

# SO MUCH TO TEACH AND SO LITTLE TIME TO DO IT

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"There is so much to teach and not enough time to do it well." This is a common lament in educational circles. Despite much discussion on ways to reinvent the teaching learning process, little has changed. It is time to revisit this dilemma with a fresh approach. The issue becomes clearer when we identify what is important to teach and how the knowledge and skills taught are integrated into the learning process. Only then can we begin to design a truly effective instructional program.

All educational conversations start at the essential question of what should be taught. This question of "what" has driven the standards movement, the accountability movement, and our current focus on 21st Century skills. The "what" in question already begins with a starting point. Whether educators agree with the standards movement or statewide assessments is somewhat irrelevant at this point. How schools and districts perform on statewide assessment instruments drive community perception of school performance. These assessments are also related to other forms of persuasion ranging from funding to state mandated penalties. State established core standards are the basis for at least part of the answer as to what should we teach.

So mastery of core standards is on the list. But what core standards are we talking about? Assessment drives this question. Not all core standards are created equally and much of the work that educators perform on curricular reform revolves around trying to determine what standards will be assessed and where should emphasis be placed. This is a problem that will only end when state assessments are not the only driver of accountability that is recognized.

In addition to the identified key standards, much has been written lately about incorporating 21st Century skills into the curriculum. Many educational researchers define these skills in different ways. The STEMs curriculum or Science, Technology, Engineering, and Math, has gained a great deal of acceptance especially since the publication of Thomas Friedman's groundbreaking book, The World Is Flat, was published. Others have also included the Arts to this list. Educational futurists such as Marc Prensky, and Sir Ken Robinson have also made strong arguments for technological proficiency to be included on this list. The partnership for 21st Century Learning has included skills in three areas that build off of core subject skills. These include life and career skills, learning and innovation skills, and information and technology literacy. There are many frameworks for identifying 21st Century skills and there are different merits supporting the varying approaches to answering this key question that must be considered closely before moving forward.

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Having identified what to teach is only the first step. How these skills and knowledge are placed in the learning context is critical. This is one of the great flaws of our current system. To understand this requires a common understanding of the learning context. For simplicity sake, consider learning to consist of an input phase, a processing phase, and an output phase. Input is where the student learns the new knowledge or skill. On Bloom's taxonomy of learning domains

this would be at the knowledge or comprehension stages. This step is usually accomplished through direct instruction followed by practice and eventually assessment to determine if the student can reproduce the knowledge or skill on demand.

The processing phase is where students begin to apply that knowledge and analyze and compare it to other knowledge and skills. An example for this stage would be a student drafted literary criticism comparing the works of two different authors. Bloom would equate this to the application and analysis levels.

The output phase is where students actually produce new thoughts, ideas, and products based upon the learning. After learning how shading and contrast relate to perspective in an art class, students would then be asked to create a new piece of art incorporating this new knowledge. On the Bloom taxonomy this would be the synthesis and evaluation stage.

The problem with our current system is that we seldom leave the input phase. To be fair to teachers, blame for this phenomena should not be laid entirely at their feet. We continue to add more and more to the pile of things to teach with few things ever being taken away. If forty standards are good then fifty must be better. In our well-meaning way, we have all contributed to the problem. Students need to learn about the environment. They need to be taught character education. Wellness issues from nutrition to proper exercise are important. The stack of what is to be taught builds and builds but the finite constraints of time and resources don't increase to match. In the end, it all becomes a dizzying blur of individual skills that must be taught, assessed, and marked off as mastered. This requires a steady stream of presenting new information, giving frequent practice, and measuring to see if students can restate the information.

Our instructional models have adjusted to meet this demand. In my thirty years of education, I have never seen a greater reliance on direct instruction than today. Teachers are the hardest working people in any classroom that you enter. We have asked them to work faster, cover more ground, and teach more skills without realizing that this model allows for little work to be done at the processing or output stage where real learning takes place.

There have been valiant attempts to make it all work. We emphasis differentiated learning systems for students. Teachers pretest, group, regroup, and individualize to try and focus the learning closer to the needs of the individual learner. Instructional models such as service learning that integrate multiple standards into units and lessons are used but these are difficult to implement and require a great deal of time and expertise to ensure coverage and assessment of everything that needs to be taught. In the end, these tend to be perceived as "extras" and not the real work of teachers or students.

So this is the crux of the dilemma. An analogy would be to compare educational work to that conducted on an assembly line. The final product is a student who has mastery of the defined knowledge and skills. The assembly line is a set distance from start to finish. Another product that gets built on an assembly line is a car. Cars today look nothing like cars of 50, 30, or 20 years ago. They now have GPS systems, airbags on all sides, and some can even park

themselves. These items have all been added to the assembly line. Students have also evolved. We have added knowledge and skill expectancies that previous generations did not have. Yet the car assembly line has changed considerably. It has been expanded and new tools and technologies are used to make the new cars. We have not made that same leap in education. We continue to shove more work stations on the same finite assembly line and we asked our workers just to go faster and more efficiently. Something has to change.

Daniel Pink in his book, A Whole New Mind, discusses the three pressures changing our world today and in the future. He defines these as abundance, Asia, and automation. Without going into a lengthy discussion on his key points, he essentially is giving a wake-up call to educators that we need to be doing more than teaching students skills that can be done cheaper by someone else or by a machine. He makes a compelling argument for going beyond the input phase to the processing and even more important, output phase of learning. This is where the real winners of the conceptual age will be found.

The answer to how to change our instructional model to address this problem is coincidentally found in Pink's research but not our current educational conclusions based upon that research. I have discussed Pink's book with many other educators. I have heard Pink talk about his ideas with an auditorium of educators. The conclusions have always come back to the fact that we need to include more (different?) skills and knowledge in our teaching. What we have all failed to realize is that we have not looked at our industry through the same lens that we look at the rest of the world. If automation is the solution for the car assembly line, then why shouldn't we consider it as part of the educational solution?

Most educators at this point will rise up in indignity at this point to correctly state that we do use technology. We have student data systems. Students do work on computers, we have on-line assessments, and students are making podcasts and movies. Technology is part of our industry but it has not been used in the same way that other industries have incorporated it. Automation has been used successfully in other industries to eliminate basic, logical, and sequentially repeated steps that can be done faster, cheaper, and more efficiently than a human. It has replaced the lower skilled end of the human work force. Why hasn't education considered this same concept? What if we turned over input phase work to the machines? In this model, technology would take over the responsibility of teaching students the bulk of the state standards that teachers currently are teaching.

This type of learning is not unknown. One of the most effective ways to learn a foreign language is through the use of a program called The Rosetta Stone. The Rosetta Stone has infinite patience and can give you direct instruction that is targeted at exactly your instructional level. It gives immediate feedback and it never gets tired. It is perfectly suited for this type of input learning.

Recently my daughter took an online algebra class. I had helped her in the past on this difficult topic and struggled. After my fourth explanation and fifth diagram trying to explain the formula for slope of a line, I found myself falling back on the classic instructional strategy of saying the same thing I had been earlier only now I was louder and slower. This seldom works. My

daughter's computer program was more patient. It gave further examples and even showed her where she was making an error. There are many things that a computer would be much more efficient at teaching than I can ever hope to be.

So what happens in a system where most of our current standards are taught through a computer? Does this make the teacher's job unnecessary? In this new system, the teacher's role isn't eliminated but it is changed. Now the teacher becomes a learning coordinator. Her job is to help a student initially develop their learning plan. The learning plan includes plans and timelines for mastery of all identified knowledge and skills that need to be mastered. Under the old system, time was a constant. In this new system, each student will be expected to meet all learning goals but time is a variable. Some students will need more time to master grade level standards. Others will be working well above grade level. Since input phase learning will be computer based this is perfectly fine. Assessment will be built into the system. Students will get instant feedback which will help guide further work. Practicing a skill incorrectly will no longer occur. Homework will look different as well. The line between home and school will blur since technology is not hampered by space or time. The teaching day doesn't end at 3:00. If a student needs extra review they get it at home or in after school learning labs.

Teachers also become a quality control expert in the new system. They constantly review learning plans to ensure that benchmark targets are reached. They also ensure that skills have been truly mastered through frequent checking and review. This will take time but considerably less time than what a teacher currently spends on current standards.

This will free the teacher up for their most important function. They will structure learning opportunities for students to move into processing and output phase learning. This is also where 21st Century learning skills can be taught. Teaching at these levels will incorporate technology but it will be for a different purpose than input phase teaching. At these levels, technology will become a work tool that will enable students to design and create.

Automation does not in itself necessarily produce any significant increase in student mastery of core standards. Automation also doesn't automatically ensure that 21st Century skills are taught or that teachers are reaching higher phases of learning with their students. What it does do is take the pressure off of teachers to use all time and resources to teach input level standards. The rest will be up to us.

This new model for education is not error free and there are many issues that will need to be resolved. Some will complain that educational software has not developed enough to take on the important function of teaching core standards. Others will argue that without clearly defined assessments in place, student learning will be inconsistent. Still others will argue that I haven't truly defined the role of the teacher or what instruction will look like in this new system. The criticisms are all correct. There are more questions than answers. This is almost always true when a new idea emerges. All change starts with an idea. The details do need to be resolved but automation may be the key to allow education to move forward in the 21<sup>st</sup> Century just as it was the answer to industry in the 20<sup>th</sup> Century.