Clearing the Confusion between Technology Rich and Innovative Poor: Six Questions

by Alan November of November Learning | **NovemberLearning.com**

In a recent webinar, more than 90% of school leaders responded that they were leading an innovative school as a result of the implementation of technology. At the end of the webinar, when polled again, only one leader claimed to be leading an innovative school. The complete reversal was due to a presentation of the Six Questions that you will read about in this article.   This list of questions was developed to help educators be clear about the unique added value of a digital learning environment.

Test your own level of innovation. If you answer no to all Six Questions when evaluating the design of assignments and student work, than chances are that technology is not really being applied in the most innovative ways. The questions we ask to evaluate implementation and define innovation are critical.

(Beyond SAMR: Special note to those of you applying SAMR. Many educators who believed their assignment to be at the highest level of SAMR have discovered that the answer can be NO to all six of the transformation questions.)

Transformational Six

1. Did the assignment build capacity for critical thinking on the web?

2. Did the assignment develop new lines of inquiry?

3. Are there opportunities for students to make their thinking visible?

4. Are there opportunities to broaden the perspective of the conversation with authentic audiences from around the world?

5. Is there an opportunity for students to create a contribution (purposeful work)?

6. Does the assignment demo "best in the world" examples of content and skill?

1. Did the assignment build capacity for critical thinking on the web?

Before the Internet, our students accessed sources for homework that had been preselected by a teacher or a librarian. Clearly, the Internet has removed any pretense of control of information. Under this "Wild Wild West – No Sherriff-in-Town" learning environment, it is even more important that we prepare students to make thoughtful decisions about how to select high quality sources.

If you have ever watched a student research on the web you will probably observe that they enter the exact title of their homework for their search query. They will only look at the front page of results (even out of millions). There is no thought to use a second or third search tool. Critical thinking and careful evaluation of the reliability of sources is sorely lacking. Basically, we have a major mess on our hands. To make it worse, our students "do not know, they do not know". If they knew "they did not know", then they would ask their teachers for help in designing searches. When was the last time any student asked a teacher for help in designing a search? Perhaps more importantly, when was the last time a teacher offered to help? If our students fail at step one – selecting the right information, then they will automatically fail at critical analysis.

We can not abrogate our responsibility of preparing our students to be critical thinkers in the Age of the Internet. We need to teach our students the discipline of how search engines work and the creativity of designing a powerful query.

An example: a student types in the name of the assignment, "Iranian hostage crisis" into Google. The results list of this search will only yield search results with Western sources if the search is anywhere in North America. The reason for this is that Google knows the geographic location of your network. If you are searching from North America you will not see any sources from Iran in the top page of search results.

If you ask most students to change their search strategy to find Iranian sources, most will simply type "**Iranian sources**" into the search bar. As already explained this will not yield any Iranian sources. Google does not read English or any language. It cannot interpret this request to mean "get me sources from Iran". It is possible to use the advanced search page to select Iran as the source of your content. Or, you can use the Google operator "site" to switch your search to Iranian sources with the two letter Iranian country code "ir" (site:ir). See all of the Google operators at **(http://www.googleguide.com/advanced_operators_reference.html)**.

Equally, if not more important than understanding how to use the advanced features of Google, are the word choices our students use to run their search. How many of our students would guess that "Conquest of the American Spy Den" is how Iran refers to the take over the American Embassy?

Compare two searches:

"Iranian Hostage Crisis"
"site:ac.ir "conquest of the American spy den"

The first yields all Western sources. The second search yields a focused return of academic content from Iran. You can imagine that there is no agreement between the two search results. You can also imagine that very few, if any, students would design the second search without the guidance from a teacher.

Very few if any students are about to ask their history teachers for help with a Google search on the Iranian hostage crisis. It is the teacher's responsibility to teach the research skills that lead to high quality comparative search. In this case, the teacher could have required two sources from Iran. There should have been a review of country codes and the use of the advanced search techniques to generate results from Iran. Finally, the teacher should have spent some time in class challenging the students to think about their search terms. "What did the Iranians call the takeover of the American Embassy?" (Teach students how to use Wikipedia well to design their search in Google – e.g. Wikipedia mentions the "conquest of the American spy den".

While it would be convenient to imagine that we can just teach students to learn about advanced search techniques and inquiry design in one orientation session in the library as we do with the Dewey Decimal System that will not be sufficient. Many students have a very difficult time of transferring knowledge from one setting to another. We need all of our teachers to recognize the critical and essential role they play in preparing students to be web literate. This needs to happen at the point of giving an assignment across the curriculum and beginning when we teach students to read. (Watch young children who cannot even read ask Siri for an answer.)

What should concern every educator is that our students are typically woefully unprepared to design intelligent searches. Sadly, too many of our students do not realize how insufficient (almost dangerous) their research skills are. Their own misplaced sense of confidence about how to use Google is preventing them from asking their teachers for help. Your students need you to embed web literacy skills into the design of the assignment. They just do not know they need you. The concept of the "digital native" knowing a lot more than the "digital immigrants" is largely a myth. Both groups need to become web literate.

2. Did the assignment develop new lines of inquiry?

With access to massive amounts of information and different points of view and access to primary sources comes an opportunity to teach students to ask questions we could never ask in the limited world of paper. Continuing with the example about Iran, the question emerges about why did the Iranians refer to the take over as the Conquest of the American Spy Den? Or, did the goals of the student-initiated revolution against the Shah align with the goals of the religious leaders who became the leaders of the new government?

In an interview I had with Stephan Wolfram, a chief designer of the knowledge engine, Wolframalpha, he explains that most of the answers asked by traditional assignments are on the web if you know how to find them. What is not on the web are the questions. One of the most important skills is to teach our students how to ask the creative, innovative and even impossible questions. "The new answers are the creative questions."

3. Are there opportunities for students to make their thinking visible?

We now have tools that can reveal what students are thinking. Research shows that one of the most important skills to improve student achievement is to teach them to self assess their work. In the case of writing an analysis of the "Iranian Hostage Crisis and the Conquest of the American Spy Den" students can be required to use a digital recording tool such as Kaizena to provide a voice recording of an analysis of their own writing. In this way, a teacher can gain insight into what the student was thinking about the flow of ideas he or she tried to represent with their writing. Of course, a side benefit is that some students will improve the quality of their own work when they are required to review their writing before they hand it in.

4. Are there opportunities to broaden the perspective of the conversation with authentic audiences from around the world?

While many teachers now have a website with forums for their own students to share their ideas, there are numerous blogs around the world and other publishing sites where we may want to encourage students to broaden and deepen their learning experience. For example, recently, I worked with a social studies teacher who was designing a lesson on immigration to the US. When she discovered that The Economist magazine blog had an ongoing discussion on immigration she realized that she could engage her students in a high level conversation with people around the world on this topic.

Many teachers have websites for students to share their work with the world. One of my favorites is the website of 1st grade teacher, Kathy Cassidy from Moose Jaw, Saskatchewan. Her students continuously share their work with students around the world via her website (http://mscassidysclass.edublogs.org/) and the official class twitter account (**@mscassidysclass**). Eric Marcos, 6th grade math teacher in Santa Monica, California supports his students to build tutorials in mathematics that they offer to the world at www.mathtrain.tv.

Of course, one of the benefits of students publishing their work for a global audience is the opportunity to receive feedback for their work beyond the classroom. Many students can be more motivated to publish for a global audience than an audience of "one" – the teacher.

5. Is there an opportunity for students to create a contribution (purposeful work)?

This one may be the most difficult qualities to build in to our assignments. A colleague in Istanbul has her Geometry students designing the Geometry curriculum for blind students by visiting a local center for the blind and working with the students to understand how to build tactile activities to understand Geometry. When her students finish their project they will publish it to the web for global access.

When I interviewed these students in their classroom in Istanbul many shared with me that they chose to extend their required 40 hours of community service. Many have given more than 200 hours to this project with no extra credit. Some students even continue their work the year after their course has ended. Their commitment to their work does not depend on an external reward or punishment system such as grades, but an intrinsic drive based on making a contribution.

While many teachers with whom I speak worry about the decline of student focus, we can immediately address this decline by adding "purpose" to student work. **(See Dan Pink, Drive, for research studies on purpose.)**

6. Does the assignment demo "best in the world" examples of content and skill?

Before the Internet it would have been impossible to show students examples across the curriculum of "best in the world" applications of knowledge and skills across the curriculum. Now we can. One example comes from a science teacher who shared with me that one of his students was under motivated to work on the "egg drop" assignment. You may remember this is where you have to design a contraption surrounding a real egg and then drop the whole thing from a height to protect the raw egg from breaking. I suggested that he show the student a search of "**award winning egg drop" site:sg** to find videos from Singapore middle and high school students to motivate the young man to get to work. While this strategy does not work in every single instance, watch what happens when you show students "the best in the world examples" of what other students can accomplish. Students are often more motivated, inspired and willing to work harder when they know what other students have accomplished. Sports coaches rely on this very same strategy to motive and inspire their athletes. Of course this kind of research can also help the teacher realize that they may want to recalibrate their expectations of acceptable student work to a higher level as well.

Conclusion:

Attempting to frame a definition of innovation should lead to healthy debate. If the litmus test revolves around the straight forward question about whether or not the technology functions, then yes, many schools can claim to be innovative. However, if our aspirations extend to a new level of student achievement then too many of our schools are "technology rich and innovative poor".

Clearly, we must move our focus beyond the device and toward the design of learning. Otherwise, we may find ourselves, as Neil Postman so eloquently described in 1985 when he titled his book about the impact of the media, **Amusing Ourselves to Death**. If he were alive today, he might say that we are *amusing ourselves to death* with a 1,000 apps.