

# AN INNOVATIVE METHOD FOR INTEGRATING A DIVERSITY WORKSHOP *in a Chemical Engineering Course*

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As chemical engineering students graduate and enter industries or graduate schools, they will most likely be working in a diverse work environment where some of their colleagues, managers, and customers have cultural backgrounds different from their own. Thus, it is crucial for engineers to be able to work effectively with people from different backgrounds. In fact, in many multinational companies, it is becoming essential for employees to have successful international assignments as a prerequisite for moving up the corporate ladder.

Given this context in the corporate world, engineering students should be exposed to diversity in their undergraduate education. Diversity education usually takes place outside of core engineering programs, and it can be difficult for engineering students to see the relevance of diversity education to their engineering curriculum. To demonstrate to students the importance of diversity for engineering professions, we integrated a short diversity workshop as part of a chemical engineering course for undergraduate seniors (about 40 students) at the University of Michigan, entitled “Problem Solving, Troubleshooting, and Making the Transition to the Workplace.” (<See <http://www.engin.umich.edu/scps/>> for the course syllabus).<sup>[1]</sup> This course, taught by Professor H. Scott Fogler, includes other topics such as critical and creative thinking skills, negotiation skills, teamwork skills, problem

solving skills, financial planning, technical communications, and trouble-shooting to prepare senior engineering students for real-world challenges when they make the transition to the workplace. Thus, we thought that a diversity workshop would fit in this course where students can learn how to deal with diversity in the workplace.

The author, who has a background in corporate diversity training and consulting at DuPont, designed a short diversity workshop for this course. The diversity workshop is 1.5 hours long and focuses on awareness-building of different communication styles. The workshop includes various exercises so that students can experience different communication styles and cultures through participation. Throughout the workshop, lecturing is minimized to enhance interaction among students.



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Asian culture is chosen to highlight and contrast with the U.S. majority culture. We chose Asian culture because it is the native background of the author, and it is quite different from the U.S. majority communication style.<sup>[2]</sup> Since most students in the class represent the majority culture, this emphasis gives students more awareness of their own communication styles by contrast. Also, understanding Asian communication style is important for engineers in light of increasing business ties between U.S. and Asian companies.

## DIVERSITY WORKSHOP CONTENT

To make engineering students interested in the subject of cross-cultural communication, this workshop uses various exercises and examples that have relevance for students. The following sections describe the framework of the workshop.

### Ice-breaking Exercise.

#### **Cross-Cultural Communication Simulation**

The goal of this ice-breaker is to create an interactive class environment by having students experience cross-cultural communication in pairs. For this, the following simulation<sup>[3]</sup> is used.

1. First, students are paired (Student A and Student B).
2. Then, in each pair, one student (Student A) is shown the slide with the communication styles he/she needs to present:
  - a. Ask about B's personal matters.
  - b. Minimize eye contact.
  - c. Minimize body language (hand movement).
  - d. Try to keep distance (2.5 feet or more) from Student B while talking.
3. The other student in the pair (Student B) is then shown the slide with the different communication styles he/she needs to present:
  - a. First, answer Student A's question.
  - b. While talking, use excessive body language.
  - c. Keep eye contact with Student A.
  - d. Stay close to Student A (1.5 feet or less).
  - e. After answering Student A's question, ask about Student A's view on the war in Iraq (or any sensitive political issue).
4. The pairs then start a cross-cultural conversation for a few minutes.

This situation simulates communication between individuals with different styles in use of eye contact, body language, and physical proximity. This exercise will give students a flavor of cross-cultural communication and its potential issues. Although the exercise is done with the same language (English), students can see how different communication styles

can negatively impact effectiveness in communication and the building of trust in relationships needed in the workplace.

The exercise also serves as a good icebreaker since most students find it enjoyable because of the acting involved. For example, since Student A in each pair is trying to keep their distance while Student B is trying to stay close, the result can be conversation constantly interrupted by physical movement.

### **Learning the Difference Between Generalizing and Stereotyping**

One danger in any diversity workshop is reinforcing stereotypes. To avoid this and to let students know that in this workshop, generalization is used instead of stereotyping, two graphs are shown using a format familiar to chemical engineering students (Figure 1), in which generalization is shown as two normal distribution curves, whereas stereotyping is shown as two  $\delta$ -functions. Students can easily understand that generalization allows some exceptions (for example, although most Americans behave in a certain way different from Asians, some Americans do behave in an Asian way); on the other hand, stereotyping does not allow any exceptions, and thus needs to be avoided.

Common questions raised during this part are “Are all stereotypes bad? Are there any good stereotypes? How about ‘Asians are good in math,’ which seems like a positive stereotype?” From sociology, we learn that stereotypes are always harmful because they encourage “myth-making” and curb the wants and desires of individuals and ultimately negatively affect societal attitudes towards groups.<sup>[4]</sup> For example, for an Asian-American whose strength is art and design, the math-aptitude stereotype raises false expectations by others or by self—or worse, funnels individuals into narrow categories.

### **Understanding Common Asian Cultural Mores**

Common Asian cultural norms are presented in the forms of the following exercises. The purpose of these exercises is not necessarily to make students understand Asian cultural mores but rather to make them aware that some cultures are quite different from their own. Thus, cultures other than Asian can

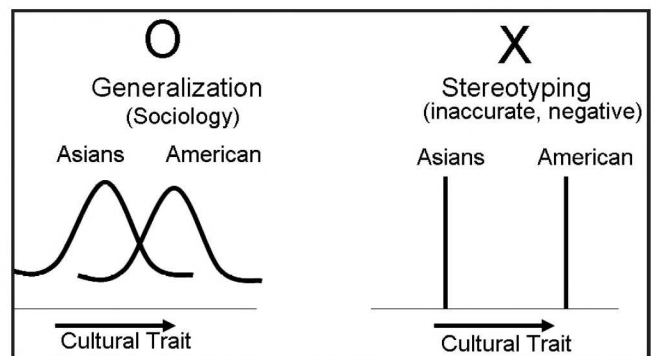


Figure 1. Difference between generalization and stereotyping.



be used here if the instructor is familiar with them.

It is also important in these exercises to urge as many students as possible to share their interpretation, so that students can see how diverse the interpretations can be depending on their upbringing.

### Exercise 1.

#### **Japanese Poem for Understanding Group Orientation**

The goal of this exercise is to make students realize how differently people react to a similar situation depending on whether their culture is based on group orientation or individual orientation (Asians are more group-oriented than the U.S. majority group). The students are first asked to read the following Japanese poem entitled “Sunset.”<sup>[5]</sup>

*The train was crowded as usual.  
A young woman was sitting down, and an old man was standing in front of her.  
The young woman stood up and gave her seat to the old man.  
The old man got off at the next station.  
The young woman sat down again.*

*Then, another old man was pushed by the crowd and ended up standing in front of her.  
She stood up again and gave her seat to the old man.  
The old man got off at the next station.*

*Another old man happened to be standing in front of her.  
But, this time, the young woman did not stand up.  
The train passed the next station.... and then the next station with the young woman looking down and ashamed.  
I got off the train. I wonder how long she could endure the pain.*

The students are then asked to interpret why she was ashamed. It is important here to tell students that there are no right or wrong answers so that they feel at ease in giving their own interpretation.

Non-Asian students in the class typically will say, “The young woman was ashamed because she was not using good manners (younger people should give seating to elderly),” or “She was ashamed because she gave in to her desire to sit down.”

On the other hand, Asian students will say “The young woman has been struggling to balance good manners against the pain of sticking out in the crowd (Asians tend to have group orientation and avoid being singled out even when they are doing the right thing),” or “She did not want to get attention from other passengers.”

These different interpretations along with the different proverbs and pictures in Figure 2 can be used to talk about group orientation (“The nail that sticks out gets hammered down” is a Japanese proverb) vs. individual orientation (“The squeaky wheel gets the oil,” a U.S. saying).

This exercise will give students a real opportunity for finding various reactions among participants based on their various upbringings, especially when the class is diverse.

### Exercise 2.

#### **Short Vignette from a Japanese Movie for Understanding “Saving Face” Concept**

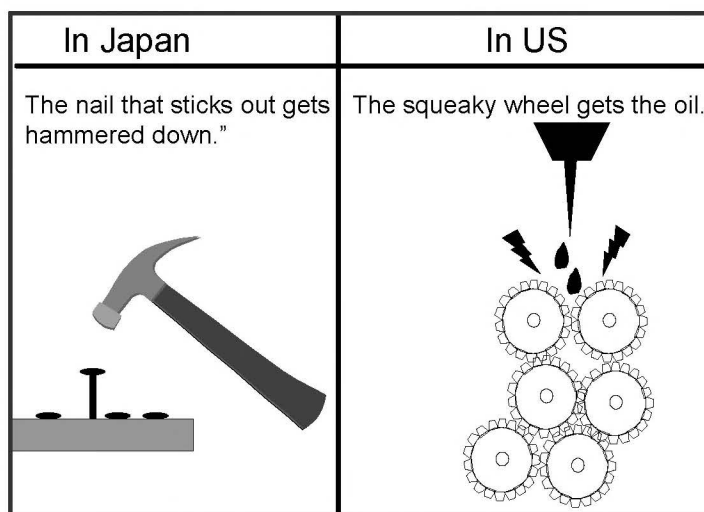
The goal of this exercise is to teach students the importance of saving face in other cultures. Saving face means maintaining credibility, honor, the demonstration of kindness, or status in society or on the job. Saving face is practiced in western cultures as well, but saving face is especially important in Asian cultures in public situations or in the eyes of others.<sup>[6]</sup> The following example illustrates this when “face” relates to maintaining credibility as a kind person.

A short vignette from a Japanese comedy movie<sup>[7]</sup> is shown in the class. The vignette was chosen because it is full of actions and is funny and does not need translation. The vignette shows a crowded train, where a younger man finds a boy sitting while an elderly man is standing. This younger man then forcefully removes the boy from his seat and then tells the elderly man to sit down. But, the elderly man declines to sit down. Then the younger man becomes very *angry* with the elderly man.

After viewing the vignette, students are asked why the younger man got angry. Non-Asian students in the class typically say, “The younger man got angry because the elderly man did not thank him,” or “He got angry because the elderly man did not sit down.”

Asians’ interpretation is that the younger man got angry because he lost face. In Asian culture, face (in this case kindness shown by the younger man) must be acknowledged by other

people present in the situation (in the eyes of others). Since the young man’s face (kindness) was not appreciated by the elderly man in public, he lost his face in front of other people and got humiliated and angry. In Asian culture, saving face



**Figure 2.** Group-oriented vs. individual-oriented culture.

is much more important in public situations than in private situations. If other people were not present in this situation, the younger man would not have been angry.

This exercise will teach students the reason why Asians often prefer to have private and one-to-one meetings to avoid losing face in public before discussing or negotiating important or sensitive issues in a large group.

**Exercise 3.**

**Saving Face in the Global Workplace**

The goal of this exercise is to show students how saving face (discussed in Exercise 2) adds complexity to the real workplace. In this example, “face” relates to credibility and status/rank on the job. The exercise uses a situation involving Japanese automotive transplant engineers and an engineer from their company’s supplier. In this situation (shown in Figure 3), both a Japanese process engineer, Ayumu, and a Japanese materials engineer, Yoko, are at an equally higher status than an American manufacturing engineer, Joe (Ayumu and Yoko give directions to Joe).

One day, the Japanese process engineer Ayumu tells the American manufacturing engineer Joe to use a new material. Then, this new material’s supplier, Akira (also Japanese), finds out that the Japanese material engineer Yoko is against the use of the new material (Ayumu and Yoko are both Japanese but have poor communication with each other because Ayumu is located in the United States while Yoko is located in Japan).

If the supplier’s representative Akira had not told Ayumu that his coworker Yoko might not agree on the use of the new material, then Ayumu would have had to change his directions to the American engineer Joe—and would have lost face in the eyes of others (Engineer Yoko and Engineer Joe). In this case, face refers to the higher status (giving directions) or credibility. Since Ayumu holds a higher status or rank than Joe, he would lose face if his directions are later changed by others’ decisions.

To prevent this loss of face, supplier Akira had to tell Japanese engineer Ayumu that the Japanese engineer Yoko was against the use of the new material. This way, Ayumu and Yoko could negotiate in private without involving the American engineer Joe, and Ayumu’s direction would not be denied completely in the eyes of Yoko and Joe.

This real situation shows the importance of saving face in the workplace and the complexity in dealing with different cultures.

**Exercise 4.**

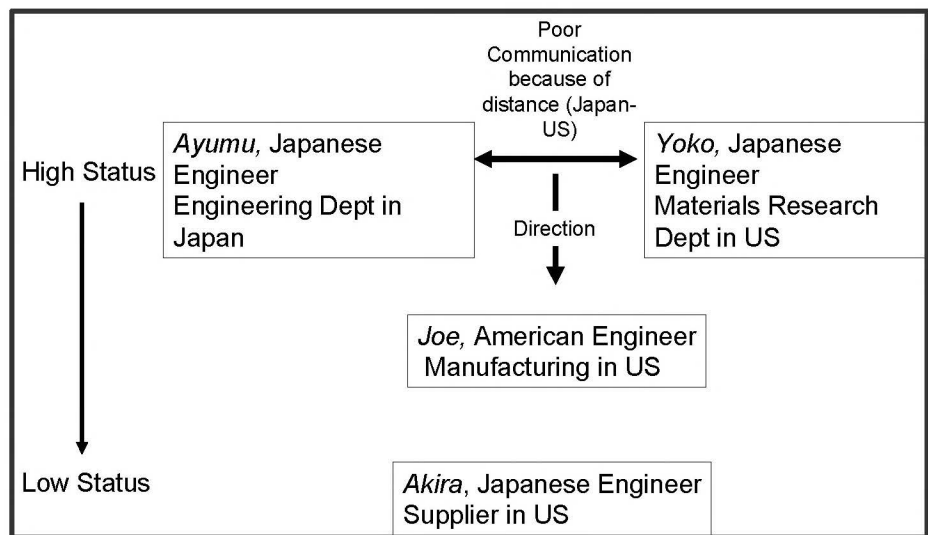
**High-context vs. Low-Context Communication Styles**

The goal of this exercise is to teach students that it is critical to know the communication style (high- or low-context) for effective communication. Whereas the U.S. majority communication style is called low-context (the meaning of a statement is in the words spoken), Asian communication style is called high-context (meaning is unspoken but interpreted indirectly from the context, the history of relationship, or general social rules).<sup>[8]</sup> The high-context style is:

- *Subtle, often nonverbal cues used to convey meaning (body language, facial expressions, silence, tilting head).*
- *Does not say a lot, but expects you to know a lot.*
- *Described well with the Chinese proverb, “He who knows does not speak, he who speaks does not know” (Lao-tsu, Chinese sage, 6th century B.C.).*

To illustrate this difference and the confusion caused by it, a few examples are given in the workshop in order for students to think about possible interpretations for high-context communicators with low-context statements or questions. For example:

- *A low-context question “Are you hungry?” can be interpreted by a high-context communicator to be that the person asking this question may be actually hungry and suggesting that they should go to eat together now, or the person may be suggesting that they should take a break from this intense negotiation.*
- *A low-context statement “I’d like that report as soon as you can get to it” can be interpreted by a high-context communicator to be “Drop the current project you’re working on and finish that report today.”*
- *A low-context statement “We need to tighten our budget”*



**Figure 3.** An example of saving face at Japanese plant in the United States.



can be interpreted by a high-context communicator to be “We should not spend at all,” or even “My position might be eliminated.”

Through these examples, students can see negative consequences of not understanding high-context communication style and can understand why it is so important to know which communication style is in use for other speakers.

### **Nonverbal Communications**

Nonverbal communications are discussed around use of silence, use of eye-contact and use of gestures, and emotional expressions. For example, silence is considered negative in the U.S. majority culture, whereas silence has many positive aspects in Asian culture, such as showing respect to superiors. One of the negative consequences of not knowing this difference would be that people uncomfortable with an Asian person’s silence tend to disclose too much information during negotiation.

### **Homework Assignment**

A homework assignment is given to reinforce the main points. The students need to find a person who grew up in a culture different from the majority culture and find out the following:

1. *What are/were some difficulties in communicating with Americans or with persons from the majority culture?*
2. *Ask how he/she communicates with elders, teachers, or supervisors in their native country.*
3. *Ask if their native communication style is more indirect than American communication style. Is what they say in a native culture what they really mean?*
4. *What can Americans do differently to make the person who grew up in a different country feel more comfortable in communication in the United States?*

This assignment can make students become aware of the reality that people with cultures different from the U.S. majority culture feel they always have to adjust their communication styles for majority members. It can also lead majority students to think about better ways of communicating with those from other cultures.

### **OUTCOMES**

The goal of this workshop is to give students awareness of different cultures playing out in the real workplace, in a nonthreatening way. In general, neither defensive reactions nor guilty feelings were expressed in the class. This probably results from the use of Asian culture, which is mostly unknown and nonthreatening for a largely European-American audience. Feedback from students suggests that they were surprised to know how different cultures impact communication and that they did not know that their U.S. mainstream culture is so different from other cultures such as Asian culture. Also, we found that students with backgrounds different from the

U.S. majority culture could help the class understand diverse cultures when they were encouraged to share their experiences during the class.

### **CONCLUSIONS**

The diversity workshop can be integrated into a chemical engineering course so that students can see the relevance of diversity education for engineering professions, where engineers from various backgrounds need to work together effectively. By having a diversity workshop as part of a course for senior undergraduate students, we can show the importance of diversity in the engineering profession and provide strong motivation to learn diversity for students who will be joining a diverse workplace shortly.

Generally, universities offer some type of diversity education as part of the general education requirements for undergraduates. This may be in many possible forms—courses with cross-cultural themes, courses that raise awareness about racism, or courses that promote a global perspective. Often, these courses are taken in the first two years of study. The exercises described here provide an extension of this foundation of diversity education during the upper-level portion of the undergraduate curriculum.

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