' is viewed positively by the cadets, providing them with support throughout their training programme.

Understanding these perceptions assists us in designing instructions to motivate students, diagnose motivational strengths, areas for development and research relationships critical to student motivation.

Introduction

Established in 2019, Onboard Maritime is an Educational Technology (EdTech) company that focuses in the utilisation and adaptation of digital tools, software, and hardware to enhance teaching and learning processes, predominately in the specialist area of Maritime Education and Training (MET).

The Cadet Development Programme is delivered to students through a learning portal, as part of a wider learning management system. The courses have been developed by a team of experienced MET professionals who bring their wealth of experience from working at sea and in education. Integrating this expertise to design and create authentic learning experiences. The courses are fully delivered online, enabling clients to administer and track their employees' learning journeys through their own branded portal, hosted and managed by Onboard Maritime.

Since the Cadet Development Programme was launched in 2022, several Maritime Training Providers have adopted the programme as an integral part of their cadet learning journey, augmenting and supporting cadet transition from their parent college to their sea training phase.

Training providers currently utilising this platform include: Chiltern Maritime, Just Be Maritime, Trinity House and Clyde Marine Training. These training providers have given over 380 deck and engineering cadets across the UK access to the learning system.

With any new development being implemented, it is essential to reflect on the user impact. This report has been produced to self-evaluate the impact of the Cadet Development Programme on the cadet and the sponsoring company. The results of this report will be utilised to further develop the existing body of knowledge on implementing digital pedagogies within the Maritime Education and Training context.

The global economy is critically dependent on the maritime industry, with over 80% of the World's goods trade delivered by sea and no viable or sustainable alternative for transporting large volumes of goods over prolonged distances.

To sustain the industry it is essential that, a continual stream of seafarers both enter and remain in the industry to avoid any global skill shortage.

Given the global nature of the work conducted by seafarers, an international minimum education, training and certification criterion for those working at sea has been defined by the International Maritime Organization (IMO).

As global markets change, so must the development and implementation of MET. A significant industry disruptor was the recent Covid-19 pandemic which precipitated a rapid shift from conventional classroom settings to online course delivery.

This disruptor, combined with improvements in global connectivity, has accelerated the digitisation of learning across a spectrum of educational applications, including MET, untethering education from physical confines. This in turn, has unlocked an opportunity for a truly global MET provision which has the potential to revolutionise the maritime industry and the role of education within it.

Significant technological advances are developing at an unprecedented rate with the rise of autonomous ships and the advent of new fuels and propulsion systems.

This, combined with a relatively small pool of experts working within the niche maritime context presents further

opportunities for MET providers to develop and upskill the workforce on a global scale. Ensuring that the next generation of seafarers not only meets the minimum requirements of the current 'Standards of Training, Certification and Watchkeeping', but also develop the skills, attributes and confidence to address these emerging demands safely and systematically.

The Maritime Skills Commission was established in July 2020 by the Department for Transport as part of the broader 'Maritime 2050' strategy, identifying seven high-level themes to help the UK maritime sector meet and respond to future challenges.

Two reports were published after the completion of workstreams conducted by the Commission.

- The 'Seafarer Cadet Review' contained 23 recommendations on skills gaps and modernisation.

- 'Digital Learning', which captured lessons learned during the coronavirus pandemic. The report aimed to help education and training providers across the sector reflect on those lessons and to embrace the most beneficial practices.

Background

Onboard Maritime identified these challenges and opportunities and developed a digital programme that links the current training provided in traditional MET centres, with the experience gained by cadets on board ships during their sea phases, with a view to preparing the cadet for their future role as a certified officer onboard ship.

Partnering with a training provider, the challenges from both the cadets' and the sponsoring companies were identified, and the 'Cadet Development Programme' emerged as a strategic response to these challenges. Maximising the opportunities provided by digital education to enrich the learning experience.
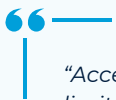
The Cadet Development Programme

> *"Colleges took little or no interest in students when they were at sea. Sponsoring companies took little or no interest in the college phase".*

MSC 'Seafarer Cadet Review' June 2021

> *"Course content must meet and anticipate the evolving needs across the industry sector".*

MSC 'Seafarer Cadet Review' June 2021

> *"Access to on-line learning tools were very limited. Some felt that they could have used time at sea more effectively if they had had access to on-line or live streaming tools".*

MSC 'Seafarer Cadet Review' June 2021

The Cadet Development Programme is available to cadets from Phase 1 of their training until they gain their first Certificate of Competency.

It is a 'long course' digital education programme focussed on supporting the cadet in their studies and development.

There are no formal methods of assessment throughout the programme, the primary aim is to support the cadets in the completion of their college work and their shipboard Training Record Book.

The programme is designed to allow for synchronous and asynchronous learning experiences.

The phases referred to in this report are set out below:

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
College	Sea	College	Sea	College

Addressing the Needs of the Maritime Industry

The 'Cadet Development Programme' addresses several recommendations that were made in the Maritime Skills Commission, 'Digital Learning – Lesson Captured' (2020) report. These are highlighted below:

For Providers	For Learners	For Teachers and Support Staff
1. Content and learning is created following a specific digital pedagogical approach which is distinct from classroom teaching.	9. The course is designed to support a learner-centred approach.	12. Flipped classroom method of delivery implemented.
2. The cadets access the learning through a company branded 'learning portal' with the learning management system.	10. The programme measures a student's engagement and outcomes they completed rather than attendance of online sessions.	13. Engages in the sharing of best practice and new perspectives.
3. The 'Cadet Development Programme' provides a space to try new materials, methods of delivery and communication and evaluate its effectiveness.	11. Materials and interaction have been designed for synchronous and asynchronous access from students.	17. The learning support links the activities in the classroom with the more practical learning at sea.
4. Opportunities for cadets to upskill and enhance their digital capabilities.		18. The digital content allows for asynchronous learning and is broken down into microlearning modules for the cadets.
7. The programme is designed to incorporate elements of teacher presence and social presence to encourage social interactions.		19. Cadet feedback is gathered on a continual basis and suggestions for improvement are welcomed.

To determine the impact and effectiveness of the Cadet Development Programme, a mixed-method approach was utilised, combining feedback from a cadet survey with semi-structured interviews with sponsoring companies.

The survey utilised the Music® Model of Academic Motivation Inventory developed by Jones (2012/22) which broke the learner experience down into five primary components:

- Empowerment – The degree to which a student perceives they have control over their learning environment.

- Usefulness – The degree to which a student perceives the online materials are useful to their future.

- Success – The degree to which a student perceives they can succeed in their course.

- Interest – The degree to which a student perceives the instructional methods and coursework are interesting.

- Caring – The degree to which a student perceives the instructor cares about whether the student succeeds in the coursework and cares about the student's well-being.

The survey was sent to cadets at three stages of the programme:

- Phases 1 – 3: At the beginning of the training.

- Phases 4 – 5: Preparing for their end of training and final examinations.

- Completed: Cadets who had recently completed their training and gained their Certificate of Competency.

To avoid confusing participants completing the survey, the tense used in posing the survey questions was altered, with current students being asked questions in the present tense and completed students being asked questions in the past tense.

The surveys were then internally validated to ensure the questions measured the intended component and were directly comparable. The survey was distributed by email to candidates who had completed the course and via the learning management system for those who were currently undertaking the programme.
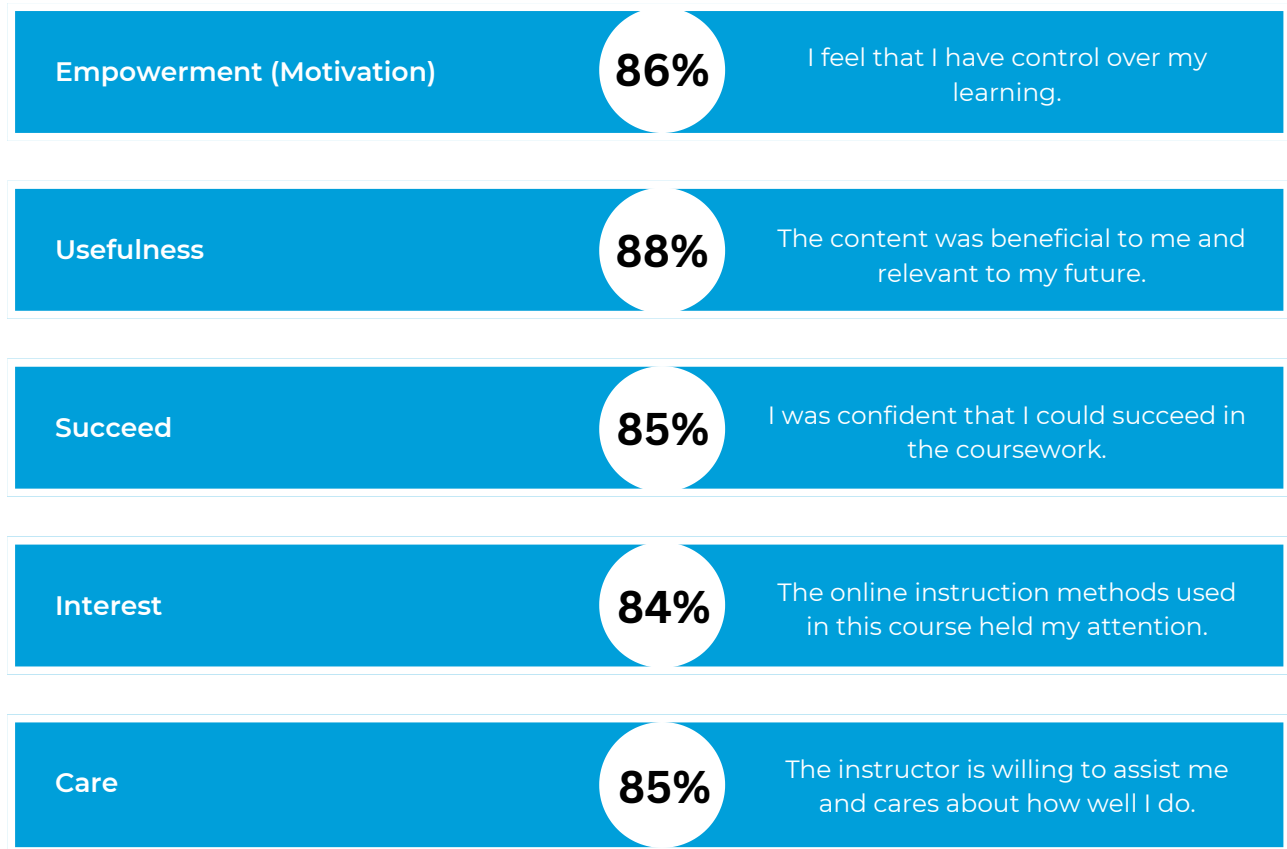
264 cadets were invited to complete the survey, with 42 responding giving a 16% response rate for analysis.

A good survey response is recognised as being between 5% and 30%. [1]

[1] **Average Survey Response Rate - What You Need to Know - Customer Thermometer**

Evaluating Impact - Results

From the survey results, the 5 components measured by the Music © Model of Academic Motivation (Jones 2012/2022) were identified.

Empowerment (Motivation)	**86%**	I feel that I have control over my learning.

Usefulness	**88%**	The content was beneficial to me and relevant to my future.

Succeed	**85%**	I was confident that I could succeed in the coursework.

Interest	**84%**	The online instruction methods used in this course held my attention.

Care	**85%**	The instructor is willing to assist me and cares about how well I do.

Empowerment – Encouraging independent learning

86% | **'I feel that I have control over my learning environment'.**

The Maritime Skills Commission 'Digital Learning Report' identified one of the strengths of digital learning was that it 'encourages the rise of the independent learner'.

Independent learners are responsible for their own learning goals, motivation, and development.

Creating an online environment which supports independent learning and self-learning requires an understanding of the extrinsic goals of the student.

The 'Cadet Development Programme' has been designed to align with the STCW Operational competency tables and specifically to support the cadets in obtaining their deck or engine certificate of competency.

Key Construct - Autonomy

In an educational sense, this means promoting an interest in self-learning, understanding the value of education, and having confidence in their capabilities and attributes.

The outcomes are manifestations of being motivated, and internalizing values and regulatory processes.

(Deci & Ryan 1991)

Course Design for Empowering Learners

Some of the strategies we have found useful in our course design include creating meaningful activities which are aligned with the students' goals.

We have embedded triggers throughout the course to enable students to monitor and gauge their progress such as dashboards, digital badges, and feedback milestones.

Usefulness - Is the Programme Useful?

Two key factors in determining whether a cadet will become a self-regulated, independent learner are whether they think the programme is useful to them and if they believe they can complete the work they are being asked to do.

The **'Expectancy-Value Theory'**, (Eccles & Wigfield 2002, 2020) essentially asks two questions, **"Is it worth it?"**, and **"How well can I do this?"**.

Usefulness

88% | 'The course content was beneficial to me and relevant to my future.'

Key Construct - Utility Value

Utility value refers to how a task fits into an individual's future.

Utility value captures the more 'extrinsic' reasons for doing a task. Not doing a task not for its own sake but to reach some desired end state.

(Wigfield and Eccles, 2000)

Success

85% | 'I was confident that I could succeed in the coursework. '

Key Construct - Expectancy Theory

Expectancy refers to a student's belief as to how well they will do in upcoming tasks in the immediate or longer future.

It is different from a students' belief in their ability which is their perception of their current competence at a given activity.

(Wigfield and Eccles, 2000)

Interest - How Engaging is the Programme?

Before a cadet can decide whether the 'Cadet Development Programme' will be useful to them and help them achieve their goals we must get their interest.

'The Four-Phase Model of Interest Development' (Hidi & Renninger, 2006) assists us in course design.

It helps us ensure that every interaction and activity we ask the cadet to do, has a sound objective behind it.

Phase 1: Triggered Situational Interest
Phase 2: Maintained Situational Interest
Phase 3: Emerging Individual Interest
Phase 4: Well-developed Individual Interest

Situational interest refers to focused attention that is triggered at the moment by a stimulus.

This can be achieved by grabbing the student's attention or sparking an initial curiosity.

Interest

84% | 'The online instructional methods used in this course held my attention'.

Key Construct - Situational Interest

Situational interest refers to focused attention and the affective re-action that is triggered in the moment by environmental stimuli, which may or may not last over time.

(Hidi & Renninger, 2006)

Individual interest refers to a person's predisposition to re-engage with content over a period.

In this respect, individual interest is linked to individual and self-learning.

Caring - Instructor Presence in an Online Environment

Caring

85% | 'The instructor is willing to assist me and cares about how well I do'.

Key Construct - Caring

The care perspective, when applied to online learning, is about helping students find their full potential and supporting them by looking for the individual qualities and building upon these strengths to aid the overall success of the individual.

(Robinson, Al-Freih, Kilgore, 2020)

Being able to gauge the cadet's perception of caring through the evaluation form, was important as there was a marked difference between the response from cadets in phases 1-3 of their training and those nearly the completion of their course in phases 4 & 5.

This highlighted the role of 'teacher presence' within the 'Cadet Development Programme'. 89% of cadets who were in phase 4 & 5 indicated that they perceived their instructor cared for them compared to 82% in phases 1 – 3.

In phases 4&5 cadets are invited to engage with a series of instructor-led tutorials which are available synchronously and asynchronously. In phases 1-3 the 'teacher presence' is limited.

(Robinson, Al-Freih, Kilgore, 2020) identified a number of themes when researching care in online learning environments. These included:

Practice

Peer-to-peer support

Confirmation

Personalised feedback

Modelling

Opportunities for Synchronous Interactions, instructor presence

Dialogue

Personal vs group communication
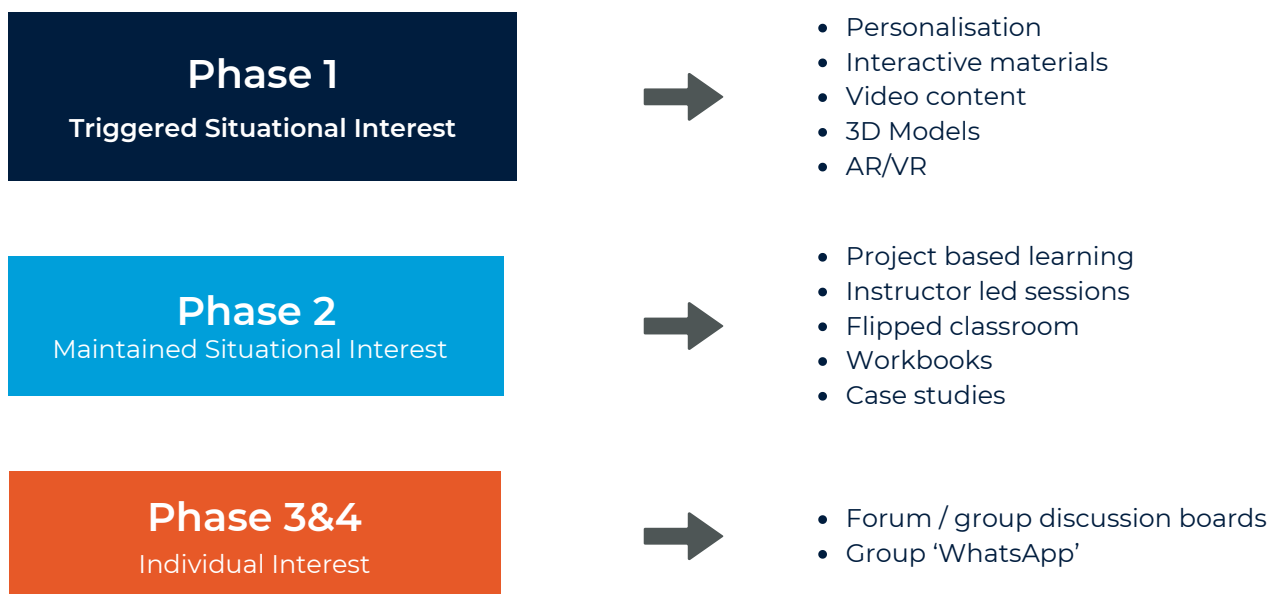
Conclusion and Next Steps

By sharing our findings of the evaluation, we hope to contribute to the growing body of evidence around best practices in the design and delivery of digital education programmes.

The results of the evaluation have informed our decision-making process for improving the programme with the aim of enhancing the cadet experience for the cadet and our clients.

The course design and delivery for a programme delivered over a long period of time, in this case three and a half years, is very different to the design of a course with one specific outcome or objective.

During the planning and course design for this programme, we considered the variety of learning opportunities the cadet will experience throughout their time in training and the challenges they are likely to face. In constructing online / offline activities and engagements we found the 'The Four-Phase Model of Interest Development' (Hidi and Renninger, 2006) to be very useful.

It enabled us to construct meaningful and objective activities for the cadets.

Phase 1 **Triggered Situational Interest**	→	- Personalisation - Interactive materials - Video content 3D Models - AR/VR
Phase 2 Maintained Situational Interest	→	- Project based learning - Instructor led sessions - Flipped classroom - Workbooks - Case studies
Phase 3&4 Individual Interest	→	- Forum / group discussion boards - Group 'WhatsApp'

E-Learning for compliance purposes or online learning with a specific single objective is the focus of phase 1 of the model and the triggering of an initial interest.

In creating our programme, we have embedded strategies to take a cadet from an initial interest in a topic, sustaining that interest in phase 2, to being able to act independently in their questioning and research of subject matter areas in phase 3.

We also found the 'flipped classroom' approach to be an effective digital learning strategy.

Materials in the form of videos, text and exercise are available for the cadets to engage with prior to an instructor led, online session.

Conclusion and Next Steps

During the online session, the instructor focuses on developing the knowledge of the cadets through questions and answers rather than the teaching of theoretical constructs.

Cadets can choose to attend these sessions synchronously or watch a recording asynchronously at a more convenient time.

In the next phase of the Cadet Development Programme, Onboard Maritime will be collaborating with South Shields Marine School and exploring approaches that can maximise learning opportunities for cadets during their designated sea phases as well as consolidate and reinforce their knowledge and understanding.

The intentions are to provide further feedback and evidence on the strengths and challenges of facilitating digital learning in the maritime industry.

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