

Multilingual administration of engineering examinations

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Multilingual administration of examinations is commonly practised in many countries. However, there are special problems in dealing with specialized fields such as engineering. The purpose of this commentary is to set out some of the issues that have come up in our experience. Although the Sri Lankan case is considered here, the situation is common to engineering education in many poor countries and some of the translation issues pertain even to Japan and China. We therefore call for a formal study of these issues by engineering educators, especially since professional educators in education departments may not be aware of or be even exposed to these issues, particularly of equity in examinations.

In multi-cultural societies found in Sri Lanka, multilingual administration of examinations is common. For example, the national, high-school level general certificate of education (GCE) examinations at the advanced and ordinary levels are held in Tamil and Sinhalese languages, the former being the language of the minority and the latter, the official language. The papers are set in Sinhalese, marking schemes agreed upon by the ministry and the papers are then translated into Tamil. Translators need to be experts in the subject and the source and target languages, i.e. they need to be experts in three areas. The number of teachers and students runs into several tens of thousands. The language is simple and essentially non-technical. Books, with a large enough market to support them, have been written and printed by the government, along with glossaries. There is now general agreement on the process and delivery.

There is ample literature¹⁻⁴ on non-technical translation and it is a growing field. A journal devoted to the subject, *Translation Journal*, has been in circulation for about six years now. However, the issues pertaining to the translation of examinations, though increasingly in the public eye following some mishaps at examinations, are rarely studied by professional educators. Based on mishaps in the Sri Lankan public examinations conducted by the government for school children, the Ceylon Tamil Teachers' Association has pointed out some of the equity issues that arise when an examination is translated:

(1) In textural comprehension papers, when the original question involves poetry in the source language, it is not adequately communicated in the target language.

(2) When an IQ test draws on the culture underlying the source language, students answering in the target language may not be culturally at ease or conversant, and as a result may not be able to fare so well. Examples vary from questions involving Buddhism posed to Tamil students or flowers belonging to particular Sinhalese regions which Tamil students are not familiar with. To give a concrete example, we take the 1969 Sri Lankan GCE advanced level examination which was the last time the examination was conducted for regular students in English in addition to Sinhalese and Tamil. The original English-medium question in the applied mathematics paper referred to a 'pontoon bridge'. A pontoon bridge consists of cylindrical barrels tied together with their axes horizontal. The question required the depth to which a barrel would go under water to be computed. Many Tamil- and Sinhalese-medium students who had never heard of a pontoon bridge before had the barrels with their axes vertical, so that the water displaced by each barrel (instead of involving a complex integration as expected), was trivially computed by the required depth times the circular cross-sectional area. English-medium students, many of whom had been brought up on *Fleetway Picture Library War Comics*, were aware of pontoon bridges from these picture-books and they were able to answer the question correctly.

(3) A word with a unique meaning in the source language might be rendered in the target language as a word with two meanings.

On account of these much publicized problems at the school level, the issues have increasing awareness, if not understanding. In Sri Lanka the role of translation in mutual understanding between

warring communities has been recognized. Vibhasha, which trains translators, is a major project undertaken by the Centre for Policy Alternatives, an influential Non-Governmental Organization in Colombo. The authors serve on Vibhasha's Core Advisory Group for Science and Technology and have been working for the past two years on creating a glossary for engineering and science.

Special situation with regard to engineering

However, the field of translation that has not been adequately broached upon is technical translation, particularly of examinations, a field that is neglected by the fact that translation studies have not been sufficiently taken up by engineers and scientists. In many countries, it is common for technical education to be in the English medium, whereas schooling is in the local language. In Sri Lanka, the local languages are Sinhalese and Tamil. Here, education at school was by compulsion in the local languages, with a commitment to carry the same policy into the universities. The arts faculties of the university system entirely and the science faculties in large part, have switched to the so-called mother tongue. Together they form and involve very large numbers in the various universities and were able to effectively change over.

The engineering faculties, numbering three, and cumulatively admitting about 900 students per year, have not been able to switch over. The reasons have been practical – for only 900 students in all the specialities and Tamil and Sinhalese media together, there are no authors to write such books and publishers to print them. Invariably, engineering departments are short of staff and it is just not feasible to conduct courses in two media.

Engineering in the Tamil medium is even more difficult, because the market cannot support textbooks for fewer students. Besides, because of the civil war, very few Ph D-level Tamil engineering staff members remain in the country. As such, teaching in Tamil is not possible. (The civil and electric power engineering departments have adequate staff in Sri Lanka, since, it is difficult to find jobs in the West after a doctorate in these fields.)

As a result, engineering has always been taught in English. However, since the switch-over to English was sudden for all students from high school to university, there were some attempts to repeat the lectures in Sinhalese and Tamil during the first year; but these were abandoned when the staff crisis deepened as the country deteriorated with ethnic conflict. However, examinations have been administered in all three languages in the first year and even the second year in some cases. In engineering and more so in the sciences, when such an alternative provision is made, students do attempt to answer in English but often, switch to Tamil or Sinhalese, so that the answer book is bilingual.

Background: Examination translation at the university

The process of setting university level examination papers is as follows. The instructor (in local parlance, lecturer-in-charge) sets the paper in English, gives it to a moderator who checks for accuracy in terms of syllabus and time, translation and upon being passed by the moderator, translates the paper into Sinhalese or Tamil. The paper is then given to a member of the faculty. Educated Tamils having fled the country in large numbers and there are few Tamils on the faculty. Translation is therefore often done by a member of another department who might not be too familiar with the topic. The uneven loading on Tamils is worsened by the fact that every paper has to be translated into both languages, whereas there are much fewer Tamils to share the same quantum of translation work. The translation itself is not checked by a moderator for want of translators and because the moderator would usually know only English and his own language. Due to the laborious process of paper-setting when the translation is done it is almost time for the ex-

amination. After the examination is over it is the time for grading (or marking). The examiner marks only those answer scripts that are in English or his mother tongue. The problem of finding a competent Tamil translator that we encountered earlier usually does not apply to finding a Tamil grader/marker, since Tamil students invariably answer entirely in English.

The government (i.e. the UGC) has encouraged trilingualism by offering a language allowance for those faculty members establishing competency in English, Tamil and Sinhalese. But the liberal policy encouraging multiculturalism has failed. It turns out that many Tamils pass the Sinhalese language examinations, while the reverse does not happen. As a result, the language allowance that mainly Tamils benefit from is not implemented – except at the regional Tamil universities in the northeast, where ironically there are no Sinhalese students. The matter is further complicated by a ruling that passing any language examination does not by itself qualify one to grade science examinations in that language, and that one must have studied science to a serious level in that language and learnt its nuances, before being able to grade effectively in that language.

Problems and call for formal research

The problems we have encountered are as follows and are often peculiar, especially to engineers and scientists. Unless we engineering and science educators study these issues ourselves, they never will be addressed and resolved.

Technical terms

The Tamil and Sinhalese languages, though very ancient and culturally rich (Tamil is one of the oldest languages spoken without a break), have not been widely used in modern science. As a result, technical terms do not exist and thus have to be created. As mentioned, this has not been done properly at the university level in science and engineering. Students and staff use the current English word in the local language in casual discussions. However, to write the English word in a formal examination paper is considered philistine because (i) it exposes the local language as lacking in natural and modern terms and (ii) foreign

words cannot always be written in the local alphabet because the local language might lack the flexibility of the English alphabet (a flexibility lost through choosing an accurate pronunciation system) and might even violate local grammar rules.

The issues that then arise are as follows:

(a) Since the English word is the one naturally used in conversation, should we write the word in English in a Tamil or Sinhalese examination paper where it appears (as the Japanese seem to be doing in their Japanese language engineering and chemical journals), without worrying about the rules of grammar?

(b) Should we naturalize a word?

(c) Should we create a new word in the local language? This appears to be the way it is going in Sri Lanka. But there are problems. First, there being multiple faculties, each seems to be creating a different new word. Attempts have been made to put technical folk together and glossaries have been created. But then we find, at least in the case of Tamil, that the Tamils in India (through the agency of Tamil Nadu Textbook Society, Anna University and The Tamil University among others) have created their own words⁵. Second, like with English and Latin/Greek, the word form in Tamil or Sinhalese might be a common one and the borrowed form of the same word from Sanskrit the elegant form suitable for print. As a result of this elevated status of Sanskrit, new creations draw from Sanskrit rather than Tamil and are not well-known. This problem is exacerbated at the school level where the government hands over glossary-creation to language scholars who dig up old words and Sanskrit words that no one has ever heard of. Third, a word we newly create seems artificial and unknown to the students who, as mentioned, normally use the English word and often do not understand the translations painstakingly made. And fourth, is it really necessary to find a new use for an ancient word as we do? If it is a new word, why not adopt the English word as our new word? There is an irony that we find irresistible and must point out. Consider the Tamil word created and used for signal in Sri Lanka, *saihahi*. It is of Sanskrit origin and by beginning with s instead of ch violates grammatical rules anyway. But most importantly, it appears to be an Indo-European word of the same etymo-

logy and meaning as the word sign. That is, in trying to avoid a European word, signal, that violates our grammatical rules, we have introduced an Indo-European word that has all the faults of directly writing signal without the accuracy of the word signal.

Because of these problems, examination translators follow the practice of writing the English version in English letters within brackets. It is a practice that not all agree with, but allows the students to overcome the problem posed by a newly created artificial word.

Equity: Acronyms

An acronym well known in English, when translated into Tamil or Sinhalese may not make sense to the students. So we render the acronym as the translation of the complete phrase. This raises the issue of equity in examinations. A student writing the paper in English must know the acronym, whereas a student writing it in Tamil or Sinhalese has it spelt out for him. What does it do to equity in examinations?

Equity: Gender neutrality

Tamil is naturally gender neutral, whereas English is not. Should a non-neutral phrase in the original English be deliberately rendered non-neutral in the translation? How does it impact equity? If we deliberately translated preserving the gender bias, the translation would read unnaturally.

Equity: Differences in translation

Since the translations are by different persons who often cannot read each other's language, there are invariably differences that affect equity. One translator might be true to the original in English and preserve complex phraseology in the translation by maintaining clauses and sub-clauses. Another might break up a complex question into small sentences. Would the differences bias the question papers in the different media?

Equity: Grading

The scripts with answers in a medium that an examiner does not know, as men-

tioned, are handed over to another person who sometimes might not be equally a subject expert. Sometimes an examiner might not be proficient in his own language. Such examiners are unlikely to admit their ignorance to avoid being seen as colonial. How does this affect grading? In a divided society like in Sri Lanka, Tamils are a minority and, operating in a larger culture, they try to efface themselves. Our research into numbers at the Open University of Sri Lanka shows that almost all Tamils in the Faculty of Natural Sciences answer in English and do not use the facility to answer in their mother tongue, whereas as many as 25–50% of the Sinhalese use the facility to answer in Sinhalese, in a survey of eight courses at the second year of university. A much larger percentage would answer in English and give some of their answers in Sinhalese, when they are unable to find the correct expression in English. A similar phenomenon is seen at the engineering faculty at the University of Peradeniya, but to a lesser extent as the students are able to switch to English much faster. Tamil engineering students at Peradeniya openly and consistently state that they look at the translated question only when they are confused about an English sentence and use Tamil only for the structure of the sentence to ensure that their interpretation of the English original is correct. One explanation for the lack of use of the facility to answer in Tamil is that Tamil students, knowing that their language is effectively marginal in the Sri Lankan context, try quickly to switch over to English. Another explanation is that Tamil students do not wish to be identified as Tamils in a faculty where almost all examiners are Sinhalese.

Practicality and medium equity

A paper is carefully structured to be answered in three hours. Recently, a second year paper on applied electricity ran into 17 pages with translations of only the text, the figures not being repeated. Because of English having new words, a single word in English often was a phrase in the translation, as a result of which the translations were each more than twice as long as the original and took longer to read. If students choose to

read the paper in two languages, how does it affect the time assigned?

Type-setting

The staff setting a question paper in English do not always have the facilities to type the translations and even if they did, would not be fast at it. As a result, translations are hand-written by many examiners and were leading to several corrections in the typed version. Due to lack of time, translations are rarely checked and lack the integrity of the original. Again equity issues come up.

Conclusions

Multilingual administration of examinations involves special technical issues peculiar to science and engineering and fair administration requires careful planning and forethought. Engineering and Science Educators must study these issues, if they are to be formally addressed and resolved.

It is our personal view that the process of offering an alternative medium to English in science and engineering education may not really help the students.

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