



# INNOVATION ABSTRACTS

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## CULTURAL ATTITUDES TOWARD EDUCATION

**A commentary on the effect of our culture on education**

Education, from a general perspective, is any learning that we obtain from different media. Education does not start on our first day of kindergarten, nor is it limited to the four walls of the room where an educator imparts his/her knowledge. It starts from the first interactions with our fellow human beings. It continues even as we leave the classrooms. That is, we gain knowledge from our surroundings. With this in mind, the cultural attitudes of the society toward education greatly affect the education of its citizens. What a society upholds or devalues will be reflected in the way the people interact with others. This is what is called non-formal education. So if education is portrayed in a negative manner throughout the media and this then becomes a cultural norm, by extension, the citizens of that society will tend to view education in a negative manner.

One of my favorite shows on television is *The Big Bang Theory*, but I am always troubled with pangs of guilt whenever I watch it. For all its popularity, the show, for me, just reinforces the negative cultural attitude toward education that exists in American society. If you have not seen the show, it is centered on five characters. Penny, who dropped out of community college, now works as a waitress while waiting for her big break as an actress. The other four characters are brilliant and work at a local university. Even though the other four are highly educated, Penny is portrayed as being consistently smarter, saner, along with possessing more common sense than all of them put together, and is often called upon to rescue these guys from whatever predicament in which they have found themselves.

There are plenty of examples in other forms of media that contribute to this negative attitude of our culture surrounding education. For example, in 1980 Billy Joel had a hit song with "It's Still Rock & Roll to Me." The lyrics of the song contain the words "Should I try to be a straight 'A' student?/If you are then you think too much." Again, what subtle (or not so subtle) message does this implant in a young person's mind? Bruno Mars had a hit song in 2012 called *The Lazy Song*. It was (and

still is) a very popular song. The lyrics, "*Yeah, I might mess around and get my college degree. / I bet my old man will be so proud of me. / But sorry pops, you'll just have to wait,*" conveys the message that an education is easy to obtain and, by extension, nothing of value.

In comparison, other countries hold education in much higher regard. For instance, the Japanese hold large celebrations and expensive presents are given when a child enters kindergarten. According to a U.S. Department of Education report: "Much of a mother's sense of personal accomplishment is tied to the educational achievements of her children, and she expends great effort helping them. In addition there is considerable peer pressure on the Japanese mother. The community's perception of a woman's success as a mother depends in large part on how well her children do in school." Although Finland and South Korea are at the top of international comparisons of test scores, they differ greatly in methods of teaching and learning. They hold the top spots because of a shared cultural belief in the importance of education and its "underlying moral purpose." Their cultural attitudes toward education are such that education is highly prized. In Finland, it is a tremendous honor to be a teacher, and teachers are afforded a high level of respect and admiration. In Singapore, becoming a teacher is competitive and highly selective and is viewed as a great honor.

The family culture can also greatly influence attitudes toward education. A clear relationship exists between the culture of the home and that of the school. Children from middle- and upper-class families will share a common mode of speech, style of social interaction, and social background with their teachers. The content of what they are taught and the manner in which they are taught are likely to appear familiar to them. In contrast, for children from other class backgrounds, and especially for those of low-income families, the school will represent a cultural and social world set apart from that of their families and communities, and one in which they are likely to feel out of place. A child from a home where a positive attitude towards education exists will benefit from a positive interaction between the influences of home and school. A child from a home where education is viewed as something negative, or at best, something to be tolerated, is less likely to reach the higher levels of the educational system. If the culture of the home is such that the child

is expected to go to college, then in all likelihood that child will go to college. If the culture of the home is that education is viewed negatively, then a child from that environment will struggle to go beyond the legal age requirement to stay in school.

Society shapes our education, and society is greatly influenced by the media. If the media portrays education in a negative manner, then society will have this negative view of education and the educated. In this global economy where education appears to be key to a successful economy, we need to have a positive attitude toward education if we are to move forward.

So what can we do? The cultural attitudes and values surrounding an educational system do more to support or undermine it than the system can do on its own. Using the positive elements of this culture and, where necessary, seeking to change the negative ones, are important to promoting successful outcomes in the

## THE USE OF DNA SEQUENCING IN THE MICROBIOLOGY LAB

Most of the students enrolled in microbiology at Gateway Technical College wish to enter the nursing program. One of the objectives of the course is learning how to identify bacteria properly. There are different approaches to accomplishing this, but the gold standard is using DNA sequencing. In the laboratory, the students identify bacteria present in/on an environmental sample using two different approaches.

### The Culture Independent Approach

Most bacteria in an environmental sample cannot be cultivated (grown in the laboratory on artificial media). As a result, genomic DNA from the sample is isolated by the students using kits purchased commercially. The students often feel like they are in an episode of *CSI*. The DNA is then subject to polymerase chain reaction (PCR) amplification using universal primers to the 16S rRNA gene. The PCR product is cloned. Entire *E. coli* colonies containing the cloned DNA are sent for traditional Sanger sequencing. The sequences generated (approximately 650 bp) are trimmed to remove vector and primer sequences and are then compared to known sequences found in the GenBank nucleotide database using the BLAST algorithm.

### The Culture Dependent Approach

Bacteria from the environmental sample are plated onto artificial media, such as TSA agar, blood agar, and cooked meat broth. Antibiotics can also be added as a selective agent. Media is incubated both aerobically

and anaerobically at body temperature for several days, after which time the media is examined for bacterial growth. A pure culture of the bacteria cultivated is then made and colonies of the environmental isolates are sent for DNA sequencing. This approach is far easier and less expensive than the culture independent approach. However, if the bacterium cannot be grown on artificial media, the bacterium cannot be identified.

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### The Goal

The goal is that students will have an even better understanding of how DNA is sequenced than just lecturing on the topic. Students will be able to use computers to identify bacteria based on their DNA sequences. This has a direct application to the medical field. The same methods used here are used in hospitals across the country to determine the bacteria that are causing an infection in a patient.

Since nurses often have to explain medical tests to patients, a more complete understanding of this technology will enable them to describe how the procedure is done and why this procedure will benefit the patient.

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