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The Novelty of CAPTAINS: the Communicative Learning Approach of Maritime English and its Facilitation by Technology

Abstract

This paper presents one of the many novel aspects of the CAPTAINS project: developing rich media interactive educational software in which learners are able to record and self-assess their performance in communicative English, in addition to 3D virtual interactive learning environments, in which they are able to interact and "talk" to virtual maritime characters about handling situations at sea, in standalone mode but further published in an e-learning 2.0 platform, Kwebo, developed by AIT. Kwebo provides all the necessary tools to facilitate the development of an online Maritime English learning community, allows synchronous and asynchronous online communication and collaboration, in an integrated manner with single sign-on access. Communicative Language Teaching (CLT) is an appropriate approach in teaching English to Merchant navy officer cadets, as Listening and Speaking skills are essential to effectively undertake onboard duties, as a lack of such skills has proven to have led to accidents on sea. The CAPTAINS project will use Communicative English Language Teaching with 2D/3D simulations in its scenario-based learning approach. The scenario based learning approach will show how to communicate effectively and take the appropriate actions, as well as demonstrate how poor communication skills can lead to being in critical situations. The maritime industry can significantly benefit from the existence of a software training tool for its sea-going and port personnel, since it focuses on effective communication in English. The publishing of such interactive rich media educational software on the Kwebo e-learning 2.0 platform will launch the set-up of the first online Maritime English learning community, facilitated further by collaborative authoring and online communication tools and services in a complete integrated learning environment dedicated to enhance Maritime English learning. The EU Leonardo funded CAPTAINS project is expected to result in both novel, software based maritime communicative English learning material, accessible from within the KWEBO e-learning 2.0 platform, and the birth of the first online Maritime English learning community. This paper provides the rationale of the formulation of the new "canon", i.e. an intercultural, real-life inspired, communicative, and cutting edge, in terms of technology, learning approach to which new content could constantly be integrated.

Keywords: Maritime English, communicative language teaching (CLT), CAPTAINS, authenticity, rich media interactive educational multimedia, 3D virtual learning environment, online learning community, e-learning 2.0 platform, KWEBO

1. Introduction

English has been established as the language of the sea at an international level and is used in all situations such as ship-to-ship, ship-to-shore and on board communications.

Linguistic, paralinguistic and cultural issues hinder the safety of the ships at sea (Ziarati, 2006). A careful study identified that 80% of maritime accidents are caused by human factors (Verbek, 2011), of which failure of communication represents one third (Ziarati, 2006, Trekner, 2007). The IMO has also underlined the importance of effective communication in an International Seminar as a crucial issue for Marine Safety (Winbow, 2002). It is important to look for solutions to resolve and remedy these problems on a global scale (Loginovsky, 2002).

Communicative Language Teaching (CLT) set in the context of real-life situations at sea is not commonly applied in the curriculums for training merchant navy officers (Ziarati et al, 2011). It was also found that English language skills of the ships' crew are at a low level, resulting in ineffective communication. Recent research, has shown that ineffective communication is a major cause of accidents and incidents at sea (Ziarati et al, *ibid*, 2011; Verbek, 2011; Trekner, 2007; IMO, 2005). The CAPTAINS project (Ziarati et al, *ibid*) has reviewed a number of accidents and incidents based on communication failures. The appropriate accident scenarios were used to support the development of learning content on the CAPTAINS advanced e-learning platform.

The CAPTAINS project (EU Leonardo Captains Project, 2010-2012) is creating and publishing interactive educational multimedia, simulations, and 3D virtual learning content on an advanced e-learning 2.0 platform. The content was based on real-life scenarios on linguistic and cultural diversities with respect to effective communication in English among seafarers on ships and ashore. The CAPTAINS project (*ibid*) will develop software based maritime communicative English educational multimedia and e-courses in which the created learning scenarios will make use of proper learning approaches, online communication, virtual collaboration and learning spaces as a medium facilitated by the e-learning 2.0 platform, KWEBO, enhanced with 2D/3D interactive rich media simulations. This will be seamlessly interlinked with other forms of online educational content and be bundled and offered as complete online learning e-courses, accessible from within KWEBO. It is significant to point out that the knowledge base of real scenarios is intended to be included in the curriculum of Maritime English in maritime education and training institutions. Industrial and vocational training for sea-going and port personnel would benefit from the existence of the CAPTAINS software-based training content since it focuses on effective English language communication, which is an essential ingredient in safe and efficient ship operations.

The CAPTAINS project will use Communicative English Language Teaching with 2D/3D simulations in its scenario-based learning approach. The scenario based learning approach will show how to communicate effectively and take the appropriate actions, as well as demonstrate how poor communication skills can lead to being in critical situations.

Moreover, it will develop, add value and enhance the attractiveness of VET systems and practices incorporating state of the art computer assisted language learning (CALL) in an experiential environment. Such an environment is brought around from within the KWEBO e-learning 2.0 platform. KWEBO is a novel system, in constant development, with the aim to introduce a number of educational, collaborative and communication tools and services for educational and not only stakeholders, integrated in a single platform with single sign-on access. Among its current technological innovations one can enlist the integration of social networking and collaborative authoring tools, the interfacing with existing social networking sites, to boost technology-enabled social learning, along with incorporation of 3D virtual learning environments and seamless integration with rich media interactive educational content and simulations. The main aim is to enhance the way people learn, share and communicate using a single platform and user account.

This paper is presented and structured in the following manner:: Section 1 has provided a brief introduction to the rationale, aims and objectives of the CAPTAINS project (ibid) as well as an initial insight into the novelty of its e-learning platform. Section 2 presents the innovations brought around by the CAPTAINS project and how they have materialized: (i) innovative educational content, ii) novel learning approaches (scenario-based, experiential), iii) course design and development results instantiating the learning approaches. Then, methodological/ didactic approaches and areas that have been considered in the design and the development of the CAPTAINS educational software and e-courses are discussed. Section 3 summarizes the results of the user feedback questionnaire, which gave significant inputs into the design and development processes. Section 4 presents KWEBO, AIT's e-learning 2.0 platform, brought into the project to form the medium for publishing the CAPTAINS developed e-courses and educational software, along with its novel features. Section 5 describes the CAPTAINS digital courses- standalone and e-courses. Finally, in the last Section conclusions and future work are presented.

2. THE CAPTAINS PROJECT AND ITS INNOVATIONS

2.1 CAPTAINS` INNOVATIVE BACKGROUND RESEARCH

The CAPTAINS project has been based both on results from other successful Leonardo projects as well as on the findings from current research in the area of Sea at Safety. In particular, the project has exploited the research findings of the Leonardo SOS project (2005-07) on the review of the IMO requirements for education and training for merchant navy officers as well as the findings of the Leonardo project MAIDER (2009-11) which reviewed the accidents and near accidents. Another result that has been used as input for the CAPTAINS project is a review of SMCP (Standard Marine Communication Phrases, International Maritime Organization, 2001) , that has been considered as the basis of developing the intended case studies/scenarios.

2.2 CAPTAINS` NOVEL LEARNING APPROACHES

The CAPTAINS project based on real-life situations has adopted novel learning approaches for effective English communication, outlined in more detail in the IMEC 23 conference paper "New Tools for New Seafarers: Presenting the Captain`s Platform for Maritime English" (Iakovaki, 2011).

As regards the foundations of the approach, first of all, linguistically, the modern tendencies call for an intercultural competence rather than plain native speaker level of proficiency as well as the communicative approach to language learning. Moreover, there is a need in the professional and human resources management level to have their discourse understood and legitimized as learning materials as well as the need to integrate safety in the working culture. Furthermore, technological breakthroughs such as state of the art experiential simulations and virtual learning/collaboration environments greatly contribute to the transfer of knowledge and skills.

The CAPTAINS project has thus focused on defining novel learning approaches for supporting experiential and scenario-based/problem based learning, with the aim to enhance effective verbal communication on ships in order to avoid accidents. These approaches have been defined based on a created within CAPTAINS knowledge base of real-life critical situations emerged by ineffective communication onboard ships.

2.3 CAPTAINS` DIGITAL COURSE DESIGN AND DEVELOPMENT

Another aim of the CAPTAINS project has been to design and develop digital courses on communicative English learning, both in standalone and e-course mode, based on scenarios and experiential learning approaches.

The designed and developed courses, as described in Section 5, are composed by a set of interactive rich media learning content. The primary learning content consists of a variety of digital photos, graphics, text, sounds/recordings, images, videos, etc. whereas the developed secondary learning content has focused on more complex learning content such as interactive rich media simulations of real-life scenarios and multimedia presentations, (e.g. representing a virtual dialogue) utilizing the collected/created primary learning content.

The designed and developed digital courses are primarily suited to learners at an Immediate English Language level. Furthermore, the courses have been designed and planned in such a way to consider the requirements of accreditation and certification.

2.4 CAPTAINS` METHODOLOGICAL / DIDACTIC APPROACHES

In a report by Ziarati (2010) it is noted that in pedagogical terms, there is an important distinction between knowledge and skill. Full competence in the use of Maritime English involves both knowledge of the English language and the skills in applying it correctly in a maritime context. Communicative skills are thought to be the most appropriate approach in teaching English to Merchant navy officer cadets. Loginovsky (2002) also argued that English to maritime officers should be taught in the context of maritime English. The CAPTAINS learning material will take note of the argument forwarded by Loginovsky (ibid).

The new intercultural, communicative approach emphasizes the plurality of Englishness and their use onboard as equally legitimate versions. Therefore the material developed in CAPTAINS project mirrors such differences by employing a variety of representative discourse types in real-life situations.

Authenticity of materials is also a prerequisite, although the dominant feature of the pedagogical framework would be authenticity of tasks and situations. A novelty in the way such material is usually developed, lies in the fact that provisions will be made so that all levels of competency will be addressed and not just the intermediate-upper level as it is customary.

Moreover, distinctions will be made between specialties, in which Engineering, Navigation and all-around soft management skills will be called to action making for a differentiated target group. The use of virtual reality tools will allow a degree of freedom and authenticity of tasks unprecedented in such enterprises and therefore it will push the limits of the purely linguistic content so that an altogether new learning experience, a sum larger than its parts, will emerge, creating value for the trainers, stakeholders and community of practice.

3. TEACHING CONTEXTS - USER REQUIREMENTS COLLECTION

The CAPTAINS project partners distributed a questionnaire which was handed out to lecturers, professors, and seafarers who have sea experience. (Ziarati et al, 2011). This distribution of the questionnaire is part of the user requirements collection phase, prior to the definition of the novel learning approaches and the design and development of the digital courses, a total of 109 seafarers from 12 different countries completed the properly formulated questionnaire for seafarers. Over two thirds of participants were under the age of 35. Over half had more than 6 months of sea service, with almost a quarter having

between 5 and 10 years at sea. The majority had served on bulk carriers, and tankers. There were responses from 25 senior officers, 18 officers, 65 officer cadets, and 1 rating (Ziarati et al, *ibid*).

The questionnaire for maritime English teachers was completed by 64 lecturers and professors from over 30 maritime academies and universities worldwide. 39% of responses came from participants who had prior seafaring experience. Around half of the participants told us that they prepare their students for formal English language exams or tests of maritime English (Ziarati et al, *ibid*).

One of the issues investigated in the questionnaire was the participant's language level. Maritime English teachers told us that 41% of their current students were at B1 level, and 34% were at B2. 75% of the students covered by the survey were at either B1/B2 level (intermediate) with their English. Another questions dealt with English language qualifications. Approximately one third of the seafarers possessed a formal English language qualification, such as IELTS, FCE, or TOEIC. The research showed also that English is most cases was a language of instruction in nautical studies. Moreover, the questionnaire revealed that 72% percent of the seafarers said that more than one language was spoken on board during their current of most recent service on board. Furthermore, it was indicated that cultural differences have an effect on the level of communication on board.

The open responses reiterated the idea people can say that they have understood something, but in actually, they have not. This clearly underlines the need for communication to be made using standard vocabulary, and for seafarers to be able to give the correct feedback (as documented in SMCP) to confirm that they have understood an order. (Ziarati et al, *ibid*).

The two most popular methods of teaching provided by the English teachers are 'communicative approach' style lessons and lectures with audio recordings, pictures and videos. The respondents said that they seldom use distance learning, and online learning methods utilizing 2D and 3D animations. When asked to rate certain types of activities as to how appropriate they would be in the proposed new e-learning software, the maritime English teachers almost unanimously marked 'simulations and games' and 'interactive activities' as being appropriate. They also marked '2D / 3D animations' and 'self learning CDs' as being extremely useful. This shows that there is a demand, and room for, a technological e-learning solution.

Maritime English teachers told us that they would like to see teaching contexts/subject areas relating to 'safety and security' and 'emergencies on board' in the new e-learning software. Other contexts such as VHF communications and anchoring / mooring operations were also popular, although one participant suggested that the e-learning software might contain a section relating to the engine room department.

Seafarers told us that they thought practical training on board was the most appropriate way to learn maritime English, followed by conventional classroom lessons. Following these two essential elements were interactive scenario based applications and self learning. These categories were broken down into the four skills (reading, listening, speaking, writing). Participants told us that these methods are useful for them to practise all their English language skills.

3.1 CAPTAINS` METHODOLOGICAL / DIDACTIC APPROACHES

The VHF communication was a topic discussed in many of the workshops organised by the project partners. For example in the Turkish workshop, the participants emphasised the point that most accidents are caused by problems with external communication, such as collision situations. This was similarly pointed out by the colleagues in the Spanish workshop. In this workshop, it was noted that VHF communication by VTS operators was required to be fluent and masterful in its use of SMCP.

The Greek workshop reported that VHF operators try to guess the nationality of the person who is trying to communicate with them from their accent. All workshops reiterated the need to deal with pronunciation. This reflected the results of the questionnaire, which highlighted the fact that most of our survey participants felt that pronunciation was a major factor in whether or not they were understood. The issue of seafarers providing feedback was mentioned as an important matter in the Greek workshop.

According to the regulations, seafarers must repeat an order that they have been given to confirm that they have received it. The Turkish and Spanish workshops put forward the suggestion that an effective way for people to learn maritime English is through using Content Language Integrated Learning approaches.

4. THE CAPTAINS E-LEARNING 2.0 SYSTEM – KWEBO

The CAPTAINS digital courses are accessible from within an advanced e-learning 2.0 platform, KWEBO (KWEBO, AIT), that has been developed by AIT. Its added value lies in the fact that it integrates a number of educational, communication and collaboration tools and services in a single platform with single sign-on access. Furthermore, it is a dynamic, evolving system, into which novel tools and services are constantly being integrated, such as social networking, collaborative authoring tools and a 3D virtual learning space. The core technology of KWEBO is the open source OLAT LMS/LCMS (OLAT, Univ. of Zurich). KWEBO allows the authoring, structuring and publishing of complete e-courses, composed of both synchronous and asynchronous learning objects and activities (rich media learning content including audio, video, animations, games, etc., as well as chatting, video-conference, virtual class, forums and other such services). KWEBO currently integrates the following components:

- Learning Management System (LMS)
- Synchronous and Asynchronous Communication and Collaboration tools and services for its internal Learning and User Communities, such as:
 - Chatting
 - Video conference
 - Virtual Class
 - Whiteboard
 - Discussion Forums
 - Email
 - Notifications
 - Calendar
 - Notes
 - Internal Communities Management
 - Etc.
- Collaborative Authoring Tools and Services, such as
 - Blogs
 - Wikis
 - Podcasts
 - Vidcasts
 - Etc.

- Digital Library with primary digital multimedia content and metadata (including attribution information)
- Synchronous transmission system of live and pre-recorded webcasts and podcasts

KWEBO serves as the **host and access system** for the CAPTAINS e-courses, which are rich with interactive multimedia content and adopt innovative learning and evaluation methodologies both on an individual as well as a community level. Moreover, e-courses utilize the calendar, scheduling, **video conference and virtual class capabilities** of KWEBO to allow the implementation of remote classes brought together over the Web to be taught on the subject areas of the CAPTAINS project and further promote the communicative approach of CAPTAINS by exploiting such online synchronous communication, collaboration and interaction channels among remote students and teachers. To advance the communicative approach of CAPTAINS to teach Maritime English, many learning activities and learner tasks of the CAPTAINS e-courses refer to the use of the **chat and video conference** capabilities and require from online learners to communicate online and collaborate with other online learners logged in KWEBO in the same learning community and carry out learning tasks together. Such synchronous communication tools can be used for educational purposes such as pair work, sharing knowledge, ideas, discussion about tasks, asking questions and providing answers. Storing the chat history or recording the video conference session may be submitted as an assignment and may be assessed by the teacher.

Furthermore, a number of online activities of the CAPTAINS e-courses have been developed considering the **Web 2.0 collaborative authoring capabilities** of KWEBO, such as **Blogs, Wikis, etc.**

- **Blogs** often act as a basic tool for personal knowledge-management, which can be used as a personal diary or as an instrument to support group-dynamic processes (Hilzensauer & Gruber 2005). RSS technology enables bloggers to gather information from a variety of sources and to interlink these sources. This triggers the group-dynamic processes since blogs reflect an individual user's approach to gathering and arranging information. As a result, blogs also reflect a user's personal approach to learning, because sources of knowledge are interlinked individually (Petter et al, 2005:10). Blogs are used in educational context to enhance the communication among students and teachers. They are mainly used to replace the out-dated way of communication such as the e-mail. Students share their knowledge and learning experience with the teacher and other students through course blogs. Moreover, course blogs increase their interactivity (Kim, 2007). Blogs are not only used for writing-reading skills, critical thinking skills, supporting interaction, analytic, communication and discussion, but also for sharing and publishing artifacts like e-portfolios (Kalelioglu and Gulbahar, 2010). These numerous advantages of blogs show that students taking the CAPTAINS course may benefit from being involved in blog activities.
- **Wikis.** Wikis are websites which allow for creation and editing of the contents by every user. They act as a supportive tool for communication and cooperation as well as learning (Petreski et al., 2011). Wikis are used by educators as teaching and learning tools. A research has indicated that teachers and students can be very creative in developing innovative and useful activities for learning" (Fountain, 2012). For instance, a teacher supervising a student taking the CAPTAINS course may assign a task to create a wiki about navigational aids.
- **Podcasts.** "Other social based tools present at the KWEBO platform are the podcasts. Podcasts are social based media in video format used to help and enhance the course quality and experience" (Petreski et al., 2011). Students taking the CAPTAINS course may find it interesting to share the podcasts with their co-learners and teachers.

One of the major capabilities of KWEBO is the support and management of **online communities** within its system: both Learning communities and Communities of practice. KWEBO has started hosting and enabling the expansion of a dynamic learning community in Maritime English. A number of communication and collaboration tools and services are available for such learning communities. According to the role and access rights of each member, different capabilities are given to them by the system. Group administrators are given for example a rich set of tools to manage online communities in KWEBO, such as adding new members, configuring tools and services available to each member (chat, email, notifications, calendar, etc.). Learning communities are linked with specific e-courses and are granted access to those, as in the case of CAPTAINS. The 1st Maritime English learning community is granted access to the developed CAPTAINS e-courses. Among the capabilities of KWEBO are listed those that can track what the members of the learning community (learners, tutors) are interacting with, with respect to the learning material, as well as when they accessed the system and how long they remained connected, and report that to members of advanced rights, such as tutors/teachers/mentors. Specific tools are given to privileged users for initiating the creation of such automatic reports.

To boost the community and online socialization capabilities of KWEBO, deployed further within the CAPTAINS project beyond its end, a current advancement of KWEBO involves its **integration with social networking and social media tools**, utilized in a learning context to add value and bring dynamic learning content and recommended experts in the internal KWEBO learning communities. These capabilities will allow the expansion of the CAPTAINS learning community with external experts, the additional communicative learning channels through social media, mainly for informal type of learning, and the dynamic updating of the CAPTAINS e-courses with recommended external learning resources from within social networking communities (Petreski et al, 2011).

A motivating factor, especially for young learners, is the **engaging learning material in animated 2D/3D simulations and interactive educational software**. Such forms of educational learning material are easily uploadable and published within KWEBO e-courses as learning resources or learning objects (in many cases in standardised learning packages such as SCORM). One of CAPTAINS innovations has been to design and develop such new engaging, types of learning material in both 2D and 3D – more details on the developed such content are given in the next Section. The published CAPTAINS e-courses are rich of interactive educational multimedia, that focus on the active participation and interaction of the learner in the online learning process (Tsekeridou et al, 2012). As an example, interactive developed simulated dialogues and self-assessment exercises in CAPTAINS are based on past accidents and near misses, in an attempt to demonstrate the wrong and right ways to communicate, highlight potential critical situations and train the maritime personnel on what action to take in order to avoid them.

More details on the use of KWEBO and its tools/services and features within the context of CAPTAINS are given in the next section, in which specific instances of the developed e-courses and the involved learning activities are described.

5. CAPTAINS DIGITAL COURSES - STANDALONE AND E-COURSES

The CAPTAINS digital courses have been produced following a design and development process. The design process involved the learning design of the digital courses including their thematic foci, subject areas, structure of contents, learning activities design, primary learning material collection. The development process involved the visual and interaction design of the interactive educational multimedia

and the development of the former, based on the design guidelines and the provided primary material, as well as the structuring, development and publishing of the online learning activities and complete e-courses within KWEBO, and finally the creation and management of the 1st online Maritime English learning community.

The CAPTAINS digital courses, both in standalone and e-course versions, were designed based on the results of the needs analysis, which provided the thematic & content foci of the designed activities, the novel learning approaches for supporting experiential and scenario-based learning, which set the framework of the learning principles and the level to be targeted, and last but not least the user interest and perceived advantages of an advanced e-learning 2.0 platform, AIT's KWEBO, which would enhance the educational content integration, provide access to it over the Web, and facilitate learners to discover an innovative, state-of-the-art web-environment and set the foundations of the first online Maritime English learning community. Moreover, the course design process followed the guidelines of the Common European Framework of Reference for Languages: Learning, Teaching, Assessment (Council of Europe, 2009), the IMO Model Course 3.17 (International Maritime Organization, 2009), and STCW (Standards of Training, Certification and Watch keeping for seafarers) (International Maritime Organization, 2011).

Top priority of the designed courses has been to ensure that all seafarers are able to speak and understand maritime English in order that they are able to communicate and carry out their duties effectively. Therefore, the designed activities encourage end users to learn or improve their English through communicative skills, enhance language awareness and to facilitate learners acquire intercultural competence integrating the concept of EFL (English as a Lingua Franca) via authentic tasks which incorporate authentic material, thus, enhancing their employability at home and their mobility within Europe and worldwide.

All learning activities of the CAPTAINS digital courses have been designed so that the communicative approach framework is widely implemented grounded in the notion of communicative competence as the goal of second and foreign language learning, and a communicative syllabus and methodology as the way of achieving this goal as it is vital to ensure that all seafarers are able to speak and understand maritime English in order to be able to communicate and carry out their duties effectively.

- Learners are engaged in interaction and meaningful communication based on the scenarios.
- Effective learning tasks and exercises provide opportunities for users to negotiate meaning, expand their language resources, notice how language is used in critical issues where safety is at stake such as collisions, and take part in meaningful interpersonal exchange.
- Students are processing content that is relevant, purposeful, interesting, and engaging due to the state of the art web environment are able to interact with objects in the virtual bridge resulting in meaningful communication.
- Communication is a holistic process calling upon the use of several language skills or modalities integrating language with attitudes and cross-cultural assumptions - not just focus on mental processes, but also highlighting beliefs and attitudes, fears and expectations. For example, the learner might form false or incorrect assumptions due to cultural diversities. .
- Language learning is facilitated both by activities that involve inductive or discovery learning of underlying rules of language use and organization, as well as by those involving language analysis and reflection. The kinds of training activities are based on trainees' direct experience: they are not simply told how to do things, but actually asked to work through task-based activities. In other words, they are provided not just with information but also with practical, "hands-on" experience, and they will be prompted to think about what they are doing.

- Language learning is a gradual process that involves creative use of language, and trial and error. It starts with a diagnostic approach showing the strengths and the weaknesses of the learner focusing on them for better motivation.

The new intercultural, communicative approach emphasizes the plurality of Englishness and their use onboard as equally legitimate versions. Therefore, the material developed mirrors such differences by employing a variety of representative discourse types in real-life situations pertaining to safety and emergency situations and the end user should be made sensible to the pragmatic and metapragmatic, intercultural and communicative qualities of language in use. Authenticity of materials was also a prerequisite, although the dominant feature of the pedagogical framework is authenticity of tasks and situations. The use of virtual reality tools allows a degree of freedom and authenticity of tasks unprecedented in such enterprises and therefore it pushes the limits of the purely linguistic content so that an altogether new learning experience, a sum larger than its parts, emerges, creating value and a meeting place – the first online Maritime English community- for the trainers, stakeholders, experts, community of practice and partner in general.

CAPTAINS digital courses are available in two forms: the **standalone**, self-learning form provided on a CD/DVD and composed of interactive educational multimedia with self-assessment capabilities, and the **e-course**, online blended (self and collaborative learning) form, including self-learning activities of the standalone form but enhanced and further extended with online learning and collaborative/group learning activities, facilitated by the capabilities of KWEBO and the Web as resources medium, and further offering the potential for virtual class synchronous sessions. Both forms of digital courses are further enhanced with engaging 3D virtual learning material that allows for enhanced experiential learning and user interaction in simulated environments as in real-life work conditions.

Each Module of the course undertakes a notional-functional syllabus collaborating scenario-based learning stemming from real life accidents such as collision and it is divided into three units. Units 1, 2 and 3, all delivered in both standalone and e-course forms. Units 1 and 2 are composed of different sections which focus on all learning skills: Reading, Writing, Speaking, Listening. Units 1 & 2 have been implemented using 2D interactive educational multimedia, while Unit 3, under development, focuses on exploring the use of a 3D virtual interactive world and how such a form of educational material will enhance the learner experience and knowledge acquisition.

In the sequel, a screenshot-based presentation of the designed and developed Units will be given to better illustrate the learning and visual/interaction design of the learning activities as well as how the novel learning approaches have been instantiated. The differentiation among the standalone and e-course forms is further emphasized to showcase the advanced capabilities of the latter, facilitated by KWEBO. Thus, for **Module 1: Collisions and for both Units 1 & 2**, the **standalone** form's initial screen is similar to the one shown in Figure 1.

The units are structured according to the primary focus of the designed learning activities and are divided into the following Sections:

- Introduction: states the objectives of the unit
- Lead in: warms up the learners
- Reading: focuses on the reading skill but incorporates other skills too
- Vocabulary Focus: focuses on the expansion of the vocabulary targeted and SMCP,
- Use of English: gives emphasis on the grammar and structure of language,

- Writing: develops primarily writing skills but includes also practice of other skills too such as listening,
- Listening: focuses primarily in developing listening skills together with intercultural competence,
- Speaking: encourages the learner to speak, record their answer and evaluate it comparing it with the suggested answer.
- Consolidation & Self-assessment: wraps up all the learnt content of the unit.

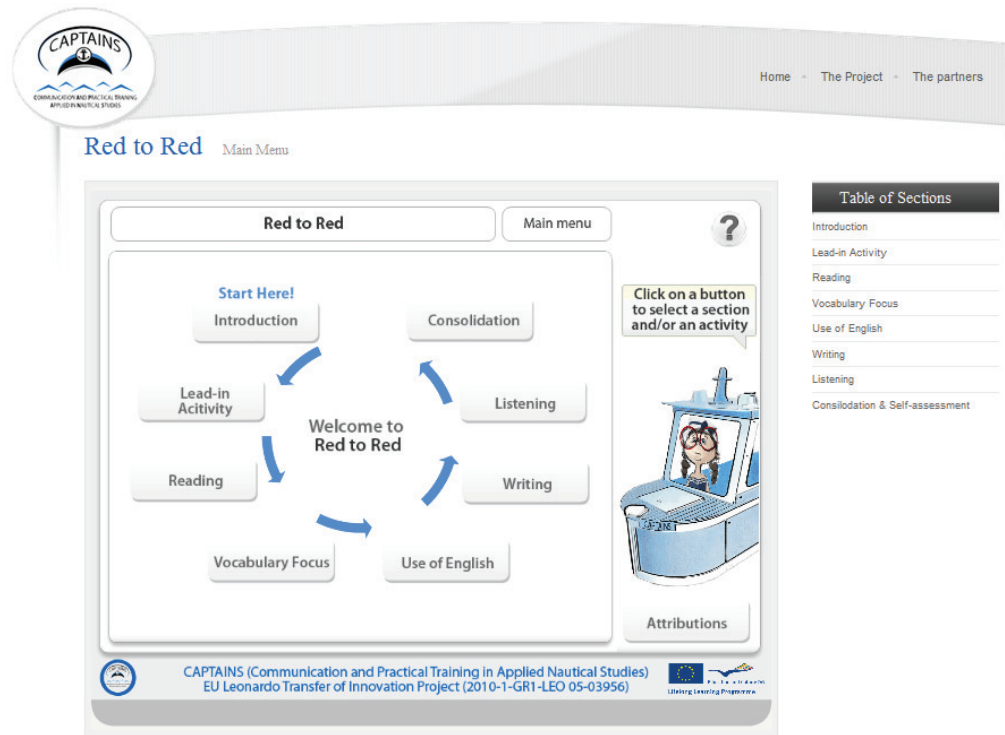


Figure 1: Initial screen of the standalone forms of Units 1 and 2

Each activity uses authentic material from the consortium's Maritime experts and worldwide while there was an effort of collecting a vast array of different pronunciations for the necessary recordings of the designed activities to allow for intercultural familiarization with the users' future colleagues. As per needs analysis, speaking activities were of top priority when designing the course encouraging learners to speak in authentic role-play situations or prompts and record their answer. This familiarization enhances speaking skills as the learners free themselves of the usual inhibitions they feel when speaking in front of an audience. They perform their speaking activities and listen to their performance getting the necessary feedback which enables them for self-correction and improvement. (Susan L . Fearn)

Apart from the focused skill of each section, other skills are also practised, i.e. the reading section starts with a pre-reading activity focusing in listening, as shown in the developed pre-reading activity of Unit 1 in Figure 2.

Module 1: Collisions, Unit 3, introduces the learner in a 3D virtual learning environment. The learner is invited to enter the 2D/3D environment and experience and practise the learning content acquired in the previous units. The unit is divided into three sections:

- The 2D accident simulation movie: The learner watches a 2D movie which simulates a real life accident related to the thematic module: collision. Multiple choice questions

examines key points of communication failures that led to the accident to ensure full competence in the use of Maritime English in safety issues based on real life critical situations emerging from English communication problems and diverse cultures due to multi-national ship crews.

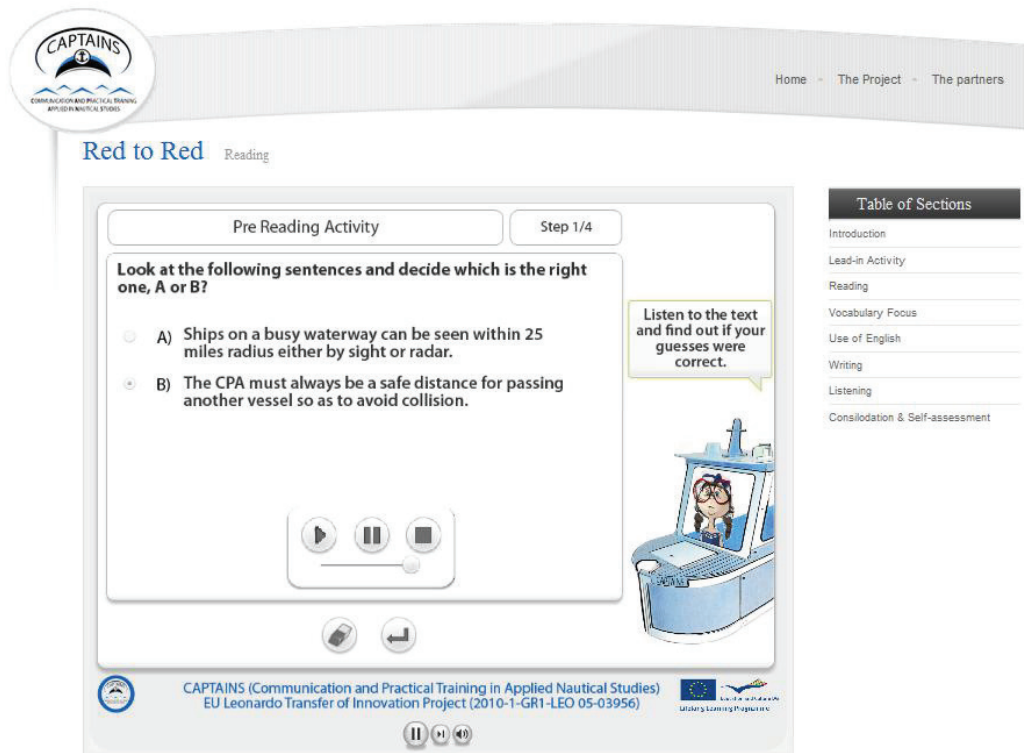


Figure 2: Pre-reading activity from Unit 1.

- **The 3D user/avatar simple interaction:** The learner enters the 3D environment as an avatar and starts interacting with the objects of the bridge to attract and assess learners' familiarization with the 3D environment of a ship's bridge before proceeding to more complex interactions.
- **The 3D user/avatar more complex interaction:** The learner is allowed to be active, interact and socialize with others, be represented as digital entities, etc. thus significantly reducing the learning curve and the time needed for transferring of skills, a key issue in competence-based and learning by doing.

The **e-course** forms of all Units are composed of the Sections, Learning activities and associated interactive educational multimedia and assessment exercises of the standalone form, converted to SCORM learning packages and imported in properly structured e-courses within KWEBO. Additional online learning and collaborative learning activities as well as virtual class sessions further enhance and complement the self-learning activities of the standalone form, in the e-course form, exploiting the capabilities provided by KWEBO. These complementary activities make use of all the tools of KWEBO promoting the set up of the first online Maritime English learning community. An example of the Unit 1 e-course within the KWEBO environment is shown in Figure 3.

The left menu of the e-course describes the structure of the unit which remains almost the same compared to the standalone form, with however more online collaborative activities

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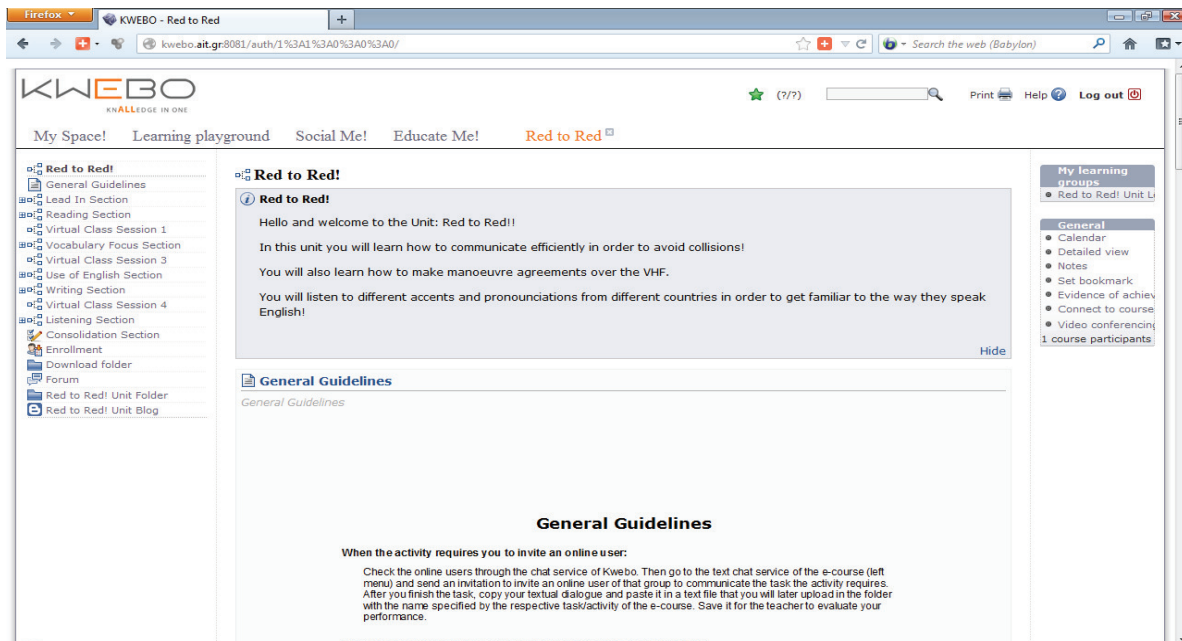


Figure 3: A sample page in Unit 1of the e-course in KWEBO.

added as well as virtual class sessions to follow the blended e-learning approach (self-learning and collaborative synchronous e-learning), as shown in Figure 4. The structure of the e-course is further enriched with forum and blog learning content and activities as required by the learning design of the unit. All the online complementary learning activities have been designed and developed taking advantage of KWEBO's available tools and services such as chat, video conference and virtual class services as shown in the right menu of each e-course in Figure 4.

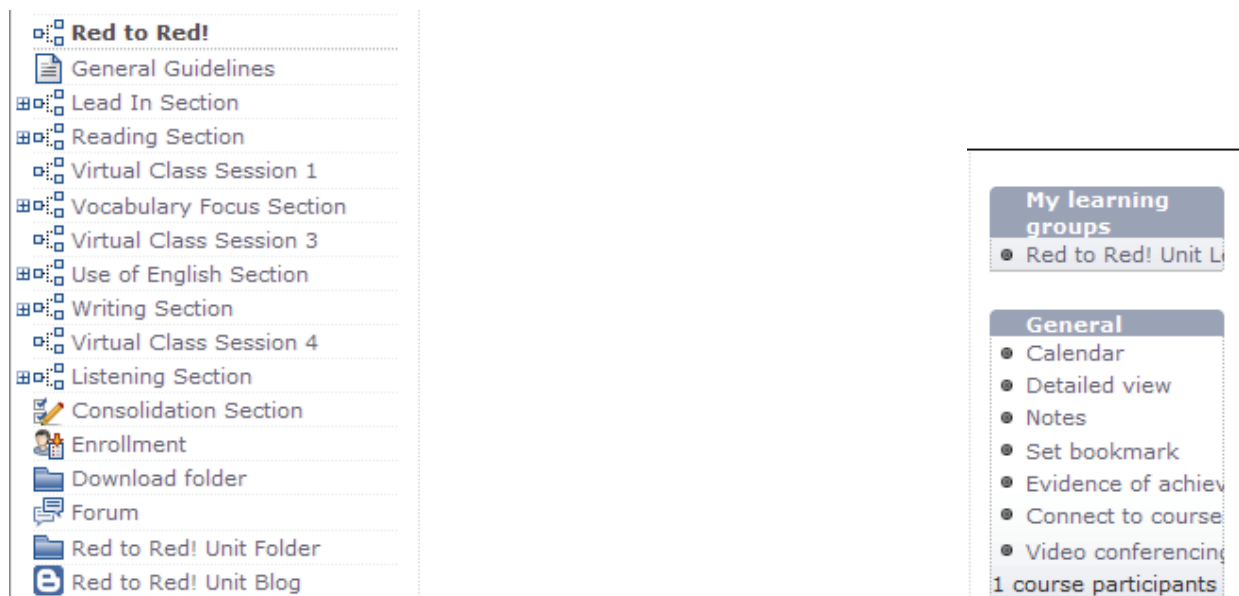


Figure 4: The structure of Unit 1: Red to Red! An e-course in KWEBO with the menu of additional tools and services provided by KWEBO.

KWEBO can provide a detailed view of any e-course published and can be hosted within its environment. It provides the description and the objectives of the e-course, as shown in Figure 5.

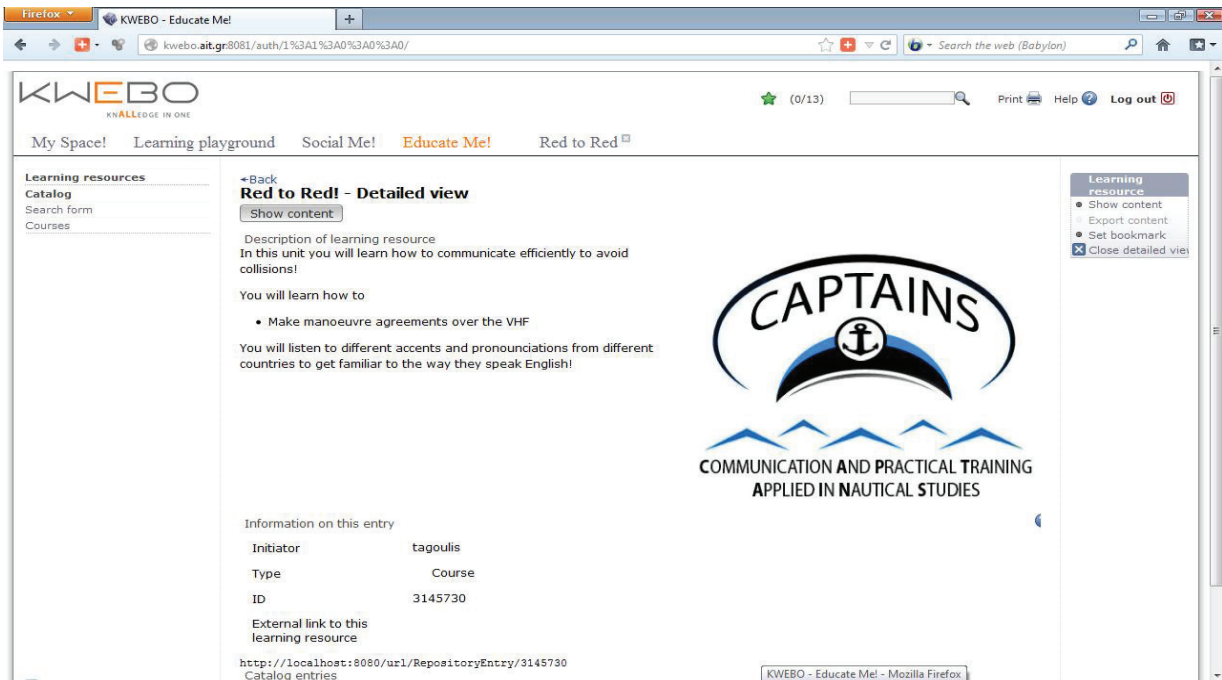


Figure 5: Detailed view of an e-course on KWEBO

Learners are able to use supplementary services from the right menu of the e-course, provided by KWEBO, such as the Notes to take notes and save them for future use or share them with other online users, as shown in Figure 6.

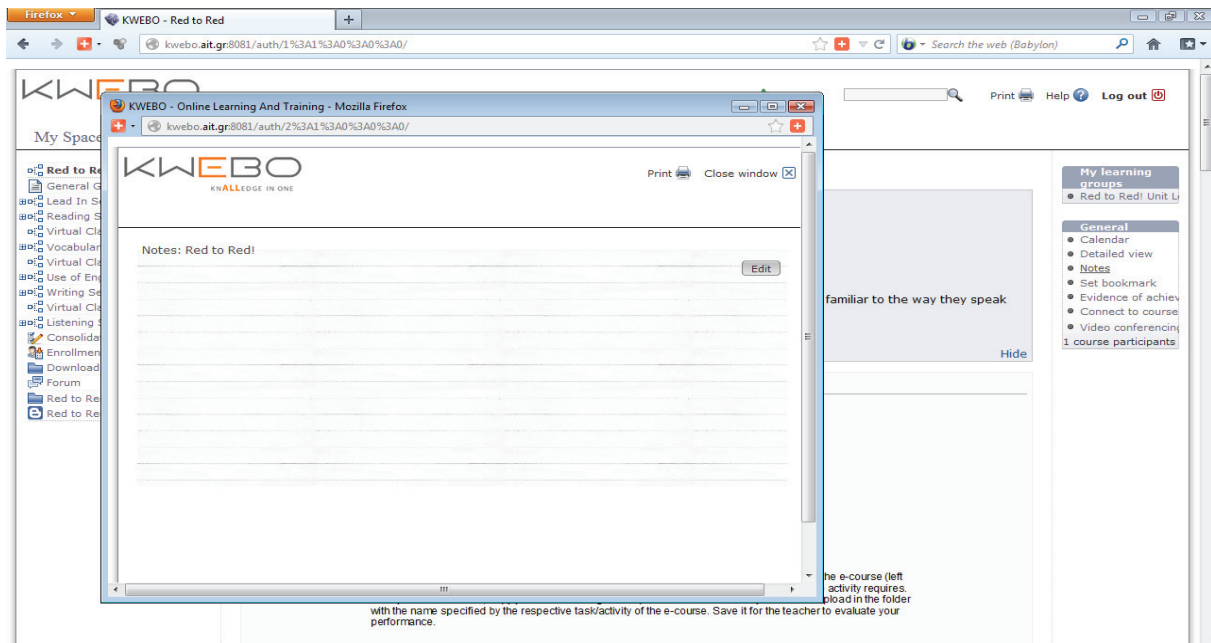


Figure 6: Use of supplementary e-course services provided by KWEBO: an example of the note taking feature.

Another example is the e-course Calendar tool. Teachers, experts and learners within the specific learning community can take advantage of the calendar tool to schedule meetings, conferences or even virtual class sessions, as shown in Figure 7.

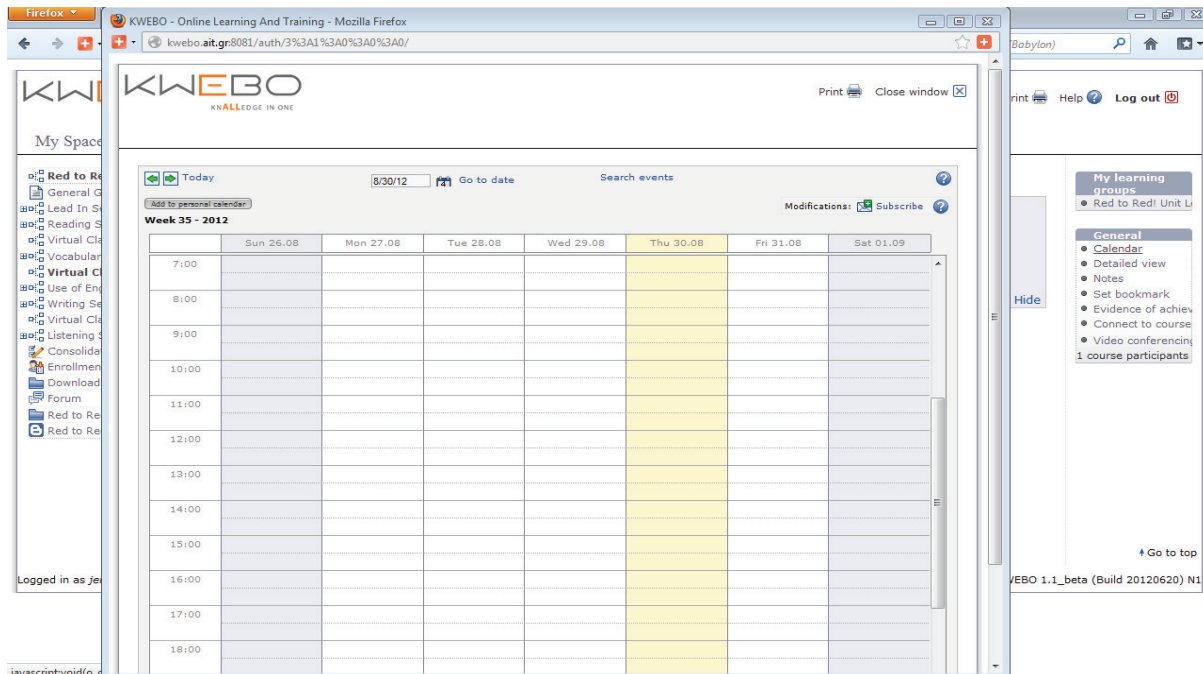


Figure 7: An example of the e-course calendar tool to schedule events and notify the respective learning community.

As already mentioned, all standalone self-learning activities in each e-course are complemented with group task activities, provided by KWEBO, which encourages interaction with other online users via facilities such as chat, video conference, forum, blog and wikis creation, as the Lead In group task activities of Unit 1 e-course shown in Figure 8.

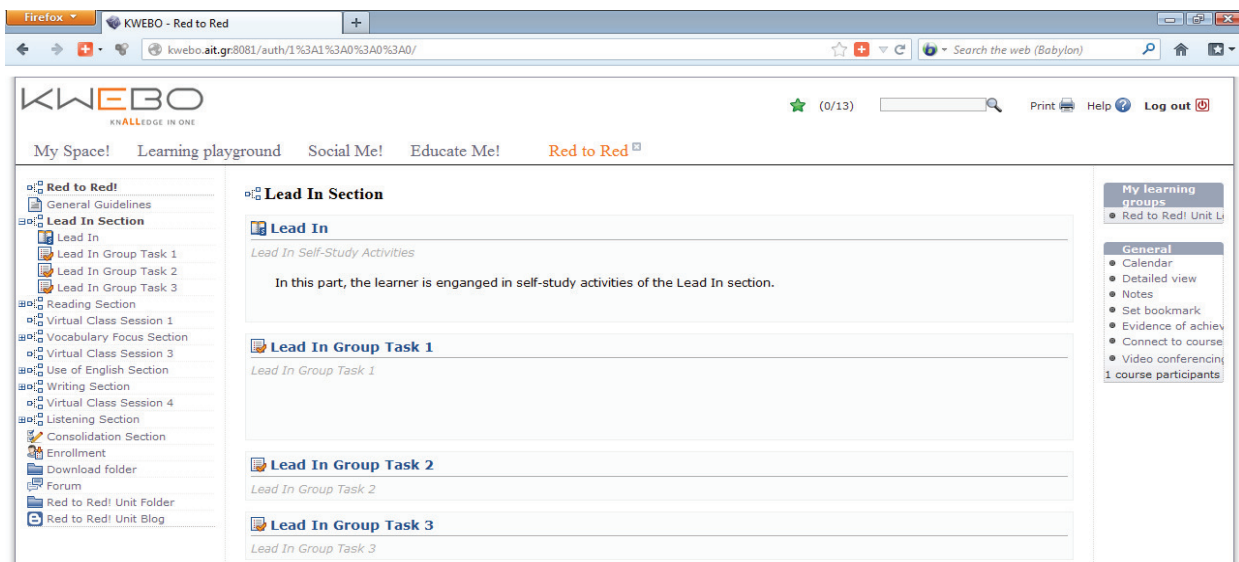


Figure 8: An example of the complementary Group tasks feature in the Lead In Section of Unit 1.

**International Maritime English Conference
IMEC 24
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Learners can view the group task activity, proceed to upload their answer for the assignment. After the evaluation by the teacher, an assessment score is provided, as shown in Figure 9.



Figure 9: An example of Lead In Group Task activity of Unit 1, with its different sections, provided by KWEBO.

KWEBO supports a variety of assessment activities, many of which are automatically evaluated, based on correct answers inputted by the course/activity author during the development phase, as shown in Figure 10, for a multiple choice assessment activity.

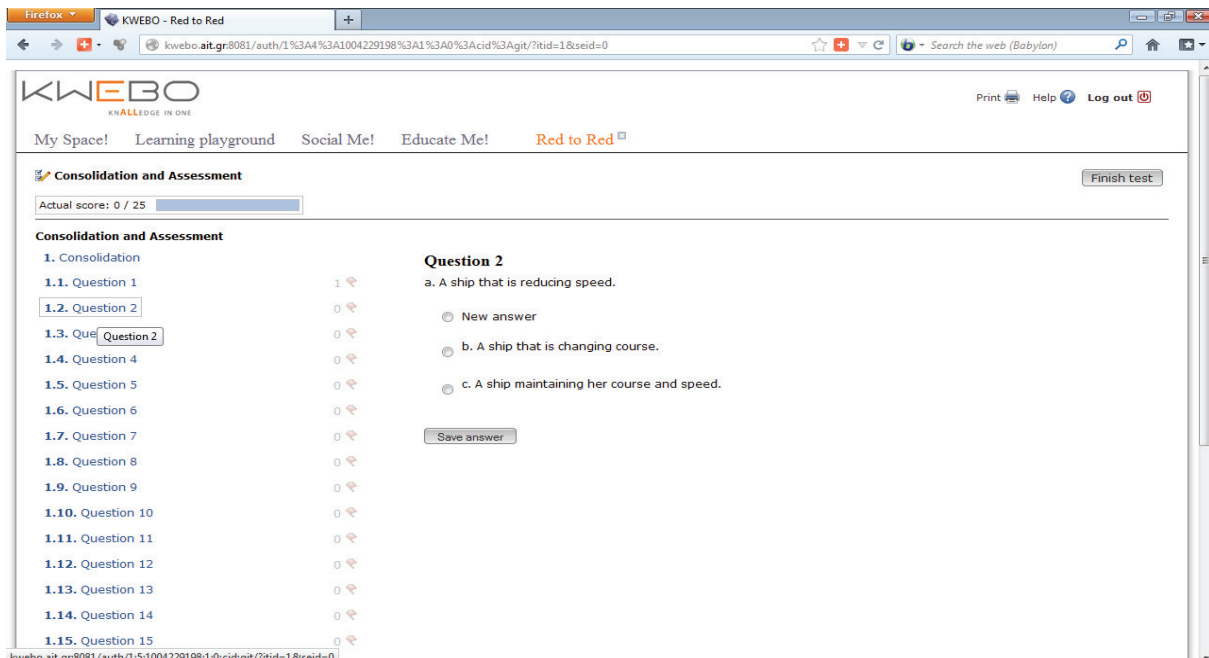


Figure 10: An example of a multiple choice assessment activity in Unit 1 which is automatically scored by KWEBO.

In virtual class activities within KWEBO and the CAPTAINS e-courses, teachers are encouraged to invite Maritime experts from their countries to share their expertise with learners via the virtual class tool of KWEBO allowing video-conferencing, chatting, presentation sharing, desktop sharing, presenter switch and whiteboard. Discussions on the thematic module or more specific real life safety issues in the maritime context are encouraged between learners and experts. The virtual class sessions can be recorded and included later in the e-course in the form of recorded webcasts for any interested learner, and for future use and sharing.

6. CONCLUSIONS & FUTURE WORK

The CAPTAINS project nearing to its end has led to significant outcomes and concrete results with respect to Maritime English Teaching and Learning, including: i) the definition of novel learning approaches to teach maritime English, that are based on scenarios, experiential learning and problem solving methods, tackling the communicative approach in language learning and focusing on the intercultural dimension of the latter, crucial for Maritime English teaching in multi-national crews, ii) the design and development of digital e-courses following the guidelines dictated by the novel learning approaches and exploiting the latest technological advances in interactive rich media educational multimedia, software simulations, e-learning 2.0 systems and virtual learning environments, iii) the initiation of the creation of the 1st online Maritime English learning community, hosted in AIT's e-learning 2.0 system, KWEBO, and accessing the CAPTAINS developed e-courses. Future work, beyond the project end, will include expansion of the vibrant and dynamic Maritime English learning community, extension of the respective e-courses or addition of newly designed and developed e-courses in related subject areas, focus on the full exploitation of 3D interactive virtual simulations and learning environments targeting to boost the experiential and communicative learning modes. The basis for all these has already been set.

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