The Progressive Teaching Initiative (PTI): A New Paradigm for Education

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Overview

In his Structure of Scientific Revolutions, Thomas Kuhn described how the creation and adoption of new scientific theories does not occur gradually, but in a rapid transition; a transition that occurs quickly after years of pressure have built up on the original theory. During those years, an accumulation of new information is accommodated within the original accepted theory until there comes a time that the original theory becomes too strained, and a new theory emerges, one that incorporates the new information in a more natural way. This sudden "paradigm shift" creates an alternative theory that then becomes the basis for further investigation and development. The scientific community is then split between adherents to the original theory, and those who support the new paradigm. (Often, the new theory only finds full acceptance after the adherents of the old theory leave the field as they lose relevance, retire, or die.)

Education is undergoing just such a paradigm shift. The practice of education has been faced with many new developments over the past decades. While current practice has attempted to incorporate and accommodate those new understandings, it has not been a comfortable process. It has led to a piecemeal approach that lacks coherence, and fails to realize the much greater potential of those new developments.

The Progressive Teaching Initiative (PTI) represents a new paradigm for educational practice that incorporates those new developments in a very natural way and, by combining them, creates something that has a qualitatively different character than what came before; the result is a much greater level of student learning and teacher effectiveness as well as enhanced satisfaction for students, teachers, parents and administrators. More is accomplished with less struggle and effort: gain is decoupled from pain.

The unifying core of the PTI paradigm is a new vision of the "course"; a vision with an elegance and sophistication that was not previously possible. While seemingly simple, this shift in focus to courses, and the creation of coherent sets of courses, has a major impact; the sort of effect that the creation of the printing press had on universal learning, interchangeable parts had on manufacturing, or operating systems had on computers. At first, there seems to be only a difference in efficiency but, in the end, the difference is transformational.

The Old Paradigm

In the past, education was built on an artisan model. Each teacher went through some sort of induction where he or she learned the basic principles of whatever was then the prevailing theory of education. Either before or during that process, those who were to be secondary school teachers learned a single content area to some significant depth; elementary teachers often did not. These individuals were then employed by schools and typically given one or more textbooks, each of which contained more content than could reasonably taught in a year, but all of which also contained an implicit curriculum. They were also given a set of state "standards."

Provided all of this background and material, they were essentially asked to prepare their own individual curricula, in the form of lesson plans and course materials; while district curricula existed, they only became embodied as working curricula when lesson plans and materials were created by each teacher. Elementary teachers would do this for all subjects; secondary teachers for the one to three courses they were teaching that year.

While they did this, their peers would be teaching what should have been very similar courses in the same building, district, state…even across the country. Tens of thousands of teachers laboring each night to create their own unique vision of what their courses should entail, and how learning would be assessed. They were isolated in their classrooms to sink or swim; about half these teachers did not survive even five years in education. None of them was as effective as they could have been in a more collaborative environment.

The New Paradigm

Technology now makes it possible for teachers to operate as members of extended, face-to-face and virtual, collaborative teams; all responsible for the learning of all students in their schools, even the learning of students beyond their schools. Shared digital files capture the collective wisdom and knowledge of the best teachers both with respect to content and pedagogy. This allows teachers to contribute in the areas of their greatest strength, while deriving the benefit of those same contributions from other teachers in their areas of greatest strength. The result is teaching and learning that far exceeds what was possible for any one teacher to provide. It also drives a process of continuous improvement, so that each year, the courses provided by these teachers become better.

As importantly, this frees teachers to focus on the art, and skill, of teaching. The focus of pre-service education and professional development now shifts to identifying people with the necessary skills to be a great teacher, and developing those skills. The key to great teachers now shifts to the inter-personal skills, collaborative ability, empathy, communication skills, energy and passion needed to create a classroom dynamic that drives effective learning. Instead of identifying people who can persevere through the nightly struggle to create redundant lesson plans, we identify people who can motivate and understand students. Rather than asking tens of thousands of teachers to plot tens of thousands of separate paths from point A to point B in their curricula, to prepare for common End-of-Course tests, we ask them to all work together to create one path, or a few alternative paths; each teacher supporting the others' work.

This new paradigm is more effective for student learning, more motivating for teachers, and eliminates the waste and inefficiency that has been emblematic of the teaching profession. This had not been possible in the past years of textbooks and teachers isolated in their classrooms; but it is happening now. Realizing the potential of new technology has enabled this new paradigm which connects all teachers together to obtain better results, with less effort and lower cost.

Interactive White Board Software

The technology now exists to create a new paradigm for teaching and learning; at its core is Interactive White Board (IWB) software, the software used to drive IWBs. Nascent within this technology is the ability to share courses of instruction between unlimited numbers of teachers and students at no cost. As is often the case, the first uses of this technology were to just do what had been done before, in a slightly different, perhaps better, way. Just as the first word processing programs for computers were used like electric typewriters, the first uses of IWB software were to create lessons that would be part of traditionally developed curricula; its potential to restructure education was not realized during its first many years in classrooms.

However, that potential is being realized now in the form of digital courses of instruction; IWB software files are the enabling technology for the new paradigm. They make possible large scale face-to-face and virtual collaborations; allow the creation of coherent, accurate, course-specific content; make the delivery of the best pedagogy efficient and practical; transform and invigorate the roles of students, teachers, and administrators; and will, in time, transform teacher preparation. All of this results in significant gains in teacher effectiveness and student learning.

IWB Presentations

The content of an entire course of instruction is now delivered via a set of IWB software files. In the past, each teacher would craft their own explanation of each topic with varying levels of accuracy, clarity and alignment, both to the standards and to End of Course (EOC) assessments. Since only the students would see their teacher's presentation of content, its accuracy varied greatly, as did its clarity.

By creating IWB Presentations it is easier for the teacher who initially creates the file to read it, reflect on it, and check his or her own work. This makes it easier to identify gaps in explanations that would likely not be noticed while teaching in classroom setting. While lesson plans should also have been able to identify these gaps, they did not provide nearly the level of detail and visibility that is possible in reviewing slide by slide exactly what the class will see.

More importantly, by having an expanding number of teachers sharing and using the same files, all of them can check and refine the presentation for accuracy, clarity and alignment with the course goals. Since each teacher is adding to, and continuously improving, the prior work of many teachers, each IWB Presentation gets better with time. Added to that, student results on assessments can identify areas in the presentation that need improvement.

At first, the school community (students, teachers, parents and administrators) drive this cycle of continuous improvement; but as these presentations are shared with thousands of schools and teachers, at www.njctl.org, that cycle becomes increasingly effective. The result is far beyond what can be accomplished by any one teacher, and that benefit is shared by all.

As a result, each year, all teachers of the course begin with the best version of each IWB Presentation that was refined by so many of their colleagues. This helps all teachers, but especially new teachers, and new teachers of a course. The high entry barrier to teaching a new course, or becoming a new teacher, has been dramatically lowered.

Student Responders and their Effect on Formative Assessment and Pedagogy

Black and William's research made it clear that the effective use of formative assessment is a critical predictor of student learning. As a result, large investments were made in the professional development of teachers so that they would be able to better create and use formative assessment. However, even when teachers had enough understanding to accomplish that, execution proved daunting in practice because of the time required to develop these new more complicated lessons (with ongoing embedded formative assessment) for multiple courses. While it was possible, in theory, to effectively implement formative assessment, it was not practical.

Student Responders proved to be just the technology that was needed to make formative assessment practical. Creating IWB Presentations with embedded Student Response questions has enabled a pedagogy that alternates between short intervals of direct instruction and real-time embedded formative assessment. Not only is the content of the course embedded in each IWB Presentation, so is the pedagogy that is used to teach that content.

After brief direct instruction on a new topic, formative assessment questions are asked of the class, within the IWB Presentation; students are encouraged to discuss their ideas. When the question is stopped and the class's answers are displayed on the board, there are three possible outcomes: they are almost all right; they are almost all wrong; there is a mixture of right and wrong answers. Only the teacher knows which is the case in each instance, since the students do not yet know which answer is correct.

If they are all right, the teacher might try one more question, and if the result is equally good, skip the rest of the questions and go to the next topic. If they are all wrong, the teacher would reteach the concept. If there is a mixture, the teacher would ask the students to find someone with a different answer and have each try to convince the other that they are correct. Then, they would revote to see if the students have been able to reason to the correct answer, which is the usual outcome. If not, the teacher would explain the correct answer. Then they try again, repeating this with multiple questions until the vast majority is answering correctly on at least two questions in a row.

The creation of IWB Presentations with the proper interweaving of accurate content, direct instruction and formative assessment is time consuming, but once that work is done, using it in class is effortless for a good teacher. The teacher naturally implements one of the most critical elements in predicting

student learning, formative assessment, without having to create those questions each night and remind themselves to use them each day. The class becomes students centered, with social constructivism at its core, without the teacher having to strain to make that happen. The laborious part of the work is done in the creation of the IWB Presentation; leaving the creativity of teaching to the teacher in the classroom: interpreting student answers, deciding how to proceed, motivating the class, driving peer instruction, collaboration and social constructivism. The path of least resistance for the students and teachers is also the best possible path.

The labor intensive, time consuming work of creating IWB Presentations that meet these requirements is shared by many teachers, and used and improved by all of them. Work that would be impractical for any one teacher to do is made easy when done by many. Once instruction is moved to a digital format as an IWB Presentation, it becomes easy to share with colleagues; the work of creating lessons and formative assessment questions can be shared; everyone contributes and everyone uses the result.

While the creation of such high levels of content and pedagogy might have been theoretically possible in the old paradigm, they were, in practical terms, impossible. This new approach results in a qualitatively different outcome: better instruction in a very large numbers of classrooms.

Lessons, and Lesson Plans, become Obsolete

Instruction driven by real time formative assessment will, by its nature, not fit into the boundaries of pre-scripted lesson plans. Formative assessment is used to constantly measure student understanding and adjust the pace of the class. Students are kept in their Zone of Proximal Development, learning as quickly as they can, but no more quickly. The pace varies from day to day, and from class to class. That's one reason that real time formative assessment is so critical.

Also, different schools have class periods of different duration; some schools have classes that are 80 minutes long; others have 40 minute classes. Even within the same school, the length of class periods can vary during the day or for different days of the week. So, course materials built around a lesson model cannot be shared and improved by teachers in different schools, or even be useful to individual teachers with classes of different duration.

IWB Presentations represent units: 100 to 200 slides providing three to six weeks of instruction. It is possible to make adjustments in order to complete a unit of instruction in a reasonably predictable period of time; it is not possible to know in advance how much students will learn in one class period.

So this new paradigm does not use the lesson as the increment of instruction. Nor does it use lesson plans; both because the lesson model itself has been abandoned and also because the plan for instruction is made much more visible through IWB Presentations, homework and assessments than was ever the case with the description of planned instruction that was provided by lesson plans.

Instead, unit plans which sketch out which slides will be taught on which days, which quizzes will be given on which days and when the unit assessment will be given have moved to the center of planning. These are also provided at www.njctl.org to be shared by all teachers, and then customized by the

teachers within a school based on their class period structure, their experience with the pace of their students, holidays, etc. The result is that within the school it has become possible for all students in the same course to be starting and ending units at the same time, and preparing for the same unit tests together. That creates the possibility of school-wide collaboration between all students and teachers.

Large scale Teacher Collaboration and EOC tests

It is clear that in order to be most effective, the formative assessment within each lesson and unit should lead to unit level summative assessments (unit tests) and that those unit tests should lead to the final exam, the final summative assessments given at the end of each year.

Simultaneously, the world was moving towards district, state, national, even international, End of Course (EOC) tests. So the work of aligning course materials to EOC assessments could now be shared by teachers across great geographical distances.

This further fueled the movement towards wide-scale collaboration, with thousands of teachers creating easily shared digital files for the instruction of courses that lead to common EOC assessments, why not all work together to create a course, or alternative courses, to accomplish that? And why not use face-to-face and electronic communication to share feedback on student outcomes from each set of course materials on a real time basis to continuously improve those materials.

Also, as one course becomes well defined, how it fits into the overall structure of student learning is clear and the benefit, and ease of creating, coherent horizontal and vertical articulations between courses is evident to all. The coherence this brings to education proves exciting to students and teachers alike: dead-ends are eliminated and school becomes a space within which students can move themselves from point to point with clarity; teaching and learning have been made visible.

Assessment for Learning

Now, other aspects of these new courses emerge naturally. If formative assessment is so valuable, why not transform almost all assessments to become formative. This is done for quizzes and unit tests by letting students take “retakes” of different versions of tests or quizzes whenever they feel they have learned more and would like to raise their grade. This keeps students “in the game” by constantly leaving open the possibility of success; never giving them an excuse to give up and accept failure. This gives a formative quality to every assessment, and drives social constructivist interaction between students as they teach each other to prepare for tests and quizzes… and retests and requizzes.

While very appealing, this would have been too much work for a single isolated teacher to support; how many versions of the same quiz or test can a single teacher create. But thousands of teachers who are teaching the same course can create many versions of each test, with each of them having to do very little. While grading these extra tests take some time, the elimination of the need to grade homework or create lesson plans more than compensates.

Textbooks

Textbooks are no longer relevant to primary and secondary education. They were the material of the old paradigm, the lump of clay from which each teacher would handcraft their course. As such, they provided far too much material to teach in any course; the job of the teacher was to find the course within that lump of clay by shaving away the unneeded parts.

IWB Presentations replace the textbook. They are specifically designed to match the content of the course, there is very little excess to be shaved away, just enough to serve different versions of a course. The teacher uses the IWB Presentations to teach, and gives copies to students to use. Aside from the copy available online at www.njctl.org to all, they also either print a copy (3 or 6 slides per page) or, in schools where one-to-one efforts provide laptops, or equivalent, to students, the students use electronic copies.

Students no longer write down what the teacher is presenting, they already have a copy. Their class notes focus on what they need to write down to better understand what was presented. Both the teacher and the students have much less writing to do, giving them more time for thinking and discussion.

Also, in this way, as the materials are continuously improved, the latest version, as well as earlier versions, is always available.

The Role of Homework

The nature of homework changes; in the past, grades were given for homework, which led to large scale "cheating" as students copied each other's work. Many students saw homework as a way to get extra points, not a way to learn. Now, homework becomes a form of individualized instruction with built in formative assessment. This is accomplished by providing students the answers, at the back of each assignment. That way they can practice what they learned during the day and check their answers as they go. They are done their homework when they understand the answers; not when they write out, or copy, pages of work that might be right or wrong. Since thousands of students are working on the same homework assignments at more or less the same time, they can help each other in person or electronically; driving wide-scale social constructivism.

This also eliminates the previous distortion in our system of education, where students could get high grades each marking period and low grades on the EOC test. That resulted from marking period grades that were inflated by getting points for homework, often copied homework. The marking period grades did not reflect what the student knew or could do, but the EOC test did; hence the disparity.

Correlating Interim and EOC Assessment Grading

It's critically important to align the content taught in a course with that which will be assessed on its EOC assessment. While some might argue that is "teaching to the test", the alternative would be absurd; teaching students what will not be assessed on the test. In fact, by aligning the course content properly, it's now possible to avoid frantic "teaching to the test" towards the end of the year, when students, and

teachers, realize that what they have learned, or taught, is not sufficient; so they set out to cram the learning of a different curriculum in the last month or two.

While this content alignment is necessary, it is not sufficient. Most EOC assessments are very rigorous, but only require a relative low raw score to achieve a high result. For instance, a raw score of about 65% on the Advanced Placement (AP) Physics B exam results in the top score on that exam; a result achieved by only about 10% of U.S. students who take that exam. If the rigor on unit tests were kept at this same level, students would be receiving D's and F's throughout the year and then getting exceptional result on the EOC test. Of course, that's not what happens.

Typically marking period grades are either "padded" with extra points for projects, homework, attendance, and/or for being a well behaved student. Unfortunately, these extra points don't correlate with outcomes on rigorous EOC tests.

Or, as is often the case, teachers make unit tests that are easier than the EOC test. They design tests that result in their high performing students often earning raw scores of better than 90%. Unless they have classes only comprised of the top 1% of U.S. students, that must mean that their tests are far less demanding than the EOC exam, otherwise all their students would be earning top AP scores or being judged "Advanced Proficient" on state tests. The problem is that this means that the first very challenging test their students take all year will be the EOC test. The result is more typically what happens, students get A's and B's all year and then do poorly on the EOC test.

To some extent this can be avoided by making unit tests at the same or a higher level of challenge than the EOC test, and then grading it using the same scoring system, the same non-linear "curve", to generate grades from raw scores as will be used on the EOC test. Since taking EOC test are more challenging by their nature, due to the breadth of the content assessed, the conversion program needs to be adjusted to reflect that…that has been done in the grading program for PTI courses.

Before leaving this topic it's worth pointing out that the only explicit "teaching to test" that should be done is to have students sit for a test of the same structure and duration once or twice before the EOC test so that they are comfortable and have the stamina for a prolonged assessment. Too often, students, especially those who suffer from a poor academic self-image, are quick to give up when faced with a longer test than they have seen before that year; perhaps their first 1.5 to 3.0 hour long tests of the year. In addition to familiarizing them with the rigor of the EOC test, they should also be familiarized with what the test will feel like when they take it.

Social Constructivism, Heterogeneous Classes and the Classroom

Social constructivism is essential in the new paradigm; about half the time in each class is spent with students answering Student Response formative assessment questions (getting peer help as they need it) or working together on classwork problems.

To help foster this atmosphere of peer learning and social constructivist interaction, students do best if seated around round tables so that interaction flows naturally. The norm becomes for students to be

facing each other or sitting side by side around a round table discussing their different perspectives. Students love to talk with each other, even if it's about an academic subject. Now, they are encouraged to do that, and sitting together reinforces that.

Heterogeneous, untracked, classes are important if all students are to learn, and they are made effective through this social constructivist classroom structure. Students sitting around a round table will have a range of strengths and weaknesses. Some may have had a stronger background in mathematics, others in visualization or drawing. Together, they are able to construct knowledge and bring each other along much more efficiently than they could apart.

While some might be concerned that this hurts struggling students by moving too quickly for them; the opposite is the case. Tracked classes that are comprised on only struggling students provide them no pathway to improvement. The students reinforce each others' weaknesses and lack of motivation; being with strong motivated students, who can help them, allows them to keep progressing.

On the other hand, some might expect that this holds back academically strongest students. This is also not the case; those students will often play the role of teaching those who need help, filling in the holes that those weaker students have in their backgrounds. This elevates the standing of the top students by recognizing them for what they know and can do and helps them construct a much deeper understanding themselves. The best way to improve your own understanding of a subject is to teach it to others.

The Role of Teachers

Teachers are no longer creating their own courses (lesson plans are eliminated) nor are they grading homework. Instead, they are focused on teaching, an underappreciated skill, or art. The ability to motivate and coordinate the learning of a large number of people each day is of the utmost value in this new paradigm. In the past, much of teachers work was in curriculum development, matching state standards to lesson plans to EOC tests, to textbook chapters, etc. While some of that work must still be done, it is now shared by large numbers of teachers collaboratively engaged in the continuous improvement of very specific sets of courses.

Teachers now spend most of their time planning how to reach each and every student in their courses, not individually creating new courses. When you go from one PTI class to another, each teacher is teaching the same material with the same IWB Presentation. You might think that this would seem scripted…that each teacher would be droning on, speaking words that were not their own. The opposite is true. Freed from the task of creating multiple new courses each night, the creativity and personal style of each teacher becomes evident. Just as great choreography brings out the best in dancers, so too do great courses bring out the creativity and energy of teachers.

In the old paradigm, teaching was not respected as an art. Anyone with a degree showing that they had sat through some pre-service and content classes was considered qualified to teach. Now, the heart of teaching lies with the individual's disposition and skills: teaching skills, inter-personal skills, collaborative ability, empathy, communication skills, energy and passion. This had been lost in the need to create

"teachers" who could each write multiple curricula. While that still need that to be a small part of many teachers' jobs, this new paradigm frees teachers to teach.

The Career of Teachers

Continuous improvement is fundamental to PTI: thousands of teachers creating better Student Response, test and/or homework questions; creating better direct instruction slides for IWB Presentations; prowling the internet to find better digital materials to add to IWB Presentations; creating new versions of assessments. Each year, every teacher starts each course with the best version of all the work done by all the teachers before them; each new teacher, or new teacher to a subject area, starts with the best work of the most experienced teachers.

In the old paradigm, secondary and middle school teachers would teach the same courses year after year; it would be just too much work for a teacher to start teaching a new course; their prior work in creating course materials would be useless to them. The result was the creation of silos; teachers in the same hallway not knowing the content of each other's courses. Biology teachers not understanding what was being taught in physics; math teachers not understanding what was taught in chemistry; English teachers not understanding what taught in social studies. Fragmentation and incoherence was the natural result of this. As was intellectual stagnation on the part of teachers; their students would have a better vision of the scope of subjects being taught in the school than their teachers.

Now, it is possible for teachers to learn the content of a new subject area, and then teach it. Biology teachers can learn to teach physics courses, social studies teachers can teach physics courses; English teachers can teach social studies courses. Teachers learn the course in order to teach it; the course, not the content area, becomes the atom of instruction. This allows teachers to reinvigorate themselves by moving into new subject areas, rather than having to move out of teaching. Their teaching skills remain valuable; they are just applied in a new domain.

In primary schools, the old paradigm led to teachers being more expert in some content areas that they taught than others. Since they were expected to create lessons in content areas in which they were not as facile, it could be expected that the courses that they created way would be uneven in quality; mathematics often being the subject to suffer. Now, the quality of instruction is both higher and more even, both between teachers and between the multiple subjects taught by the same teacher.

Similarly, a 2nd grade teacher moving to 4th grade would have been expected to create new lesson plans for all the content areas. Just seeing the substitute plans that an elementary teacher must leave for a one day absence shows the level of complexity with which they cope. But if a teacher could walk into a new grade with all the course materials in place, regardless if it was their favorite or least favorite content area, moving between grades would be much easier. This makes looping and other approaches the support cohesion and continuity, much easier to implement.

Substitute Teachers

Formerly, an absent teacher often meant that students would lose a day, or days, of instruction. That was always a problem, but it poses an even greater challenge in this new paradigm, since the students in that absent teacher's class would fall behind those of the other teachers of that same course. That would put those students at a disadvantage when taking the common unit test, or cause the delay of the unit test for all students in the school, reducing student learning overall.

Fortunately, there is a solution that keeps courses aligned and maximizes student learning. With many, or all, teachers using the same teaching methods, and some even teaching the same course, teachers can support each other's classes when one is absent, helping out or replacing a substitute teacher. The absent teacher just needs to let his or her colleagues know the last slides they taught, the last homework assignment that was given and the last quiz that the students took. With that information, a colleague can spend some time in that class to make sure that it continues moving forward. Students can also help in this process, since many of them will see the arc of the course and will have reviewed the IWB Presentation before coming to class; they can help teach the class.

The key is for all teachers and students in the school to take responsibility for the learning by all the students in the schools. Collegiality and collaboration towards accomplishing the common goal of helping all students learn is at the core of this paradigm.

Tutoring Sessions

All students do not have the same academic background, nor do they learn at the same pace. This poses an obstacle to the heterogeneous, untracked classes which are essential to this paradigm. To overcome that, it's critically important that students have access to assistance outside of class. While that can take the form of tutoring sessions during the day, it is often efficient to have sessions after school as well.

Since all students are taking the same course, regardless of their teacher, they can get assistance from any teacher. That also means that one teacher staying after school can help the students of all teachers; that responsibility can be rotated between teachers.

Most of these tutoring sessions involve peer tutoring. The students with the strongest background, who are getting the best results, are encouraged to stay to help those students who need it. The teacher coordinates that tutoring and provides the last resort for questions that cannot be handled by the students.

This is an extension of the peer tutoring that occurs in classes. And just as it does in class, it helps both the struggling students by getting them assistance and the top students by giving them a chance to teach what they have learned, providing them a much deeper understanding.

Pre-service Education

It is now more critical to stress the skills of teaching than the skills of curriculum development. Looking for dispositions and personal qualities that lend themselves to good teaching is the first step. It's hard to

make someone care about children, be empathetic, know how to motivate and help organize the work of others if this is not part of their nature. Given that nature, it is then possible to hone those skills to create a high quality teacher.

Once an individual has the set of skills to be a great teacher, they should be certified to teach those courses for which they have proven they have the needed pedagogical content knowledge. It is easier to teach someone with the experience and talents of a great teacher to teach mathematics, than to teach someone with a strong background in mathematics to be a great teacher. And we can teach teachers the needed content knowledge using the identical techniques that they will use to teach it to their students. This will drastically increase the number and quality of teachers in areas that have traditionally suffered from a shortage of high quality teachers.

Similarly, elementary teachers should be certified to teach all the content areas that they will be teaching. They have to learn many content areas to become certified to teach a grade, but that is appropriate since they will need to teach those content areas.

And if a teacher wants to teach a course in a new content area or a new grade in elementary school, they just have to be certified to teach that course, or the set of courses in that grade, by showing that they have mastered the needed content. That will result in a profession that has high, but relevant, entry requirements for becoming a teacher, but more fluid boundaries between the different content areas.

Summary

This paper has described a paradigm shift in education that is underway; education will not look the same a few years from now as it did a few years ago. This process started with the Progressive Science Initiative (PSI), moved to the Progressive Mathematics Initiative (PMI) and will soon be entering other subject areas. The general approach can now be framed as the Progressive Teaching Initiative (PTI). PTI holds the promise of creating an educational system that is more centered on student learning, leads to higher levels of student learning and teacher effectiveness, and results in greater satisfaction on the part of all involved in education, in whatever role. And it can accomplish this at what should be about the same cost as the current system, perhaps a lower cost.

This new paradigm, as has often been the case, arose from what was initially a sideways move to a new technology, which then opened up possibilities that could have not have been expected. Its potential is likely to continue to surprise us as its various avenues are explored.