An investigation into the Use of Multiple Choice Questions in Maritime English Tests – RZ Confidence Validation: Paper 2 - with Specific Test Questions Relating to Maritime English

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Abstract

This second paper on the same subject uses the validation method described in the previous paper for the use of 'Multiple Choice Questions' in specific test questions used in Maritime English competence-based testing. As stated in the previous paper the described methodology can in fact be applied in the validation of multiple Choice questions in any other tests developed for subjects other than Maritime English. Furthermore, the methodology can be used in 'true or false' type questions or similar types of testing. The methodology is based on the one developed by Professor Ziarati in 1981 for the testing of the knowledge of ship officer cadets at Highbury College when he noticed that some students often guessed the answers in some cases. The method he developed not only deterred guessing but also offered an opportunity for students taking these type of tests to inform the test developer/setter as to whether the test was easy, average or hard and identify which question posed the greatest challenge. This approach then enabled the test developer/setter to learn from the feedback received and make sure the future tests developed are more balanced and fair.

The context

This second paper is written as an independent paper for ease of use and referencing. To this end, some of the content has been copied from the first paper (Ziarati. 2018).

In developing competence-based tests in the subject of Maritime English for ship officers in the past, often two options were considered:

1) Review of the Job specification of the ship officer for whom the rest is designed and developed for, to ensure Relevance, Scope and Validity. These latter terms mean that the content of the test question/item is relevant, that is, it is in line with the jobs they are/will be doing with a 'scope' that encompasses the core of their duties and at a depth 'valid' to their status viz., cadet, officer or senior officer;

2) Inclusion of peripheral subjects of interest to ship officers such energy management on board of vessels or in ports in addition to content outlined in 1) above. Examples of these

were given in the first paper. The idea was that ship officers through their competence assessment regime of their core subjects which is directly related to their job functions are expected to be competent in doing their job as outline in IMO STCW, hence no need to relate the test content always to their job specification and hence also include test questions/items on related subjects, such as ship pollution, environment protection and so forth, which are more generic topics and would add value to their education and training. Including subjects such ship energy management could help them to opt to become responsible for ship energy efficiency team and help to safe energy or reduce harmful emissions into atmosphere.

As was the case the current context of teaching and assessing Maritime English has been determined by the latest amendments (Manila, 2010) to the original International Maritime Organization (IMO) International Convention on Training, Certification and Watchkeeping for Seafarers, known within the Maritime community as the STCW-78 Convention [1]. These amendments were made in response for the need of international standards in training seafarers towards acquiring practical skills and competences in addition to professional knowledge.

The shift to the competence-based approach to teaching and learning Maritime English implies that the goal of assessment should be communicative competence. The IMO recommends in the newly revised (2015) IMO Model Course 3.17 Maritime English that "Tests of English language competence should aim to assess the trainee's communicative competence. This will involve assessing the ability to combine knowledge areas of English language with the various language communication skills involved in order to carry out a range of specific tasks. Assessment should not test the trainee's knowledge of separate language areas alone." [2]

Assessing linguistic competence in Maritime English adequately and reliably at internationally recognized levels has been brought to the attention of the IMLA-IMEC audience in the recent years. Research work in Maritime English Training (MET) studies suggests that numerous attempts and efforts to address the complexity of the issue and explore the process of developing assessment instruments have been made throughout the years. Research into existing tests of Maritime English (both teacher-made and commercial) suggests that each training institution or company uses its own resources, experience and understanding of how and when Maritime English competence should be measured and how results should be interpreted and used. This, in turn, shows that despite the major breakthrough of the Maritime English competence Yardstick [3] as a standard it hasn't been applied properly and consistently yet.

Furthermore, little is known about the extent to which assessment literacy of Maritime English teachers and providers has been the focus of any specific training and monitoring. The main focus of teacher training seems to be the methodology of teaching English for Specific Purposes (ESP) and acquiring the specific subject matter knowledge from the maritime professional working environment. An ESP teacher is often a course and task designer, a teacher, a researcher and evaluator and his/her role "... becomes more pronounced as the teaching becomes more specific" [4]. It is generally assumed that as

teaching and testing go together and are inherent parts of the educational process in any content area, ESP teachers have the necessary knowledge and skills to produce valid and reliable tests.

Most online maritime English tests extensively use Multiple Choice or True or False questions; this is because in online testing systems the use of Multiple Choice or True or False questions are common place and often inevitable. However, considering the IMO requirement that these tests should assess the competence of the test taker over a wide range of knowledge and skill areas these types of tests have not and will not satisfy the stated competence assessment validation of the IMO without a safeguard to ensure test takers are deterred from guessing.

Methodology

As safety at sea is of crucial importance [5], it should not be put at risk by the random production and use of unreliable and invalid tests of Maritime English proficiency. All decisions made in the process of test development and implementation should be based on solid testing principles.

If the knowledge of cadets and seafarers in Maritime English is to be competence based then there are primarily two choices. One to take the arduous path of the efforts such as those made by a collaborative project involving partners from six countries and is a core outcome of the EU-funded Erasmus+ MariLANG Project; producing an assessment methodology as a result of extensive research work in the field of language testing and experience in teaching and assessing Maritime English; or developing a validation practice for 'Multiple Choice' or 'True or False' questions as reported in Ziarati (2018). The information about the former approach will be described in detail in the project reports and in their website www.marilang.eu in near future. This paper primarily describes a methodology based on MarTEL [6,7,8] Phase Tests incorporating also the MariLANG findings as well as allowing use of Multiple Choice or True or False questions validated by the RZ Confidence Validation methodology.

The following are sample test questions/items typically used in MariLANG test bank.

By 21.00 UTC a low pressure system will move

A. 48°N, 47°W, 987 mb

B. 62°N 25°W, 987 mb

C. 48°N, 47°W, 962 mb

D. 62°N, 25°W, 962 mb

How confident are you that your answer is correct? 100%? 75%?, 50%? Or 25%?

Was this question easy, average or hard? Please comment.

By 23.30 UTC winds will occasionally

A. become stronger

B. become weaker

C. change direction

D. move to the low centre

How confident are you that your answer is correct? 100%? 75%?, 50%? Or 25%?

Was this question easy, average or hard? Please comment.

The RZ Confidence Validation statement viz., How confident are you that your answer is correct? 100%? 75%?, 50%? Or 25%? And fairness question namely, 'How confident are you that your answer is correct?' did not deter some test takers in a pilot study guessing but when the students realised that this a competence based test and that if they are not 100%, sure even if they answer the question correctly, they will not get a mark and in fact if they are only 75% sure they get -0.25 and, for 50% and 25% they get a -0.5 and -0.75 mark respectively; this did deter them from guessing the answers. If they answered incorrectly and that they were 100% sure or 75% sure these will also be applied as penalties. The penalty system for an incorrect answer or reward for a correct answer can been adapted by the test developer, and they can decide the scheme that they consider reasonable, that is to say that they can be assured that competence is tested fully and the RZ Confidence Validation is primary there to identify specific learning issues and above all make sure students do not try to guess the answer to a 'Multiple Choice' or 'True or False' question.

The provision of asking 'Was this question easy, average or hard? Please comment' ensures that feedback is obtained on the degree of difficulty or ease the test taker has found a particular question.

Read the short text below and decide whether the following statements are TRUE (T), FALSE (F) or NOT GIVEN (NG).(2 marks)

> All the islands surrounding Hulls Cove on the NE side are high and wooded, and have no prominent marks. When approaching from southward, Bold Island is easily distinguished because of its bare rocky slopes. Some shelter from southerly winds is afforded by the breakwater. Depths to the N of the breakwater decrease from between 3 and 4 m to less than 1 m on the N side of the harbour. SE winds raise a heavy swell and vessels should not attempt to ride out a gale from that direction.

1. The islands in the vicinity of Hull Cove are easily recognizable due to their landmarks.
   _____

2. When SE winds are blowing, vessels should avoid the north side of the harbour.
   _____

How confident are you that your answer is correct? 100%? 75%?, 50%? Or 25%?

Was this question easy, average or hard? Please comment.

Read the short text below and decide whether the following statements are TRUE (T), FALSE (F) or NOT GIVEN (NG).(2 marks)

Notice to Mariners

Swona Light. Temporary alteration of character, position and elevation.

The Commissioners of Northern Lighthouses hereby give notice that on 6 June 20xx the above light will be discontinued and replaced by a Temporary Light exhibiting the following characteristics:

Flashing every 8 seconds; Duration of flash 0.4 seconds

The Nominal Range will remain unchanged. The Temporary Light will be exhibited from a framework tower located 60 metres to the south-south-east of the present structure and at an elevation of 20 metres.

3. The distance from which the light can be seen will be the same.
   _____

4. The height of the Temporary Light will be 60m.
   _____

How confident are you that your answer is correct? 100%? 75%?, 50%? Or 25%?

Was this question easy, average or hard? Please comment.

Read the short text below and decide whether the following statements are TRUE, FALSE or NOT GIVEN (NG).(2 marks)

Tidal streams off the entrance to the port are shown on the chart. There are strong eddies off the entrance. Mariners in small vessels should exercise caution and avoid entering when eddies move in an anti-clockwise direction.
Local weather: the port is sheltered from N winds; SE winds cause a swell to set into the bay. Occasionally, between November and March, strong S winds, lasting

approximately 10 days, may be experienced. These strong winds cause a rough sea and hinder port operations.

5. Small vessels may anchor in strong winds.

   _____

6. In December, the weather may affect port operations.

   _____

How confident are you that your answer is correct? 100%? 75%?, 50%? Or 25%?

Was this question easy, average or hard? Please comment.

The idea of this article is not to embarrass the ship cadets or officers but to ensure they are deterred from guessing.

Conclusion

Developing a valid and reliable Multiple Choice or True or False test is a challenge faced by many instructors, teachers and test developers. While we are not discouraging test developers or instructors/teachers to develop or use proven methodologies such as those developed by MarTEL and more recently by MariLANG partners, the application of the RZ Confidence Validation makes guessing almost impossible hence enables the use of Multiple Choice or True or False questions in a competence based test. It also provides a means of identifying learning issues both in terms of the test takers knowledge or skill in a particular area of a given subject or more and in indentifying a specific learning difficulty in a particular question. Decisions related to one aspect may have serious consequences for others [9].

Being fair to all test-takers demands that all steps in test preparation are carried out professionally, this is because decisions made are about real people and fairness has to be the issue if a test is to be fit for its purpose.

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