

Importance of Standards in Testing Technical English for Engineering Students of Tamil Nadu

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ABSTRACT Employability of engineers has become questionable in the recent years. One of the reasons for poor employability skills is the lack of communication skills in English. Teaching of English language is not augmented by testing of English. The technical English syllabus for engineering students advocates teaching of all the four language skills but does not specify testing of these language skills. After teaching the skills, testing is done on reading and writing skills in English. Listening and speaking are not tested in the first year of study. After testing is done, grades are awarded based on the marks the students score in the examination, but the grades are not valid or reliable as the grades do not relate to the ability of the student per se. The grade places the student according to the criterion for pass in Technical English but does not shed light on the language ability of the student. This paper highlights some of the issues in testing Technical English for engineering graduates, and the advantages of examinations if standardised.

INTRODUCTION

Employability of engineering students has been startling. A survey by a pioneer institute in the year 2011 about the alarming percent of employable engineers set a tip-off to improvise the communication skills of the engineering students. The fact was reaffirmed in 2016 by various institutes that surveyed the employability of engineering graduates. A national employability survey as reported on Jan 25th 2016, in an article in the Hindustan times affirms that over 80 percent of engineers are unemployable. One of the reasons quoted is the lack of communication skills in English language. The number of engineering students enrolled under the AICTE for technical education has increased but the quality of the engineering graduates has dwindled over the years.

One of the premier technical institutes in the country, Anna University had designed the curriculum for English for Engineers considering the specific needs of engineering students. The syllabus focuses on task-based communicative

language teaching and includes teaching of all the four major skills, Listening, Speaking, Reading and Writing (LSRW skills). The crisis arises in testing of these skills.

“A well-designed examination system can monitor and measure achievement and occasionally aptitude, provide performance feedback to individual districts, schools and students, inform educational officials about the overall strengths and weaknesses of their education systems, and suggest directions for change and improvement” (Heyneman and Ransom 1990: 180).

The large-scale end-semester examination of Technical English at the tertiary level for engineering students is complex. The end-semester examination is criterion referenced and grade-based. The marks obtained by the student translates into grades he/she has received and do not specify the ability of the student. The results do not provide a valid and reliable assessment of the language ability of the student. It merely states if the student has cleared the technical English examination and places him/her in a grade based on the mark he/she has obtained. The examination does not ascertain what level of understanding or technical reading or writing ability the student will showcase in his/her work place. The examination will be valid if it measures what it intends to measure. The scores in the examination have to be reliable. The exami-

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nation has to be designed and developed according to norms set for assessing language ability thereby enabling the student, teacher, the stakeholders, policy makers reliant on the performance of the student in the examination.

A test measures performance, but the results imply the test-taker's ability (Douglas 2000). Technical English for Engineering is designed to teach English specifically to students of engineering and make them proficient in technical writing and reading skills thereby making them employable. The communication skills of engineering students are improvised through listening and speaking activities. The ability of engineering students is tested formatively and summatively to face real-time challenges and make them industry-ready.

Objective

The paper aims to bring out the issues in end-semester examinations for technical English so as to make the examination more standard in terms of validity and reliability.

Background for Teaching and Testing Technical English

The main purpose of introducing Technical English for students of engineering was to improve and enhance the employability skills of professional students. To meet the demands of the industry, Anna University, Chennai initiated the English for Specific Purposes (ESP) program in the late eighties to address the needs of the engineering students from rural and disadvantaged backgrounds. Technical English for engineering students was recommended by the university and a curriculum framed to meet the language needs of the students in the work place. The ESP curriculum stressed the need for improving the communication skills of the engineering students. Improving the communication skills would give the student better prospects of job and also help him/her in non-test situations like the workplace. The syllabus follows the task-based approach to language teaching.

Time and again, stakeholders insist on revamping the curriculum and syllabus of Technical English. This has been done on regular intervals, with no avail. The failure may be due to improper needs analysis done or lack of time in

revamping the syllabus. The syllabus has technical reading and writing along with listening and speaking skills. The skill or ability of the student is not assessed as it needs to be assessed. Many teachers do not know what ability of the student is being tested and how to test it. According to the syllabus, Listening, Speaking, Reading and Writing (LSRW) skills have to be assessed both formatively and summatively. All the students are administered paper and pen tests in the items prescribed in the syllabus with no inclination as to whether the items will suit the language needs of the students when he/she goes to the workplace. This lacuna in understanding the needs of the employer is not addressed either in the syllabus or in the testing of Technical English for engineers.

Teaching and testing are integral to the development of language skills. Not much thought is given to assessment of these skills or abilities that the students are meant to have acquired at the end of their study. Only reading and writing skills are assessed both formatively and summatively. Speaking and listening skills are not assessed in the first year of study. In most colleges, listening and speaking are not taught in the first year of study due to inadequate infrastructure.

Testing of English (Introduction Only)

Testing of English requires the test to be valid, reliable and practical. The test should measure what it intends to measure. The test must have both inter-marker and intra-marker reliability. The administration of the test needs to be conducive to all students taking up the examination. In Tamil Nadu, paper and pen tests are administered for all the 500 odd affiliated colleges of Anna University for testing reading and writing skills of the students. The question paper is uniform for all the affiliated colleges. In administering these large-scale end-semester examinations, huge resources are spent. The test is administered with only 25 students in each classroom to avoid malpractice. Then the answer scripts are evaluated by teachers who teach Technical English. The grades correspond to the marks the student has scored in the examination. There are no set parameters for assessing subjective items in the question paper. The objective questions reveal the understanding of the student and not the language ability. The

grades do not explain the ability of the student in terms of reading or writing.

METHODOLOGY

General Analysis of the paper

An analysis of the question paper (Regulation 2008) revealed that the test items lack focus; it is poorly worded and is ambiguous in certain places. For example: in the recent end-semester question paper, Part-A, Qn. No.9. Complete the following sentences: (2x1=2) reads,

- (a) If some IT parks are established, _____.
- (b) _____, the price of commodities would have gone up.

The instruction does not specify the student to use appropriate “if conditionals” to complete the sentences.

The end-semester examination does not actually measure the language ability of the student. It gives a pass or fail in the examination and if a student fails, he can apply for re-evaluation of his answer script. Most students clear in re-evaluation of the answer scripts. If not, he is asked to reappear for the examination. The teachers feel that the question paper for Technical English is too easy for the students and pass percentage is very high. Though the pass percent is high, these students do not secure a job mostly due to communicative issues the students have in the English language.

Methodology for Item Analysis

To understand if the testing done is perhaps too easy, an item analysis was done to understand the item difficulty. An item-analysis was carried out in Part-A of the end semester Technical English I question paper. Samples were randomly selected from Anna University, Chennai and Easwari Engineering College, Chennai. The tests were unannounced and the samples were tested only in the Part-A section (objective – cloze, match, open-ended answers). Three types of samples were chosen.

- First year engineering students (first semester) (40)
- Students in the second year of engineering (40)
- Students in the final year of engineering (40)

It was a sudden test with no prior information to the students. The results interpreted

showed that the item difficulty of the items were zero for almost fifty percent of the test items. Any test item that has zero item difficulty or .10 item difficulty has to be obsolete in the next test. But it was found that some of the test items were repetitive in the end-semester examination. Even students in the first semester could answer almost seventy percent of the items. After the test was administered, a general feedback from the students was taken. The students felt that the test items were at a basic level. They also stated that they could not understand certain instructions in the test. Few students did not find the test useful. Few felt the grammar component was boring as they have same items tested in their school level.

Each item in Part-A of the question paper was analysed. A table for all the items answer by the forty students who undertook the test in Part-I is given (Table 1) (Table: Item Analysis). Item facility (IF) for the ten questions in Part-A was found. Then the Item Facility for the top ten students, Item Facility upper (IF_{UPPER}) and the Item Facility for the bottom ten students, Item Facility lower (IF_{LOWER}) was found. The Item Difficulty (ID) for each item was found by subtracting the (IF_{UPPER}) with the (IF_{LOWER}).

$$ID = (IF_{UPPER}) - (IF_{LOWER})$$

General analysis done on Part-B of the question paper revealed that the reading passage is very basic in nature and sometimes repeated. Sometimes there is more than one correct answer to the choices given. There is no comprehending the passage for answers. One of the reading passages had asked the students to give a one-word answer for the sentence given. There was a recommendation by evaluators to consider it as ‘out of portion’ and award marks. The paragraph writing passage expects the students to describe technically a communication tower without an accompanying picture of the same. This is just an example. In an end-semester examination the students were asked to describe the gas-stove and mention its uses. This question carried 16 marks. The question did not justify the marks. Jumbled sentences have two or three right ways of ordering and some evaluators stick on to one format given in the answer key. This means that the student is given the benefit of doubt. These are a few discrepancies pointed out but there are more.

In the end-semester examination, the pass percentage of English is higher when compared to other subjects but in placements, students are not placed owing to poor English skills either in terms of communication skills or writing skills. There is a gap in the teaching, learning and testing process.

The syllabus was revamped in 2013 and the question paper of the end-semester examination had added an element of sunrise so as to avoid “teaching for the sake of examinations”. The suspense was not in the items tested but in the framing of the items. Different types of assessing the item were introduced. Still the exams are predictable and the instructions are poorly worded. The ability of the student is not assessed. Students pass the criterion based examination easily. The grades do not reveal the ability of the student. It certifies that the student has an ‘A’ or ‘B’ or any other grade in Technical English with absolutely no reference to the ability of the student. More importantly, a student who has scored an ‘A’ may or may not be proficient in the language. He may get an overall ‘A’ in Technical English paper, but his ability in reading or writing has no mention in the grade he has scored. A stakeholder who sees the grade has no clue to the students’ ability in English.

The objective of testing Technical English is mislaid as the test is designed with no intentions of measuring what it intends to measure. The end-semester examination is not valid as it does not measure the ability of the student and it lacks reliability. Examiners are either ill-equipped or unaware of examining the language ability of the student. The large scale examination conducted at the end of the semester for all the 500 odd engineering colleges that is affiliated to Anna University, Chennai is quite difficult to administer practically. Not much thought is given in either designing or developing the test that measures the language ability of professional students. The syllabi clearly states that “*To inculcate the habit of reading and writing leading to effective and efficient communication. Write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic. To help them develop their reading skills by familiarizing them with different types of reading strategies. To equip them with*

writing skills needed for academic as well as workplace contexts.”

The syllabus for technical English has components that are technically related but the teaching does not sync with the syllabus. Teachers are not trained in teaching ESP (English for Specific Purposes). So though the syllabus mentions the components to be taught, the teaching is merely exam oriented. Teachers train the students to clear their exam thereby failing to make them industry-ready. A needs analysis has to be done for the teaching and learning process. Though teaching and learning Technical English is defined, the testing of Technical English is not specified. The paper and pen test at the end of the semester focuses on testing grammar, few lexical items and other formal writing skills. The learners are assessed formatively and summatively. The formative assessments are done thrice in a semester and the twenty percent of marks given as an average of the three tests. The results of the formative tests are added to the summative assessment done at the end of the semester. The examination conducted at the end of the semester is conducted for 100 marks. Eighty percent of the end-semester examination is added to the twenty percent of the formative assessments. The grades reflect the sum of both formative and summative assessments conducted during and at the end of the semester. Formative assessments are paper and pen tests conducted for either 50 or 100 marks. The reading and writing skills are assessed and marks are awarded to the students. Whether the student will use the technical language skills he acquired in the classroom is not proven.

Needs Analysis

“The process of deciding what and how to test is generally known as needs analysis and may be more or less formalised and rigorous, depending upon the test purpose and scope” (Douglas 2011). Dudley-Evans and St. John (1998: 121) represented the stages in the ESP process namely, needs analysis, course design and importance of evaluation in teaching and learning process. The process of evaluation for Technical English proves complex as there are many branches of engineering. The difficulty arises in deciding what ability to test to ensure that the students are industry-ready. How to test the ability of the students assuming the situations

they will be in. Industries expect engineering graduates to basically understand the commands in English, interpret them, execute them, troubleshoot problems, report and also instruct in English. The ability to speak and write in English is pivotal for placement in these companies or organisations. Therefore the purpose of the test is to measure the understanding of technical jargons in English. Testing Technical English is precise only if proper needs analysis is done with the industries or the probable employers. The probable employers can disclose the level of language ability required by the fresh engineering graduate to understand the technical issues, the range of duties that will be assigned to them and the people whom they will interact on a daily basis. It is important to collect data and sample of the actual language use before developing a language test to measure the language ability of these students. The needs of various branches of engineering should be considered instead of administering a test that is common to all branches of engineering, as student of civil engineering may not need the technical jargon of a marine engineering student. If care is taken to develop a test before administering the test, the test will be valid and will yield results that will influence high-stakes decision-making.

Scoring and Evaluation

The scoring of the examination must be given more importance. The scoring pattern and the measurement of the ability of the student should be uniform even when scored a second time. The reliability of the scores should be consistent with the examiners too. The evaluation done at a particular point of time must be consistent even if evaluated in another period of time. For improvising the reliability of the tests, examiners must be trained to assess the students' on their language ability and a standard pattern of measurement should be adhered to.

Item banks need to be created with the help of the stakeholders (probable employers), experts in language testing, examiners and language teachers. Item analysis should be done before the administration of the test. Though this is a herculean task, and is quite expensive; designing and developing the test with the help of item banks will become easier in the future.

This will ensure to measure the ability that is intended to be measured.

CONCLUSION

Testing of Technical English for engineering students will prove beneficial if standards are followed in designing and developing the test. Moreover the test has to measure language ability needed by the industry. Examiners have to be trained in increasing marker reliability. Evaluating criteria has to be set for evaluating subjective items. The grade has to reveal the language ability of the student in terms of reading or writing, listening or speaking. Then there may not be a need for other additional tests to assess the language ability of the student when seeking placements or for higher education.

Advantages

Improving the standards of examination by having a valid and reliable test requires investigation and planning. It is time consuming but the exercise once done with the massive hordes of teaching faculty members, experts from industry and language experts, the tests will be standard. The main advantage of these tests is a student if given an 'A' grade in Technical English; the grade will denote that the student is

- i. Efficient in using the language in the work place
- ii. Effective in technical jargons
- iii. Infer the information and execute duties effectively
- iv. Instruct and interact clearly

"Language assessment is a complex process and stakeholders require clear, accurate information covering every stage of the process from descriptions of the exams themselves to administrative instructions and information on interpreting candidates' results" (Brian 2013).

The parameters for measuring ability of the language are agreed upon and the test is then developed. Policymakers and students pursuing higher education can rely on the scores as an exact and accurate assessment of the candidate is done.

RECOMMENDATIONS

It is recommended that needs analysis be done to identify the needs of the industry so as to make the student industry-ready.

Question papers can be analysed in detail and in future, test items that are carefully scrutinised and piloted to be included thereby improving the validity.

Teachers to undergo training for accurate evaluation of answer scripts increasing the reliability of the tests.

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