Developing Direct Measures of Global Competence

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Work in Progress:
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Introduction

In an increasingly interconnected global labor market, university graduates are called upon to interact with colleagues from very different cultures. Students are put into intercultural teams, they may have job opportunities internationally, and they are likely to encounter various work environments, because, as part of today's highly mobile workforce, they are likely to have a number of different jobs over the course of their careers. Graduates must be able to reconcile the differences they encounter in norms and behaviors in various contexts, and both educators and employers increasingly recognize this demand. But, although there is broad policy interest in global competence for many different fields, there is a gap between these policy interests and the methodological tools available to assess the skills that demonstrate intercultural competence.

Broad interest in global competence for university graduates

Academics, business leaders, and government officials in the U. S. and around the world are concerned about whether new graduates entering the labor market are being prepared to participate and compete in multicultural spaces. Over the past few decades, policy analysts have noted an increased need for professional skills ("non-routine" complex communication and problem solving abilities) in the labor market along with a corresponding decreased need for workers to perform "routine" tasks (p. 1280).[2] These professional skills are closely related to the interpersonal skills that are important for intercultural interaction.

As noted above, specific fields recognize the importance of intercultural competence for their employees. In engineering, for example, the organization that accredits engineering programs, ABET, has identified three dimensions in which an engineer should be skilled: technical competence, professional competence (e.g., presentation skills), and intercultural competence. In addition, the National Academy of Engineering[11] included constructs related to intercultural competence in "The Engineer of 2020," its pivotal and oft cited report on the state of the field of engineering. The comparable European accrediting body, the European Network for the Accreditation of Engineering Education [ENAEE], calls for students to be able to "work and communicate effectively in national and international contexts"(p. 17).[6]

Methodological need

Despite the interest in intercultural competence, two methodological problems have plagued educators who wish to teach students how to interact in a multi-cultural environment. First, assessment instruments largely ask for self-reported data. Few of the tools currently in use glean information from an outside, trained observer or evaluator. Second, instruments have focused on students' knowledge and attitudes in the domain of intercultural competence. While these are

important constructs, the assessment of the actual *skills* that create intercultural competence is largely absent from the contemporary assessment toolbox.

The purpose of our effort is to develop an instrument that will assess the global competence of college graduates more directly than is currently possible. In this paper, we describe the progress we have made in this effort. Our first step has been to create a set of intended learning outcomes (ILOs), encompassing both knowledge and skills, that comprise global competence. We have also developed a set of performance indicators that align with each ILO. As of this writing, we have produced a set of scenarios as prompts for performance tasks. We are developing an associated rubric to evaluate student responses to those tasks. The result will be an instrument that contains scenarios, performance tasks, and rubrics to measure students' ability to navigate culturally complex situations. We will then gather evidence for reliable and valid interpretation of data collected from our instrument. This approach will allow educators to determine more precisely the extent to which educational experiences, both locally and abroad, contribute to students' global competence. This paper describes the process through which we are developing that assessment.

Relevant work

While assessments that answer the needs we identify are few, there are a plethora of tools that are useful to assess knowledge of and attitudes about cultural differences. These instruments are generally geared towards understanding whether an employee is prepared for an international assignment, but they all address knowledge, skills, and attitudes. Most of the instruments cited are self-assessments, looking at an individual's responses to key probes to determine his/her individual adaptability. In a few, observers do assess the individual.

The Cross-Cultural Adaptability Inventory (CCAI), for example, includes a "kit" for observer feedback, and the International Personnel Assessment (iPass, from Canada) has an interview associated with it. Assessments that are slightly more geared towards self-evaluation of competence are the Survey on Intercultural (Relocation) Adaptability (SIA, SIRA) and the Spony Profiling Model (SPM). The former has outside raters provide their assessment of the candidate's adaptability, and the latter has the individual rated by his/her colleagues.

One of the most frequently cited assessment tools is the Intercultural Development Inventory (IDI), which provides an overall picture of a respondent's comfort with and reactions to cultural differences. The authors claim that as an assessment, it is applicable across cultures and provides extensive validity evidence, as it has gone through numerous iterations in the last 15 years. It does not address a demonstrable skill, but it does address orientation (attitudes) for the following scales: Denial, Defense, Reversal, Minimization, Acceptance, Adaptation, and Cultural Disengagement. The authors suggest that intercultural understanding and reaction to differences will then translate to the ability to reconcile those differences.

The IDI does judge performance, in terms of how one's attitude changes as a result of cultural experiences, but not in what we attempt to measure—how a person's behavior changes. The IDI reflects, in a sense, how well one can understand that values are relative regardless of the culture in which they originate. (Although IDI's developers report that respondents do tend to fall into different orientations by cultures.)

Assessment of engineers' global competence

In this section, we highlight the work of researchers who focus on the global competence of engineers, as our instrument development and pilot testing is being done in an engineering-intensive institution. At Purdue University, pioneering work has been done by Jesiek and colleagues, who are piloting assessment instruments for evaluation of a specific program in which students participate in an international experience.[8] They investigated engineering students' global competence along with a set of other knowledge-based and attitudinal measures. To assess global competence, they provided scenarios to which students responded about how prepared they felt to handle the situation, and then described how they would do that. Their responses were scored with a rubric, in a similar approach to our methodology. In subsequent work,[9] Jesiek and his colleagues provide more detail on their use of an assessment tool that was pioneered by Bielefeldt and High[3] to look at how open engineers are to diversity.

The assessments described here are useful for certain purposes, but they do not provide a full picture of the skills that contribute to global competence; this is what we attempt to do. We believe our work is distinct because it goes beyond self-report to look for evidence that the student can behave in ways that are associated with global competence. (For example, can he/she communicate both verbally and non-verbally in ways that are appropriate and effective when interacting with individuals from other cultures?) We advance the field past measurement of the student's ability to simply recognize cultural differences; we attempt to assess the student's demonstrated ability to use that knowledge effectively to navigate challenging cross-cultural situations. We hypothesize there is an underlying set of capabilities that are not culturally dependent that comprise global competence and that are discernible in behavior. Our instrument seeks to assess those capabilities by asking students to perform a task that will allow an observer to see those skills.

Below we describe in further detail the process through which we arrived at our construct definitions and intended learning outcomes. We also detail the process by which we are creating our initial instrument.

Method

Construct definition and development

We defined the construct of global competency as the ability to "work and communicate effectively in national and international contexts" (p. 17).[6] To expand on this definition, we

found it helpful to draw on the framework of Trompenaars and Wooliams[13] and their work with the "Intercultural Competence Profile." These authors describe three dimensions of intercultural competence: (1) recognition, (2) respect, and (3) reconciliation. We attempt to assess students' ability to show they can "reconcile" or resolve cultural incompatibilities rather than just "recognize" differences.

We further described the construct as being comprised of behaviors identified in our intended learning outcomes (ILOs). These identify the knowledge and skills that a globally competent student should be able to demonstrate after engaging in educational experiences. These educational experiences could range from immersion in another culture, such as study abroad or internship experiences, to cross-cultural education within the classroom.

An ad hoc committee comprised of MIT administration and staff from MIT's Global Education and Career Development office (GECD) and the MIT International Science and Technology Initiative (MISTI) contributed to our first draft of intended learning outcomes. Following a meeting where committee members were briefed about existing work on this topic,[5,8] each member was charged with submitting five behaviors they believed to be present in globally competent individuals. These lists were coalesced and refined to create eight ILOs representing the knowledge and skills that a globally competent student should demonstrate. We then gathered additional input regarding the accuracy and comprehensiveness of our ILOs from administrative staff who work directly with international programs.

During our ad hoc committee meeting and subsequent smaller working group meetings with international program administrative staff, the creation of ILOs generated discussions about and required decisions regarding whether particular learning outcomes were critical to the attainment of cultural competence. For example, whereas some deemed fluency in a second language as important to navigate cross-cultural experiences, others considered rudimentary communication skills (i.e., ability to ask for directions, or say "please" and "thank you" in a second language) to be sufficient. Similarly student understanding regarding the influence of key factors such as history, economics, and political structure on technical, economic, and social policy decisions in the U. S. and abroad held various levels of importance among the ILO contributors. These discussions resulted in the creation of three additional ILOs.

The current version of our global competence ILOs includes 11 outcomes that are divided into two categories: knowledge (what globally competent students should know) and skills (what globally competent students should be able to do). The *knowledge* outcomes address behaviors such as students' recognition of differences between their own cultural values or beliefs and those of individuals in other cultures; recognition of how culture impacts professional fields in multiple cultures; and recognition of differences in the impact of history, politics, and economics on decision-making in different cultures. The *skills* outcomes address behaviors such as students' ability to communicate in other cultures, their ability to solve problems in a foreign context, and their ability to work in teams composed of culturally diverse members. Satisfactory

demonstration of these outcomes will indicate students' ability to not only recognize and respect cultural differences, but to reconcile or adapt their behavior to successfully navigate within this space.

Our final task in defining the construct was to identify performance indicators for each outcome statement. These were defined as statements of more specific behaviors that would be evident if students had mastered the skills contained in the ILOs. This work is still in progress and we will continue to identify indicators as we develop the rubrics for assessment.

An important aspect in the development of any assessment tool is gathering evidence for valid interpretation of the scores that it produces.[10] Our intended learning outcomes and performance indicators will serve as the criteria for determination of students' global competence in the rubrics that we will develop, and, as such, we must provide evidence that these statements adequately address the behaviors widely accepted as indicative of global competence. Messick[10] refers to this as content validity evidence. Thus far, we have content validity evidence to support adequate content coverage by the behaviors named in our intended learning outcomes and performance indicators from educators experienced in cross-cultural education, various literature sources,[4] and from other instruments currently being used that are reported in the literature (i.e., Washington State University[7]).

Development of performance tasks

Our next step in this project was to develop performance tasks that required student response to or participation in a scenario. The performance tasks will enable measurement of one or more of our ILOs through students' written or behavioral responses to the scenarios. The overall strategy for development of these performance tasks and the rubric by which we will measure student performance was informed by Epstein and Hundert's[5] framework for assessing the "interpersonal skills, lifelong learning, professionalism, and integration of core knowledge into clinical practice" of physicians and medical students. The Epstein/Hundert framework emphasizes a process-oriented approach that focuses on what a physician or trainee knows, knows how to do, shows others how to do, and actually does. We found this framework useful in thinking about how students might demonstrate global competencies and, thereby, how we might assess them. Research by Ater-Kranov et al.[1] informed our thinking as well.

Our performance tasks consist of questions that students will answer related to each scenario. The students are presented with the scenarios and asked the performance task questions in three distinct settings. The three methods of collecting data from students include:

- Written response to a written scenario (assesses knows and knows how)
- Written response to a video scenario (assesses knows and knows how)
- Role play participation in response to a written scenario (assesses knows, knows how, and shows how)

The performance task will require students to respond to a scenario that describes a challenge when interacting in a professional situation that includes a cross-cultural component. As noted earlier, Jesiek and his colleagues have also employed scenarios to assess global competence in engineers.[8] We hope to build upon their work specifically by developing scenarios that can be utilized with undergraduates across all disciplines, and in which students will respond via role-play. We consider the role-play format particularly important because of its potential use as a diagnostic as students prepare for and return from their cross-cultural experiences. Since role-plays have not been used to assess international student experiences, this format may reveal important needs for further research in this area. Finally, we hope to contribute to studies in global competency by describing how we are creating and implementing the instrument at each point of its development.

To help develop the scenarios, and ensure they are as comprehensive and authentic as possible, we utilized the expertise of a broad sample of faculty and undergraduate students at MIT with varied international experiences. Their stories, in the aggregate, formed a "database" from which we developed the scenarios (also see Table 1). No information from any source was used in its entirety, thereby protecting the confidentially of the source.

Table 1

Data sources for faculty and student sample by group, level of international experience, data type, and approximate number of participants

Group	Level of International Experience	Type of data provided	Number of Participants
MIT Faculty	Repeated experiences in one or multiple international environments	Interviews	10
Undergraduate Students	Ranged from 1 month - 1 year abroad	Interviews	11
Undergraduate Students	Ranged from 1 month - 1 year abroad	Reflection Statements	36

The MIT faculty interviewed represented all the schools at MIT (engineering, science, architecture, and humanities and social sciences) and various departments. In addition to representing several disciplines, the faculty were leaders of MIT international initiatives in education and for a program that provides international study abroad opportunities for undergraduate students. This program partners with corporations to provide students with global intern, research, and teaching experiences and also prepares participants for these opportunities

with courses in the language and culture of their host country. Currently, active programs exist for more than twenty countries, continents, or regions.

The undergraduate students included in our study had an international experience in Spain, Israel, Chile, Korea, Mexico, China, Italy, or Germany. Although the faculty members often had repeated international experiences, indicative of well-established and/or higher levels of global competence, many of the students had less extensive experiences ranging from one month to one year. However, gathering data from all three groups supported recommendations by developers of previous assessments of professional competence to include perspectives of all stakeholders.[5]

Both faculty and undergraduate students were interviewed using a common prompt to obtain narratives about their international experiences and what occurrences increased their ability to work effectively in an international environment. In addition to interviews, we were provided with reflection essays from students who had experiences in several countries during 2011 and 2012.

Raw data in the form of audio files of narratives from faculty and students as well as the reflection essays were thematically summarized. The themes that emerged from the raw data were reviewed and aggregated to develop comprehensive and authentic scenarios. The scenarios were developed to enable students to demonstrate recognition, respect, and reconciliation of intercultural communication,[13] which we will assess in terms of Epstein and Hundert's[5] "knows" and "knows how" behavior.

Simultaneous to both scenario data collection and scenario development, we intentionally considered both the purpose for and components of the rubric that would be used to score student responses to those performance tasks. The rubric will be constructed to reflect ILOs as the primary categories for assessment. The performance indicators will further delineate behaviors indicating attainment of the intended learning outcomes. The final step in rubric development will be to describe levels of attainment for each of the performance indicators. Again, we will consult experts in cross-cultural competence when describing these various levels of attainment. An example of a rubric similarly constructed is shown in Table 2.

Challenges

Assessing global competency is a relatively new field that necessitates innovative approaches; however, like any new field, these approaches are often accompanied with varied challenges. The challenges we have already encountered, as well as those we anticipate, include:

- Defining and assessing global competency because of divergent philosophies, approaches, and current assessments that have resulted from heightened interest in the field
- Developing a methodology and instrument for a generalizable measure of global competence

- Developing a rubric to encompass the range of ILOs and performance tasks in our study
- Optimizing scenario length to minimize the impact of time required for student to read them and to respond to the accompanying questions
- Identifying and training raters as well as ensuring intra- and inter-rater reliability in future stages of the study.

Table 2

Example of a scoring rubric (adapted from Schmeckpeper, Ater-Kranov, Beyerlein, McCormack, & Pedrow[12])

ILO: ABET Skill 3h. Understanding of the impact of engineering solutions in global, economic, environmental, and cultural/ societal contexts.

Performance Indicator	1- Emerging	2- Developing	3- Practicing	4- Maturing	5- Mastering
Students consider how their ways to address the problem impact relevant global, economic, environmental, and cultural/societal contexts.	Students give little or no consideration to how the ways to address the problem impact in relevant contexts.		Students give some consideration to how the ways to address the problem impact in relevant contexts.		Students clearly examine and weigh the impact of the ways to address the problem in all relevant contexts.

Future work

We will conduct two studies following the development of our rubric. This work will ensure that the instrument will produce evidence for reliable and valid interpretation of student scores that are indicative of students' global competence.

Pilot study

The pilot study will involve trialing each performance task with the rubric on a sample of 10 students in their final year of engineering coursework. Two raters will score each student's responses (written or behavioral) to establish inter-rater reliability. Our goal is to have an inter-rater reliability of 80% or better.

Follow-up validity studies

Larger-scale implementation of the rubrics with 30 or more students will help us to obtain validity evidence for the internal structure of the instruments. The data from this implementation will be analyzed for inter-item correlations of scores for performance indicators within each ILO and across components.

During this implementation, we will also administer another well-established self-report assessment of global competence. We will gather convergent validity evidence by comparing students' rubric scores (direct assessment) with their scores on this self-report instrument (indirect assessment). Student scores from the rubric that are positively associated with their scores on a well-tested instrument will provide further evidence to support the use of rubric scores as indication of global competence.

Future validity studies

On a longer-term basis, we will gather external evidence for validity by examining the relationship between students' scores generated by the rubrics and other variables. We would expect that students who score high on our global competence measure and also participate in international experiences will report more positive experiences than students who do not score as well. A strong relationship between students' global competence scores on our rubrics and their self-reported satisfaction would provide one type of external (predictive) validity evidence. We can also look at longer-term outcomes, for example labor market participation and alumni attitudes and beliefs.

Conclusion

This purpose of this paper was to describe our process of developing a direct measure of students' ability to demonstrate cross cultural knowledge and skills. We discussed the current need for emphasis on cultural competence among our future workforce; our working definition of cultural competence; our process for developing intended learning outcomes, performance indicators, and performance tasks; and our plans for future psychometric analysis. We maintain that although this genre of work (process documentation) is not often found in the academic literature, it will be of great benefit to those interested in developing similar tools or to those who are interested in the generalizability of our work to their particular student population. Moreover, and perhaps more importantly, we argue that the ultimate goal of our study, that of developing a direct assessment of students' skills in reconciling and navigating cross-cultural spaces, will not only enable improved assessment of students' abilities, but may lead to improved strategies for educating students about this critical skill for the 21st century. Our efforts to provide transparency to this first step in the development process will allow this work to be useful to colleagues across multiple disciplines.

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