Culture, Education, and Theaters Without Audiences

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Many years ago, the Brazilian musicians Gilberto Gil and Caetano Veloso started a new movement based on the idea that you do not know or understand a culture until you know enough about it to take parts of it and incorporate it in your own culture. This movement, called Tropicalia, continues to impact us today, and points to a way of appreciating other cultures, and even transforming education. After becoming Brazil's Minister of Culture, Gil continued to speak about this topic to audiences worldwide, while, at the same time, continuing to demonstrate the underlying ideas in his own compositions.

Before showing the connection of Tropicalia to education (and why and how to implement it), an example or two is appropriate. Imagine, for a moment, attending a performance of folkloric dancing – say tangos from Argentina. The evening will be filled with amazing music and dance, and you might leave the theater impressed by the discipline and skill of these talented performers, but probably you will still not be any closer to understanding the culture of Argentina, the country most associated with this dance. No matter how many times you sit in the audience watching a performance, you still do not gain any deep cultural insights – you look at the performance through the lens of your own culture, and your life remains

unaffected, except for the pleasant memories of the performance itself.

Tropicalia adopts a different perspective – by climbing inside a different culture deeply enough, you find ways to incorporate pieces of it into your own, and thus demonstrate a deeper understanding of the culture than you could ever achieve by watching it from the outside. This came home to me a few years ago in an interesting way. I live part-time in Brazil and, at the time of this story, was learning to play Bossa Nova guitar in exchange for teaching Blues guitar to a friend (Tropicalia is a two-way street). Shortly before coming to the US, I was contacted by an American colleague who wanted me to perform a jazz set with him on my return. He asked me to make an arrangement of the famous Gershwin song, "I Got Rhythm." While playing with ideas for the song, I asked myself what it might sound like if it was a Bossa Nova piece. By this time, I had enough under my belt to work with the concept and produce something that sounded pretty good – at least to my ear. The piece was clearly Gershwin's melody, note for note, but the accompanying chords and rhythms were clearly Bossa Nova. On getting to the US, I showed up onstage with a pickup band put together by my friend (who plays flute). We had no rehearsal time – but these were all professionals. I called out "I Got Rhythm in F, Bossa Nova style – follow my lead." The result was amazing. In fact, we ended up jamming around this piece for a good ten or 15 minutes, if memory serves, and the audience loved it. The point here is that I had been immersed in and interacting with a piece of Brazilian culture deeply enough to play with it – to use it as an element of something new.

I had enculturated myself enough to adopt a Brazilian musical style into a very American song – with surprisingly good results. No matter how many musical performances I attended, I could not have done this from anything I learned in an auditorium seat. The audience perspective may help develop an appreciation for something, but does nothing to internalize it or make it your own.

Normally, we think of "culture" as applying to a region or nation. The cultures of different regions are different from each other, and they, in fact, are defined by the people who live in them. Viewed through this lens, one can argue that a cultural understanding derives from five attributes: the things people in the culture know, the skills they have, their identities as members of a culture, their beliefs, and their ways of thinking – epistemology. These five attributes comprise what David Shaffer[1] calls an "epistemic frame," a very powerful concept that explores the various attributes of any group of people who share membership in a culture.

The connection to these elements of a culture applies to academic subjects as well. There is a

culture of history, another for science, still another for mathematics, and several for broader subjects like art. In other words, the skills, knowledge, identity, values and epistemology of historians (for example) are different from those of mechanical engineers. This cultural difference among disciplines was the topic of a famous paper by C. P. Snow[2] written in 1960, based on a lecture given the previous year. In his lecture, Snow talked about how people in the humanities and people in the sciences tended not to talk with each other much, and how they each represented aspects of different cultures. He went on to suggest that this failure to find common ground was a cause of concern for society – that they may have all spoken English, but they still were not communicating across their professional cultural divide. For us it is sufficient to say that there is a rich history of people who grasp that the professions have cultures of their own.

Now just why, exactly, is this relevant to K-12 education?

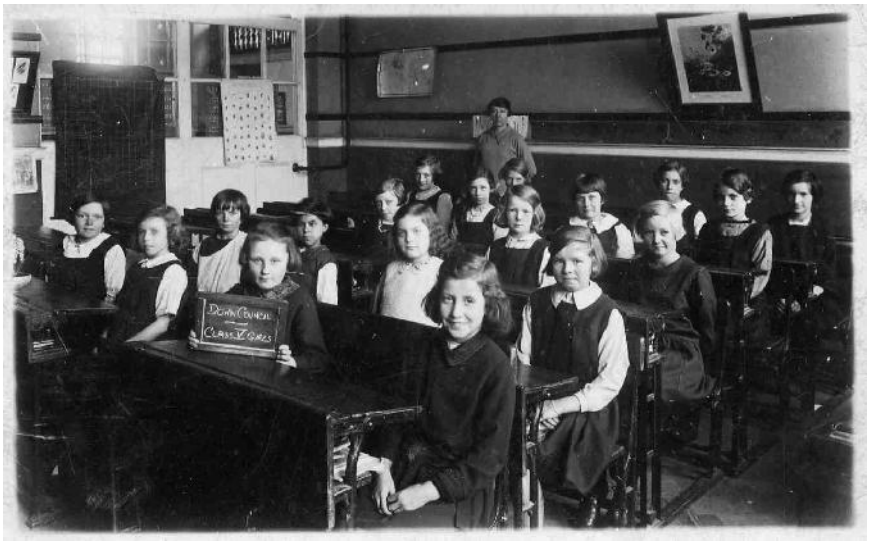
The answer can be seen in the curriculum taught in most schools: students are taught some of the knowledge, and a few skills in a subject like mathematics, for example, but leave school without any grasp of the identity, values and epistemology of mathematicians. They are deprived the opportunity to learn, in fact, why there are people who get up every morning and "do math" on purpose, as a joyful and challenging activity. Instead they are taught the same basic skills – some of them for years in a row – filling their heads with the content needed to pass a generally decontextualized test, but providing no incentive or opportunity to learn more.

Now if our society's educational system was encouraging enough students to pursue futures in some of these academic areas, and if enough of them simply graduated from high school, that would be one thing. But this, in fact, is not the case. The high-school dropout rate in the United States remains locked at 25%. One out of four children fail to complete high-school, and are relegated to a life near the bottom of the economic ladder. Imagine checking into a hospital with a mortality rate of 25%. Sorry, I'll take my broken foot elsewhere! The problem with schooling is that there are precious few alternative places for children to go. Moving a child from public to private education does nothing (in general) to change the underlying pedagogical model. It seems important to take a close look at the very model of instruction in our schools and to remodel it in deep ways that provide immersion in all elements of Shaffer's epistemic frame. In addition to the knowledge and skills associated with, for example, history, students need to know and understand the subject through the eyes of an historian – to be able to appreciate and "do" history, not just learn "about" it.

So just how, exactly, are we to make this change?

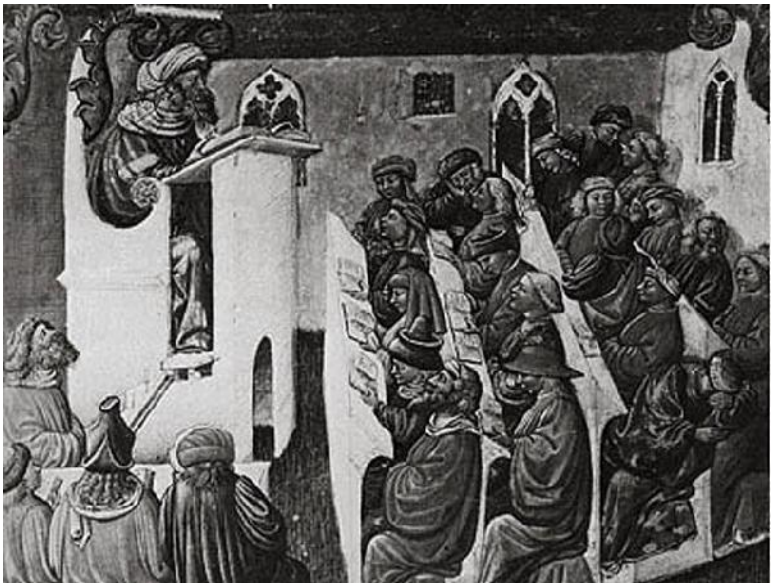
First, recall that we explored the idea that cultural understanding can not be developed from an audience seat – this is as true for geography as it is for Ballet Folklorico. Yes, I might be able to describe what I learned, and maybe even have enjoyed the experience, but there is a world of difference between being on the stage and sitting in the audience.

With this in mind, let's look at a typical classroom:



You can tell at a glance that this is a classroom; not because I said I'd show you one, but because the layout of classrooms has remained largely unchanged for many generations. Classrooms today are mostly laid out the same way – a collection of student desks facing the front of the room where the teacher presents information. In this setting, the students are clearly an audience, separated from the stage. Some classrooms have made the distinction so great that the teacher is on a riser about 6 inches above the floor.

We have made some structural changes, of course. Desks generally are no longer bolted to the floor, so different are arrangements are possible. Generally, though, room layout still reflects a model of classroom design dating back to the Middle Ages.



Based on these images, and the view of our current classrooms, we ask, "What has changed?"

Well, today's classrooms are more high tech, as interactive whiteboards are replacing blackboards – but even these new tools are still being used in largely the same old ways. The greatest changes though, are those that have taken place outside the classroom. Until recently, formal education through high school has been an option, not a necessity. That is no longer true. In fact, most of the trades today require at least some education beyond high school. And, in order to seek out this education, students need to know enough about possible fields of endeavor to choose those that would be most personally rewarding. Second, our children use technology as a primary communication tool – extending their social networks from face to face meetings to highly networked communication using text messages, Facebook, etc. In social networks, passive audiences do not exist. The Cartesian model of "I think, therefore I am" has been replaced with "I do, therefore I am".

If we want to insure that our students get the educational experiences they need (and I include involvement in all five elements of epistemic frames as part of this need), we can start by borrowing a page from the Tropicalia playbook. If the audience perspective is inappropriate, create classrooms that are theaters without audiences. Everyone in the room, from the teacher to the students, is an active participant in learning. Yes, they may all have seats, but these seats need to be moveable just as one changes sets on a stage. As for lectures, they are largely out. If there is no audience, to whom, exactly, would you be lecturing?

Our own work in this area[3] in the creation of educational "holodecks," reflects this approach.

But, by itself, changing the layout of the room is not nearly enough. If you believe that, to learn geology, you should learn also what it means to be a geologist, then the textbook-driven education of the past will be irrelevant, and even damaging to the creation of a complete epistemic frame. Students should come to learn subjects the way people working in various fields learn them. There is a world of difference between knowing how to extract square roots, and knowing how mathematicians look at problems.

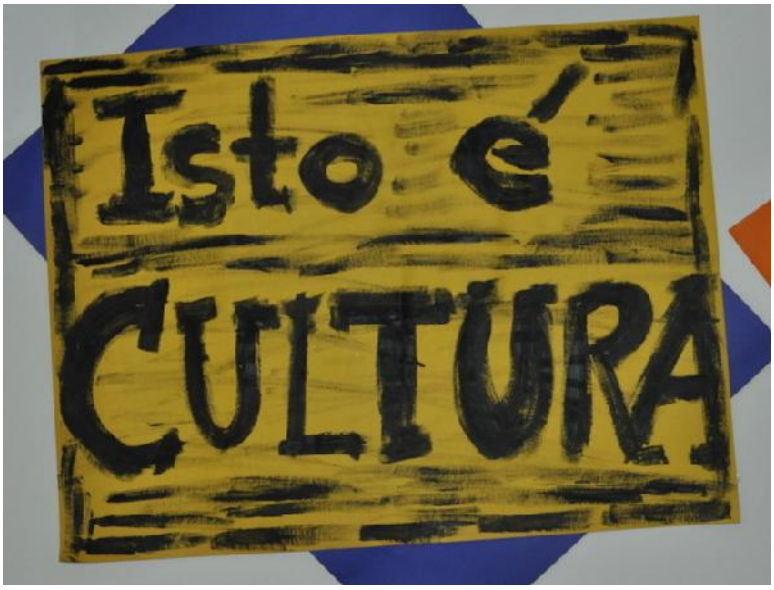
Of course, in the K-12 domain, the elements of epistemic frames will not get developed with the same detail of those held by professionals working in the field, but they will surely get developed enough for students to know why (or why not) a particular field of study might point to a lifelong career. Among pedagogical models, those based on student inquiry and project-based learning hold the most promise. In this model, students explore topics through questions posed (initially) by the teacher, and conduct their exploration through the creation of a project that demonstrates their understanding. Each child will approach a challenge from her current level of skill and, as skill grows, will choose more challenging projects in the future. The research conducted by students as part of the project reflects the kind of research done by professionals in the field.

For example, most high school students know that we only see one side of the Moon from Earth. An interesting question to explore is just why, exactly, this is. And, is this true for all the moons of other planets? The teacher's role here is to frame the question, provide access to resources (including online tools), and largely get out of the way of the students' learning. Once students come up with one or more explanations and have had the chance to share the results of their work, they can then suggest other questions worth exploring – for example, could life have evolved the way it did on Earth without the Moon-caused tides? The point is, once the door has been opened, questions will proliferate, just as they do for lunar scientists or professionals in any other field of study. I emphasize, though, the importance of the teacher *not* providing answers to the questions, but letting the students explore them on their own. Experience shows that students in this kind of educational environment develop greater knowledge and skill than they would from a textbook-driven curriculum. But, more than that, by actually doing research in a field, they are forming the foundations for understanding the identity, values and epistemology of professionals in the field.

My wife, Norma, is assisting an elementary (primary to middle grades) school in Brazil to make the kind of transformation explored here. It is a long process, and she started with baby steps – some cosmetic, others not. For example, the teacher risers in the classrooms have been removed – the “stage” is gone. The new “science” room is built like a “real” laboratory. When the renovation was nearly finished and the children came back to school from Winter

break, one middle-school girl was so excited by the science lab she almost levitated out of her seat. One teacher nearly burst into tears of joy.

In the afternoon of the first day, I saw the following sign posted in one of the hallways:



"This is CULTURE" – referring to the culture of learning in the school. What a message!

We are far from done – transforming classroom practice takes lots of staff development, coaching and time, but without a commitment to changing *how* we teach *what* we teach, all the classroom rearrangement in the world will fail to meet our objectives.

References

1. Shaffer, D.W. *How Computer Games Help Children Learn*. (Palgrave Macmillan: 2008).
2. Snow, C.P. *The Two Cultures*. (Cambridge University Press: 1993).
3. holodeck.pdf. at <http://www.tcse-k12.org/pages/holodeck.pdf>

About the author:

David Thornburg is the Founder and Director of Global Operations for the Thornburg Center for Space Exploration. He is an award-winning futurist, author and consultant whose clients range across the public and private sector throughout the planet.

David is a strong proponent of inquiry-driven project-based learning. His presentations and

workshops on this topic have been given in several countries, and form the topic of some of his speeches at conferences and schools.

His educational philosophy is based on the idea that students learn best when they are constructors of their own knowledge. He also believes that students who are taught in ways that honor their learning styles and dominant intelligences retain the native engagement with learning with which they entered school. A central theme of his work is that we must prepare students for their future, not for our past.

David splits his residence between the United States and Brazil.

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