Teacher Training for Internationalization: Issues and Recommendations regarding Diversity and Classroom Interaction

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Abstract
Globalization and the information age require new ways of education. We share our ideas as well as practical points for faculty development to facilitate this change. The background of this paper is a “Workshop for Lecturing in English” series, where besides the change of language, we have also been advocating a change from unidirectional to interactive classes at the same time. Like in the workshop, we introduce a number of problems, solutions, and benefits that teachers and students reported in surveys, in addition to some of our own experiences. An interesting finding was that both industry and students ask for more interactive lectures, whereas teachers seem to be more worried about knowledge transfer. This connects to the three main challenges we see in FD: understanding the difference between teaching and learning, giving up the feeling of being in control, and the challenge of designing meaningful assessments.

Keywords: Faculty Development, Cultural Diversity, Education Methods, Teaching in English, Active Learning.

1. Introduction
This paper focuses on faculty development (FD) initiatives at the School of Engineering (SE) of The University of Tokyo (UTokyo) aimed at supporting internationalization. We draw from various sources, including open-ended surveys conducted prior to our FD workshops, surveys with Japanese and international engineering students, and issues raised by faculty who have experience lecturing to mixed international and Japanese classes, including ourselves.

Before thinking about what and how to internationalize, it is important to recognize that there are different perspectives on the meaning of “internationalization”, including:

- “Internationalization at the national/sector/institutional levels is the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of higher education at the institutional and national levels” [1].
- “The spread of Western institutions, cultures and practices” [2].

Whereas the first definition offers no implicit criticism of internationalisation, the second frames the process in terms of cultural imperialism. This difference in view needs to be weighed and considered when trying to effect change in academic and other contexts. We would argue that the unthinking transplantation of external practices into any context likely to cause righteous resentment and eventually fail, but that internationalisation is a process of borrowing, testing, rejecting and implementing.

Our FD programs, which are at an early stage, have two goals. One is supporting faculty to teach to diverse audiences, in English or bilingually. This includes teaching English for classroom use, but also raising awareness of cultural differences, and especially sharing best communication practices. It is an example of internationalization in the first sense.

The second goal is to promote active learning. This could be seen as a way of internationalization in the second, negative, sense, because curricula at many Western universities are shaped around project or problem based learning (PBL), Conceive – Design – Implement – Operate (CDIO), cooperative learning, and similar methodologies, whereas there is a prevailing stereotype that Asian academic environments prefer one-way lectures, rote learning, and a ‘mastery of knowledge’ [3]. This view, however, is not fully accurate, as we will discuss later in this paper.

We will first provide some background to our FD goals—teaching diverse audiences and making lectures more interactive—and then show how they can actually be leveraged to reinforce each other. We also share a number of practical comments and tips, mostly obtained from surveys among faculty and students of the department of Civil Engineering, which has the longest history of English education in the SE, and offers 100% of grad lectures in English.

2. A need for faculty development
The main point of education is not that teachers teach, but that students learn. Faculty development helps teachers to bridge the gap between what is taught and what is learned by sharing best practices and making teachers familiar with various teaching methods and techniques that have been proven to increase the efficiency of knowledge and skill transfer. However, since each student, each teacher, and each subject are different, it is important to keep this diversity in mind and search for a mix of tools and methods that work for each specific case.
3.1 A need to teach diverse audiences

The SE of the UTokyo can in some sense be considered highly internationalized, with already a third of all graduate students in Engineering from overseas (mostly from China and Korea), and this number is still expected to rise. The School also formulated an ambitious ‘Bilingual Campus Plan’ to ‘create a global environment on a Japanese campus’. On the one hand this should prepare Japanese students better for the globalized future, and on the other hand it should attract more international students and help them find employment in Japan after graduation. The implementation of this plan is taking many forms, but one goal is for up to 70% of all graduate lectures to be given in English by the end of the decade.

In contrast, the number of foreign faculty is very low, and therefore all lectures are overwhelming provided by Japanese (local) academics. They will need intercultural understanding skills, make their lectures more relevant to international students, and they will have to balance between the different internationalization objectives for the Japanese versus the international students. In this aspect, internationalization is still a challenge, especially because faculty support and development within the SE has been, to date, insufficient.

We use the term “diverse audiences” to move beyond the stereotypical differences in language or national cultures [4] and recognize the individual differences and needs of all students. For most international students, neither Japanese, nor English is their native language. International students have often completed their undergraduate studies at a different university, with different academic culture, different theory/practice focus, and have different background knowledge. And what may be interesting to someone who wants to work in Japan after graduation, may not be useful to someone moving (back) to another country after graduation. Also for local (Japanese) students, their (English) language skills, stance towards learning, and personal objectives vary more than one may be aware of when giving traditional lectures. Acknowledging and addressing this diversity is important for effective education.

3.2 A need to make lectures more interactive

Now information is ubiquitous and anyone can find quality study materials on the internet, the traditional role of the university in society as a provider of quality materials is endangered. In the information age, society needs people who can quickly find and absorb new information, people who can flexibly adapt their existing knowledge and skills to new situations, and most importantly, people who can effectively communicate with others to solve challenging problems collaboratively [5]. Renowned universities around the world have acknowledged this change and are reforming to become an effective learning community, and provide guidance to help students to acquire the skills needed for life-long learning, rather than just trying to convey factual or procedural knowledge directly. In other words, universities such as MIT, ETH and Imperial College London traditionally taught engineering in terms of a knowledge transfer approach, but in the past two decades have made considerable efforts to transform their approach to reflect the changing needs of their learners and the requirements of the job market [6].

Japanese industry also calls for such “transferable skills” in addition to a strong foundation in engineering: “Leading Japanese industrialists observe that engineers in the future will need a stronger foundation in engineering fundamentals, creativity, and synthesis, as they will increasingly be faced with the need to acquire new knowledge to address new challenges. [...] As globalization brings together people from all regions of the world in both a personal and business interaction, engineers must have greatly enhanced communication and teamwork skills. Finally, Japanese education, which historically has emphasized academics, must emphasize more practice-based learning and practical training” [7]. Such skills cannot be lectured as knowledge, but have to be nurtured through experience and reflection. Faculty will have to create such opportunities, as well as guide the students through the process. This requires a completely new set of skills from the faculty as compared with giving traditional one-directional lectures.

However, maybe the strongest call for more interactive lectures comes from the students, regardless of nationality. In a survey among postgraduate Japanese and international engineering students the majority suggested more interactive lectures. These are some direct quotations from the questionnaires:

1. More discussion, one way makes us bored and sleepy.
2. They [the professors] need to demand the response of their lectures because sometimes students can’t understand before finishing their lecture.
3. Encouraging participation in class (questions, etc.) may help guarantee the good understanding of students, as well as asking for students’ feedback.
4. Taking communication with students is more important than presenting information.
5. They have to give chance to [let us] tell more questions or opinions.
6. They don’t check whether we understand or not.
7. I feel important point in lecturing in English is organizing more communication such as discussion or Q&A since most of Japanese may not understand what the lecturer says in English less than in Japanese.
8. Rather than just giving the information, better to get students interested first. For example, give 3 possible solutions and get students to discuss it.
9. I appreciated the classes where students are asked to do a presentation, as it improves communication between students and professor greatly.

3.3 A need to bridge generations
It is interesting to note from the above that whereas the need for FD for teaching diverse audiences, and in particular “effective teaching in English”, was highlighted by faculty themselves, the call for more interactive lectures comes from two other sides: industry and the students. This gap between teachers who are mainly worried about the effectiveness of transfer of information to diverse audiences, and students who are far more concerned with the need to make lectures more interactive and engaging, in itself already warrants the need for FD.

This contrast in perspectives is also interesting from a cultural point of view, as it questions the assumption that Asian academic environments prefer a ‘mastery of knowledge’ [3] and teacher centered education [4]. The fact that both international and Japanese students ask for more interaction and active concept-checking, suggests that the cultural difference may be more generational than geographical, and more complex than an essentialist position suggests. It is likely an effect of what has already been described in the 1970s by Lorti [8], that teachers are likely to teach in the style they were taught themselves, whereas today’s “Net Generation” [9] has different needs.

This example teaches us that it is dangerous to rely on stereotypes, and that a closer investigation of the actual needs and beliefs of students is important in crafting effective courses. Osland and Bird [10] have also advocated more awareness of “cultural paradoxes”, including the notion of cultural changes over generations, and other researchers have provided counter evidence to the (East) Asian learner stereotypes and highlighted the desire for more interactive teaching styles [11,12].

3. Challenges

There are a number of challenges in getting teachers to teach in English (or in general, in a non-native language) and in getting them to make their classes more interactive. It is important to acknowledge the concerns teachers have and to discuss them, especially since many of them lie at the very basis of how we think about education. We will not produce an exhaustive list here, nor will we discuss practical issues like “my English is not good enough” or “it will take a lot of time to prepare”, although these are of course points to be taken very seriously in FD. Instead, we like to focus on three issues: knowledge transfer, classroom control, and assessment.

Some teachers are afraid students may not learn as much or as deeply. They fear that they can cover less content when they teach in English or when they add interactive sequences to their classes. One teacher remarked “[when teaching in English] I can only express 70% of what I want to say, and maybe only 70% of what I say will be understood” and another said “I don’t have the time for discussions and Q&A”. These teachers think of education very much as “knowledge transfer”. The biggest challenge here is to realize that teaching does not equal learning. Let us say

learning content = student’s efficiency × (teacher’s efficiency × teaching content + self-study), then if we can devise some new (interactive) methods to increase the student’s efficiency, overall learning may increase even when we sacrifice some teaching time.

Then there are teachers who are afraid of not being in control. In the case of lecturing in English, this comes down to a need for specific phrases and vocabulary to manage the classroom, and the ability to deal with students’ questions in an appropriate and timely manner. For interactive classes, this feeling of “not being in control” connects to the previous point, and is based on the false belief of being in control that can only be sustained because teachers give one-way lectures. However, a lot of what is lectured won’t be learned, or might even not be picked up by the students. The challenge here is to trust in the capabilities of the learner, and make the student responsible for his or her own education.

The above two points require a change of mind to a constructivist theory of learning, where knowledge is not transmitted, but built by the (“active”) learner through interaction with the materials and integrating the newly acquired knowledge with their pre-existing knowledge in carefully designed activities. This is preferable, because of its higher effectiveness [13] and because today’s student will be expected to think for themselves, pose and solve complex problems, and generally produce knowledge rather than reproduce it.” [14]. This change is sometimes referred to as turning the teacher from a “sage on the stage” into a “guide on the side”.

The third challenge we like to bring up here, is about assessment of the students (e.g., test, report, or interview). Unfortunately, this point did not appear often in the comments in the surveys and workshops, apart from the fear that students might not learn as much or as deeply after teachers change (parts of) their lecture. A very practical question would be whether, if you teach in English, the assessment should also be in English. Would this be fair to students who may understand the Engineering content, but have difficulty with the language? Moving a level deeper, we can ask what type of assessment we need after making a lecture interactive. If the reason for creating interactive classes in English was to help (Japanese) students learn technical vocabulary in English, make students better at team work, help them improve their critical thinking and communication skills, etc., then maybe the traditional assessment that only looked at the engineering content is insufficient. The challenge here is to re-think what and why we assess, and it may be hard or even impossible for a single teacher to decide this without reference to the rest of the curriculum.

4. Benefits

Changing the language or style of the lecture will obviously require some effort from the teacher, but teachers who made such changes have also reported several interesting and often unforeseen benefits. We will just pick up a few points teachers mentioned in the surveys:

- My way of discussion/explanation becomes simpler in English and this may be improving my lecture in Japanese as well.
Lecturing in English would provide Japanese teachers with good opportunities to recognize that our lectures in Japanese are often based upon implicit understandings only among Japanese. Knowing these problems would be also important for Japanese students who may have opportunities to work abroad and be in a position to explain important ideas to people who have different backgrounds.

Both Japanese and Foreign students can share the same class. I encourage students to discuss with each other when solving assignments.

It certainly keeps/polishes my English skills.

Preparation of English handouts was time consuming, but I was able to publish an English text book for it.

Japanese students never ask when I'm explaining but foreign students [who are probably used to interactive lectures at their home universities] are different. It's very good for us since I can understand how deep they understood.

In group discussions, students come up with new ideas, explanations, or examples that I didn't think of. I can learn from my students, and use that in future classes or my research.

5. Practical Suggestions
The following are a number of practical ideas and tips shared by teachers who have been teaching interactive classes and/or classes in English. We want to stress that, although these methods apparently worked well for them, every teacher, every course, and every student is different. Therefore, rather than thinking in terms of do's and don'ts, please see this list as a source of inspiration and as a starting point to try and improve the students’ learning experience.

6.1 Information transfer
- Provide the same information through different channels. For instance: Japanese text on slides, but talking in English. Or even better: visuals on slides, talking in one language, and having a handout in the other language.
- Try not to put a lot of text on slides and then read that text out loud. Exact duplicates through different channels are distracting and boring the audience.
- You can make bilingual handouts, or provide a list with translations of keywords.
- One teacher said he mixes Japanese (65%) and English (35%) in lectures, with handouts in English. In the follow-up course, when students get used to the English, they do all in English.
- Try not to put too much in one lecture. Focus on the main points, and explain them in a simple and easy-to-understand manner, rather than adding lots of distracting examples.
- Be careful not to think that your common sense is the same as the students’ common sense. This holds for international students, with different cultural and academic backgrounds, but also your “common sense” as a teacher is different from that of your students.
- Some students are very good and interested in math and physics, others in engineering practice. Covering both in class seems to attract students.
- Try not to speak monotonously, but use rhythm and intonation.

6.2 Creating an atmosphere
- Teachers often complain students don’t take initiative or ask questions, while students often complain teachers don’t invite questions. Creating an atmosphere and allowing time for questions is important (i.e., more than just asking “Are there any questions?”)
- Having students discuss in small groups and then share the group’s conclusion with the whole class may be easier for students than giving individual comments/questions in front of the whole class.
- There are different ways to look at making mistakes (this may be connected to ‘losing face’):
  - You have to make errors in order to learn
  - It is acceptable to make errors, as long as you learn from them
  - If you make errors, you still have to learn more
  - If you make errors you are stupid

Even if you have a specific philosophy, the students may have another. It is important to communicate about these expectations, and make sure the agreed philosophy is not only known, but also truly felt in the atmosphere of the class.
- Create a level playing-field. I ask Japanese students to use English, and international students use Japanese (or English if that is more difficult for them) in presentations or when they mail me their homework.

6.3 Interaction
- Try to communicate, not only speak. Ask some questions or do some exercises from time to time to check if students still follow the class. Care of the reactions.
- Even for very good presenters, keeping an audience engaged for more than 20 minutes is very difficult (think about the TED.com presentations). Divide the lecture into clear segments and interchange lecturing with activities.
- Encourage students to take initiative, but manage it. Praise and encourage weak students in particular.
- When discussing in groups, give too eager students who block out the rest a “facilitator” role where they have to wrap-up the group’s ideas and motivate others to speak.
- Trust your students. Believe in their capabilities. Their motivation will come if you show passion for the subject and enthusiasm and explain how the content relates to their lives.
- Put students in charge of some things. For instance, let them use the whiteboard for group discussions (encourage them to take photos of the board with their smartphones before you wipe it!)
- Few students seem to take notes, especially when you give them handouts. Leaving some blanks in the handouts can stimulate them to think together with you while you are explaining, and “complete” the handout.
- Don’t let discussions go on too long. Set a time and remind students sufficiently ahead when they have to wrap-up their discussions and conclude a group-opinion.
- Care for the outcomes of discussions. Give your interpretation of the points made by the students and add your own points if they were not mentioned yet.

6.4 Leverage peer-learning
- Students can learn a lot from (reflecting on) each other. Encourage discussion and collaboration both inside and outside the classroom.
- Students will not understand everything you say. This holds for both the engineering content, and information missed because of language differences. If students have time to discuss, “better” students will interpret and explain to the others. This also sharpens their own learning, since explaining requires higher cognitive skills.
- For many teachers it is not a big problem to give a 15-20 minute presentation, but a 1.5 hour lecture is hard. Splitting the class in blocs of short lectures and peer-learning activities helps both the teacher and the students.
- Hire excellent (international or bilingual) students as teaching assistant. They can add explanation or facilitate during the activities, and report back the results of group discussions or common misunderstandings, misconceptions, or other problems of the students.

6. FD Workshops
Since June 2012 we have been sharing the ideas, comments, and practical suggestions above and more in a series of FD workshops. The first one-hour workshop was held twice with different participants. Considering the feedback, we organized a similar but 2-hour workshop a year later, and in the winter of the same year (2013/14) two 3-hour workshops were held. The workshops were highly interactive, with time for the participants to share and discuss their experiences, problems, and solutions, in addition to a review of educational “best practices”, feedback from teacher and student surveys, and English speaking exercises.

A total of 28 faculty took part in these workshops. Most of the participants were experienced teachers, and about 80% had experience teaching classes in English already. When asked for the main problems they had experienced, most of the (free) answers fell in two large categories: interaction with students (don’t know how much they understand; they don’t ask questions/give feedback; no time for discussion/Q&A; etc.) and English skills (I can’t express all I want to say; I need more vocab, esp. outside my specialization; I can’t understand students’ pronunciation/intonation; etc.). The graphs in fig. 1 also confirm that, at least for most of these experienced workshop participants, the presentation/lecturing in English itself (i.e., one-way transfer of information) is not the main issue.

Several participants said they would be interested in follow-up workshops with a more specific focus, for instance on English skills, developing interactive exercises, improving slides/organization, or practicing mini-lectures. In addition to this workshop series, there are some opportunities for staff and faculty to improve their English skills and to visit an (overseas) university and participate in an FD workshop there. We plan to continue this introductory workshop series and advertise it especially among newly hired faculty, while we also consider adding some more advanced follow-up sessions.

7. Conclusion
In this paper we described the main goals of our faculty development program: helping teachers to teach diverse audiences, and making classes more interactive. In practice, there is a strong focus on teaching effectively in English or bilingually and recognizing different student backgrounds on the one hand, and a push from unidirectional lectures to student-centered education with teacher-student interaction, as well as peer teaching and peer learning on the other.

We argued that the traditional stereotypes of international students versus Japanese students or Western education style versus Asian education style may give a too limited view on the world. There are large commonalities between all students (they all study engineering, they are about the same age, etc.), while there are also large differences between students in the same stereotypical group (language proficiency, objectives, etc.). Being open to diversity and having a critical stance against the all too easy stereotyping is a first but important step in FD. One finding in particular, that a

Fig. 1: Main issues as indicated by the workshop participants

Most Difficult Points when teaching in English

<table>
<thead>
<tr>
<th>Issue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q&amp;A</td>
<td>8%</td>
</tr>
<tr>
<td>Lectures</td>
<td>20%</td>
</tr>
<tr>
<td>Discussion</td>
<td>56%</td>
</tr>
</tbody>
</table>

English Level

<table>
<thead>
<tr>
<th>Issue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can read papers</td>
<td>7%</td>
</tr>
<tr>
<td>Can express my opinion</td>
<td>24%</td>
</tr>
<tr>
<td>Presenting is fine, but teaching in English is difficult</td>
<td>85%</td>
</tr>
<tr>
<td>No problems</td>
<td>at all 7%</td>
</tr>
</tbody>
</table>

64
wish for more interactive lectures may have more to do with a generation-gap than with a geographical culture-gap, is interesting in this perspective.

We also provided a snapshot of comments and suggestions from teachers and students that reflect the challenges, possible solutions, and benefits they experienced when changing the style or language of their classes. We will continue to share such experiences and provide training to help teachers improve their courses and optimally prepare the “Net Generation” for their future in the globalized information society.

References

Biography
Jorg Entzinger, PhD, was born in The Netherlands, where he received his M.Sc. in Mechanical Engineering from the University of Twente. He graduated on the automatic calibration and control of an industrial robot using visual information. After that, he investigated the human decision making and control process of airline pilots in the visual approach to landing, for which Jorg received his PhD in Aeronautics and Astronautics from the University of Tokyo in 2010. He currently works for the University of Tokyo as research associate at the Institute for Innovation in International Engineering Education on various projects concerning globalization and increasing students’ leadership and teamwork skills, while also continuing research in the field of aeronautics. He has been developing and teaching a bilingual and interactive course for 5-30 Japanese and international students, and taught occasional classes to larger diverse audiences.

Michael Handford, PhD, is Professor of the Institute for Innovation in International Engineering Education at the University of Tokyo. He teaches professional communication skills and business and management courses to Engineers, and runs regular workshops with faculty on lecturing to mixed Japanese and international audiences. He has published in the areas of English for Specific Purposes, professional and business discourse, intercultural communication and conflictual communication. He is the author of The Language of Business Meetings, and co-author of the course-book series, Business Advantage, with Cambridge University Press. He is co-editor, along with James Paul Gee, of the Routledge Handbook of Discourse Analysis. He also works as a communication consultant at several Japanese companies.

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