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Using Task-Based Instruction to Foster Clear Communications on Chinese Ocean-Going Vessels

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Abstract

English as a working language is very important on ocean-going vessels, and poor communication is one of the causes of major disasters. In order to foster the students' communicative competence, we applied task-based instruction theory into the design of English for Specific Purpose (ESP) instruction, shifting our instruction from teacher-centered to learner-centered. This paper explored the principles and procedures in task-based language teaching and applied them to ESP learning, especially in Marine Engineering English classrooms in a Chinese vocational institute.

Keywords: communication, task-based instruction, ESP, Marine Engineering English

1. Introduction

1.1. Importance of Good Communication in the Transportation Industry

Vague or indecipherable communication in the transportation industry can lead to tragic consequences. Bhatnagar (2006) wrote, "Many incidents and accidents in civil aviation have been attributed to human factors and the most prominent of these factors is miscommunication" (p. 1). Indeed, a primary cause of aviation disasters is miscommunication (Halsey III, 2013).

In an investigation of marine disasters over a seven-month period, it was found that one in five shipwrecks and almost one in three injuries to ship personnel were due to poor communication (McCallum, Forsythe, Raby, Rothblum & Slavich, 2000). Recently, when the supply ship *Maersk Detector* ran into an oil derrick, investigators concluded that the accident was primarily the result of poor communication (Transportation Safety Board of Canada, 2011).

1.2. Addressing the Problem of Poor Communication

The purposes of the 2010 Manila Amendments to STCW (the International Convention on Standards of Training Certification and Watchkeeping for Seafarers) included addressing miscommunication on the seas and establishing baseline communicative competence for all crew and ground personnel. However, the problem of communication can be quite challenging, especially among international crews who may speak different languages.

This paper described the design of a communication program to educate crews of Chinese maritime vessels using task-based instruction in English. With the introduction of the concept of task-based instruction in the 1980s, the goal of English instruction has shifted from the language structure to focus on the function of language. In other words, this has meant a shift from a focus on what is being taught to a focus on what is actually being learned. Task-based instruction purports to integrate real skills with meaningful use of language.

The paper begins by presenting the procedures and principles of task-based English for Specific Purposes for multi-lingual crews on international vessels. We then describe an example of task-based English for Specific Purposes instructional design. This information may aid in the design and implementation of task-based teaching in English for Specific Purposes environments.

2. Literature Review

2.1. English for Specific Purposes (ESP)

At the Japanese ESP conference in 1997, Tony Dudley-Evans, co-editor of the *ESP Journal*, clarified the definition of ESP, giving an extended explanation of ESP in terms of "absolute" and "variable" characteristics as follows (Dudley-Evans, 1997):

Absolute Characteristics of ESP

1. ESP is defined to meet specific needs of the learners
2. ESP makes use of underlying methodology and activities of the discipline it serves
3. ESP is centered on the language appropriate to these activities in terms of grammar, lexis, register, study skills, discourse and genre

Variable Characteristics of ESP

1. ESP may be related to or designed for specific disciplines
2. ESP may use, in specific teaching situations, a different methodology from that of General English
3. ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be for learners at secondary school level
4. ESP is generally designed for intermediate or advanced students
5. Most ESP courses assume some basic knowledge of the language systems

Anthony (1997) claimed that ESP designed for adult learners in a professional work situation, might use a different methodology from that of general English.

2.2. Task-Based Learning Theory

2.2.1. Definition of a Task

Willis (1996) noted "Tasks are activities where the target language is used by the learner for a communicative purpose (goal) in order to achieve an outcome" (p. 23). A task is "a goal-oriented activity in which learners use language to achieve a real outcome. In other words, learners use whatever target language resources they have in order to solve a problem, make a list, do a puzzle, play a game, or share and compare experiences" (p. 53).

2.2.2. Definition of Task-Based Learning

According to Richards and Rodgers (2001), "task-based language teaching refers to an approach based on the use of tasks as the core unit of planning and instruction in language teaching" (p. 223). Willis (1996) pointed out "Task instructions can be adapted to provide opportunities for practices of the different skills your learners need: e.g., beginning with spontaneous exploratory interaction or writing individual notes or reading a text prior to doing the task, and then planning an oral (or written) public presentation of the task outcome " (p. 4).

Such tasks in the context of marine engineering can include visiting the shipyard representative, creating a plan of action, or calling customer service for help. Assessment is primarily based on task outcome (in other words, the appropriate completion of real world tasks) rather than on accuracy of prescribed language forms. This makes task-based language learning (TBLL) especially popular for developing target language fluency and student confidence. Instructors adopted the task-based language learning to directly connect to real-life situations.

TBLL consists of the pre-task, the task cycle, and the language focus (Willis, 1996).

3. Principles, Procedures and Practice of Task-Based ESP Instructional Design

3.1. Principles of Task-Based Instruction Design and Practice

Nunan (2004) proposed seven principles for task-based learning: scaffolding, task dependency, recycling, active learning, integration, reproduction to creation and reflection.

Brandl (2008) mentioned eight principles for the design of communicative language learning and task-based instruction: use tasks as an organizational principle; promote leaning by doing; input needs to be rich; input needs to be meaningful, comprehensible, and elaborated; promote cooperative and collaborative learning; focus on form; provide error corrective feedback; recognize and respect affective factors of learning.

For purposes of teaching Marine Engineering English, we considered the principles explicated by Nunan (2004) and Brandl (2008) and from them, derived four general principles.

3.1.1. Principle 1 Organize Instruction around the Task Itself

To teach about the construction of an alternating current generator, for example, in addition to using pictures, animation and flow diagrams, tasks of an appropriate degree of difficulty are designed to pertain specifically to an alternating current generator. By applying their knowledge to the specific situation-at-hand, their performance can be readily assessed. To assess each student's degree of mastery, a "Skill Assessment" Table 1 can be constructed.

Table 1. Skill Assessment

Number	Skill	Result of assessment	
		yes	no
1	Can read, spell and comprehend the commonly used vocabulary, phrases		
2	Can comprehend and translate the instruction book in English		
3	Can finish the task like multiple choices, gap-filling, reading comprehension and translation in the text book		
4	Can orally describe the construction and working principles of the generator and compile the operating rules of the parallel operation of the alternators.		

Brandl (2008) advocated that "Task-based instruction as a model of syllabus design has an emphasis on performance. Achievement is measured based on whether or to what extent learners can successfully perform the pedagogic and real-life tasks. It faces the challenges, which have to do with task choice, task difficulty and sequencing" (p.11).

3.1.2. Principle 2 Learn by Doing

Task-based learning requires simulation, which has been recognized by some educators as a fundamental aspect of learning (Long & Doughy, 2011). Only through trial, error and modification, can students learn to distinguish between clear, concise messages and vague, potentially misconstrued messages.

An engineer who cannot discern a problem by listening to a crew member's account of it will have grave difficulties in trying to solve it. Thus, it is necessary in the classroom and lab settings to simulate real-time activities with real machines. When teaching about fire prevention, then, it is necessary to bring fire extinguishers to the classroom, discuss their type, usage and applications, and to simulate a fire. This would allow students to learn how to locate a fire, alert the crew, and extinguish it.

In making out a repair list, a routine requirement for ships, actual documents obtained from shipping companies are used to show the structure, sentence patterns, commonly used phrases, and vernacular of ship repair. Rather than just study these features, however, class time should be devoted to allow students to actively use the language.

3.1.3. Principle 3 Emphasize Comprehensible Input

The concept of "comprehensible input" is important because humans tend to remember only what they will use. "The best methods are therefore those that supply 'comprehensible input' in low anxiety situations, containing messages that students really want to hear. These methods do not force early production in the second language, but allow students to produce when they are 'ready', recognizing that improvement comes from supplying communicative and comprehensible input, and not from forcing and correcting production." (Krashen, 1981, p. 6-7). A deep exposure to specific English patterns, chunks, vocabulary and phrases in the various contexts allows students to get used to how language is used under real conditions of work. An assortment of materials would be appropriate for both reading and listening: books, videos, CDs, tapes, online sources, etc. and these materials should be as authentic as possible.

However, the concept of "comprehensible input" means that exposure to new vocabulary and concepts must be meted out in such a way that is not overwhelming to the student. If words and sentences are too academic and the sentence structure is overly complicated, progress may be slower. Students build knowledge about the equipment, operation, and management of a ship over time, so learning should be structured in a way that each new layer of learning is built atop established knowledge.

3.1.4. Principle 4 Integrate Cooperative Learning

In task-based instruction, students are organized in small cooperative teams. They work together to exchange information, work towards a goal, and report their progress on what they have done. The students are expected to not only be receptive to input, but also productive. Participation of learners and performance mastery should be continually monitored.

3.2. Procedures and Practice in Designing the Instruction

To aid instructors who wish to design effective ESP instruction for Marine Engineering English, we present a six-step instructional design process. These steps will guide instructors in creating

meaningful learning experiences tailored to the characteristic of their learners and the demands of the working environment.

3.2.1. Step 1 Needs Analysis

ESP workplace syllabus planning should reflect the needs of the students as well as the needs of the business (Lockwood, Jordan, & Kunda, 2002). Information is gathered through diagnosis of the needs of the workplace. The needs analysis is vital for achieving accurate input analysis and ensuring that the training is valid.

In a typical job analysis, a particular job is characterized by people who currently work in the job. For example, in 2012 a survey of Chinese shipping companies was conducted on the English language requirements for their employees. Twenty-six questionnaires were delivered and twenty-six pieces were received, among which one was invalid. Shipping companies were state-owned, joint ventures, or private in Jiangsu and Shanghai. Most companies, irrespective of ownership, proposed high requirements for employees for their communication skills in English and blamed poor communication skills for problems that cropped up during inspections. Among the 26 respondents, 23 reported they require that crewmembers understand bridge's orders and communicate with Port State Control officers, and 13 reported that they require that crewmembers communicate with foreign shipowner's representatives and fellow crewmembers.

Although shipping companies would like to hire seamen for their proficiency and experience on the ocean, seamen who lack the language proficiency necessary to communicate with foreign seamen and especially, with Port State Control officers, do not get hired. As a result, potential crew members are usually interviewed in English by the ship owner's representatives. Typical questions relate to the specific knowledge of duties, responsibilities, management, safety, and general knowledge of sea-going vessels. Potential crew members must read ship instruction books in English, and write a variety of documents in English, for example accident report, repair list, application form for bunkering, and other documents. Obviously, ship owners place a great emphasis on knowledge of job responsibilities as well as speaking, writing, reading and listening in English.

Students are the center of the task-based instruction design. Students may have educational needs or professional needs. For example, for a nonnative-English speaking marine engineering student, he studies marine engineering to read textbooks and articles in English, to write accident reports, to listen to lectures and participate in group discussion. These are educational needs. However they will also use English to communicate with bridge officers and Port State Control officers, write test reports, and complete application forms for stores and spare parts. These are professional needs. For this purpose, an interview or survey can be conducted to know about the students' prior knowledge of the topic area, attitudes toward content, educational and ability levels, learning strategies, learning interest, their goal setting, level of motivation, their suggestions for the ESP teaching and what help they need from the teachers.

3.2.2. Step 2 Goal Setting

Goal setting is also a critical part of the instruction design. In Marine Engineering English, goals are set for skills and knowledge. Table 2 provides an example of possible goals and subgoals in Marine Engineering English.

Table 2. Goal achievement

Model 1Read the instruction book of the ship's main propulsion system in English	
Vocational skill Can read the instruction book of marine diesel engine in English with aid of dictionary	Knowledge requirement: ◆ Identify various kinds of marine diesel engine ◆ Know about the ships and machinery, working principle of diesel engine, the several operating systems, shafting, new marine diesel engine technology ◆ Can know about new modern technology, like common rail Skill requirement: ◆ Can comprehend long and complicated sentence structure ◆ Can read the working principle of ships, machinery with the aid of dictionary ◆ Can talk about the construction, operating system in English ◆ Can read and write the maintenance record book for the marine diesel engine ◆ Can understand the instruction from the bridge officers and carry out the orders related to marine diesel engine operation

3.2.3. Step 3 Material Selection

Instructional materials must be suitably authentic. For example, multimedia used in teaching new crew include the topics of life-saving, bunkering, ship repair, ordering and checking the stores and spare parts, fire fighting in the engine room, International Ship and Port Facility Security drill, Port State Control inspection and so on. These materials, related more closely to learners' needs, "provide a link between the classroom and students' needs in the real world" (Brandl, 2008, p.12).

3.2.4. Step 4 Instruction Strategies Development

Dick, L. Carey and J. Carey (2009) advocated that instructional strategies should align properly with goals. Before launching into instruction, we have to identify the skills necessary to carry out a task. ESP is most effective when it makes use of the methodologies familiar to the student. For example, for Marine Engineering English, a problem-solving methodology and case study approach work well because these protocols approximate the actual day-to-day situations encountered on the sea.

3.2.5. Step 5 Task Design

Willis (1996) identified three phases in ESP task design: pre-task, task-cycle, and language focus.

In the pre-task phase the instructor introduces the topic. Brainstorming useful topic words and phrases is a good way of involving students in this phase. In this phase, the teacher will present what will be expected of the students in the task phase.

In the task cycle phase learners use language in varying authentic circumstances and are exposed to others using it. During the task phase, students often practice performing the task in small groups.

The language focus phase includes further practice and analysis of performance. Learners get repeated exposure to the language from the task cycle and have a chance to focus on form and ask questions about language features.

To demonstrate the operationalization of the three phases of task design, we provide examples of the types of activities that could be incorporated at each phase to introduce a task-based instructional approach to learning about the "Alternating Current Generator". The reading material referred to below is in the course book Marine Engineering English Reading (Wu, 2013).

A. Pre-task phase: Introduction of the topic

1. Read the instruction book
2. Study the picture of the power system (see Figure 1)
3. Make a list of key terms related to the power system
4. Study the picture (see Figure 2) of the marine diesel generator
5. Make a list of key terms related to the power system

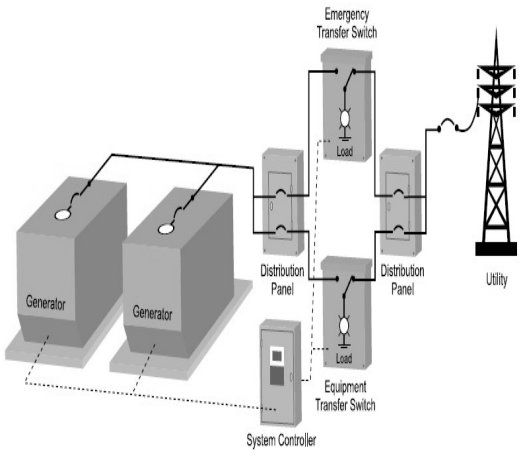

Figure1. Power system

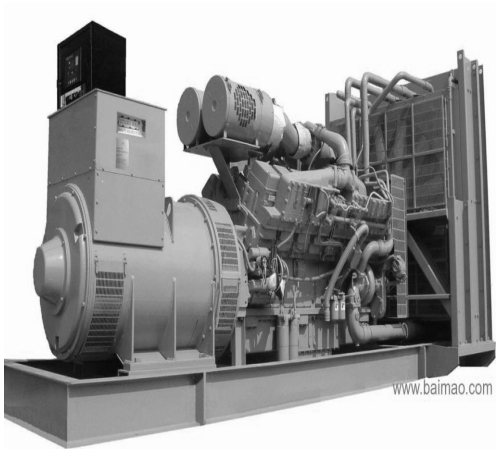

Figure 2. Profile of generator

B. Task cycle: Use language in varying authentic circumstances; practice the language

1. Read the text "Alternating Current Generator" and summarize its main ideas. Read your summary to a peer. Listen while your peer reads his/her summary.
2. Listen to an audio recording about the parts and function of the alternator while filling in missing words in a text (see Figure 3). Then use the information in the recording/text to write three questions about the alternator. Ask your questions of a peer, and answer the questions written by your peer.

The complete electrical plant on board is made up of power__1__equipment, a distribution system and power__2__devices. Alternating current has now all but replaced__3__as the standard supply for all marine installations. In an alternating current generation system, a coil of_4_rotating in a magnetic field produces a current. The current can be brought out to two slip rings. Carbon brushes rest on these rings as they rotate and collect the current for use into an external _5_. Switchboards are used to distribute electricity among various equipment. Electricity is used for the_6_drive of many auxiliaries and also for deck machinery, lighting, 7_, and air conditioning equipment.

Figure 3. Text to accompany audio recording

3. Working in a small group, create a written description of the working principles of the generator in small groups. One person in your group will read the description to the entire class. Students will be invited to ask questions of each group.

4. Watch as the teacher gives a demonstration of the working principles of the generator, the wire connection mode, the frequency of the generator, and the voltage control mode. Working with 1-2 peers, repeat the demonstration.
5. Work in pairs, and try to write the procedure of paralleling operation of alternators. Exchange the procedures with peers in the group.

C. Language focus: Further practice and analysis of performance

1. Given a picture of an alternating current generator, work with a peer to label its parts.
2. Practice grammars used in the text while discussing in a small group how an alternating current generator works and common problems found in the generator.
3. Practice attributive clause and passive voice while discussing in a small group how an alternating current generator works and common problems found in the generator.
4. Practice the word formation present in the text, like compound word, antonyms and V.+er/or..

3.2.6. Step 6 Assessment System Design

An assessment can be directed to a task, a unit, or the whole course. Still we take Item 3 Model 1 "Read instruction book about marine electrical system" as an example for teacher and self-assessment.

Table 3. Assessment criteria (for classroom)

Items for assessment	Basis for assessment	Weight
Knowledge	1. Understand the working principle of the alternating current generator 2. Know about the power distributing equipment	50%
Skills	1. Can read the instruction book in English, and compile the parallel operation operating procedures 2. Can analyze long, complicated and difficult sentences 3. Can describe, orally and in writing, the working principle of alternating current generator and requirements for the parallel operation of alternators 4. Can ask and answer substantive questions about course materials and class conversations related to the task	30%
Participation	1. Can take active part in the classroom activities like group discussion, whole class discussion, role play, individual work and after-class activities 2. Can think actively and creatively in class 3. Show good cooperative teamwork 4. Can cooperate the teachers in performing the task	20%

At the beginning of the course, the teacher alerts students to the assessment instrument. Every time a student is assessed, results should encourage student feedback and allow for questions and assessment revision.

Students are encouraged to engage in self-assessment, and to assume the responsibility for the quality of their own work. Students can judge whether the teacher's assessment is reasonable or not, according to established criteria.

In helping to determine the general effectiveness of instruction, the following factors are tracked for each student:

Group: group self assessment (40%) + teacher's assessment (60%Individual: group's score (50%) + teacher's assessment (25%) + individual self assessment (25%)

Obviously, potential employers also can assess the students' performance while taking part in internship program in the companies.

Finally, the actual high-stakes tests should be used to gauge the effectiveness of instruction. For example, potential crewmembers are required to take the reading, writing, listening and speaking tests administered by the China Maritime Safety Administration. Students who fail the exam cannot serve as part of the crew.

4. Conclusion

TBLT (task based language teaching) is a meaning-centered methodology. According to Ellis (2003), such meaningfulness provides an authentic, purposeful, and intentional background for using language. TBLT enables students to receive feedback from the teacher and peer students and such a feedback provides a more relaxing and less threatening condition for learning a new language (Sarani & Sahebi, 2012). Using task-based instruction can help students improve their practical communicative competence and equip them with problem-solving abilities to adapt to the future real work environment (Meng, 2009).

This paper described the procedures and principles of task-based ESP for multi-lingual crews on international vessels and discussed an example of task-based ESP instructional design in action, specifically for a Marine Engineering English course. The effectiveness of this customized instruction will be evaluated over time, according to student success rates on high stakes competency exams, real-time job performance, and employer satisfaction.

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