MOVING TOWARD NEXT PRACTICES IN K-12 EDUCATION

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Change or Be Changed
In 1983, the American education system received a major wake-up call with a report from the National Commission on Excellence in Education titled, *A Nation at Risk: The Imperative for Educational Reform*. The report challenged educators to recognize that—increasingly—students in other countries were beginning to outperform the U.S. students, a trend that would ultimately result in an American workforce inadequately prepared to participate in an increasingly globalized economy.

Nearly two decades later, a major piece of federal legislation—the *No Child Left Behind Act of 2001* (NCLB)—identified what districts and educators needed to do to improve our schools. It included adequate yearly progress (AYP) provisions, which required that each subgroup of students in each grade and discipline tested do better than the previous year’s students to avoid being placed on the Schools in Need of Improvement list.

Now, a third major set of initiatives to improve our schools is underway: the Common Core State Standards (CCSS), Next Generation Assessments, and teacher evaluation based upon student performance as required under *Race to the Top* funding. These initiatives are even more directive about what schools must do to improve student performance, as demonstrated on more rigorous and relevant assessments. Unfortunately, these challenging new requirements are coming at a time when financial support for education has been severely diminished by the economy.

We have moved from putting pressure on our education system through *A Nation at Risk* to putting pressure on states, districts, and schools under NCLB to putting pressure on individual teachers with the CCSS/Next Generation Assessments. I’ve been in education through all three waves, and I believe we have reached a tipping point in terms of our education system.

We must recognize that the old system with its rules, regulations, certifications, tenure, and contracts was put in place for a time that has passed. We must start to make the serious changes needed in our schools.

Evolution of Change
The combination of new standards that are more rigorous and relevant and the financial stress facing our schools will require unprecedented changes in our education system. What students must know and be able to do to be successful in the 21st century technological, information-based society has dramatically outstripped the capacity of our schools to help all students develop the necessary skills. We need to invent, move toward, and adopt changes that will become our “next practices.”

To guide thinking about that change, my colleagues and I created the Evolution of Change Model, which illustrates three levels of change.

- **Incremental change** involves improvements or enhancements that make current practices, processes, and products more efficient, effective, and/or desirable within an existing system.

- **Innovative change** fundamentally changes or replaces existing practices, processes, and products with more suitable substitutes that modify, update, or modernize the system.

- **Transformational change** includes practices, processes, and products that anticipate, reflect, or define the needs of a significantly different system or environment.

Most changes are incremental. Their impact is small, however, compared to innovative change and very small compared to transformational change. Innovative change, in turn, has less impact than transformational change.

As an example, Native American peoples in the Southwest originally rode horses bareback. A saddle was not deemed necessary for riding. Many assumed it would be cumbersome for the animal. Others, however, recognized that saddles could provide greater comfort, stability, and utility to the rider.
Putting a saddle on a horse was an incremental change to the transportation system of the day.

At some point in time, people hitched horses to wagons, which could transport families and goods with greater comfort, speed, safety, and efficiency. That was an innovative change.

Transformational change occurred with the invention of the automobile, bringing much greater “horsepower” and vastly improved utility and comfort.

Automotive technology went beyond just altering how people and goods moved from one place to another. It also changed where people went, for example, when a once-busy trail was abandoned after a new road was built. Motor vehicle traffic not only redrew maps, but also transformed society.

Recent advances in knowledge, communications, technology, and the global economy have accelerated the rate of change to a blurring speed. We can only guess what changes await us in the near future. The next transformational changes are right around the corner and mostly unpredictable.

Here is a contemporary example. Google Search was a major breakthrough in Internet utility that improved upon previous search engines. Google then added incremental improvements to become a full-service destination for communications (Gmail), video sharing (YouTube) and more.

Google’s mission to anticipate and meet everyday needs is moving to the innovative and transformational stages.

- **Google’s Project Glass** has taken the power of a smartphone and incorporated it into eyeglasses—a less cumbersome, easier to use, and more effective and efficient form of mobile technology. Voice-enabled satellite navigation can identify your location, provide detailed maps and views, and offer directions. The glasses can take images as you walk and transmit those images to others via text or through a social media site. You can download any movie, website, or data source onto those glasses. Google glasses are an innovative change. (www.youtube.com/watch?v=9c6W4CCU9M4)

- The **Google Driverless Car** prototype, released in 2012, uses technology similar to the current GPS; the “driver” punches in where she or he wants to go, and the car drives itself to that location. The Google-enabled car, a transformational change, will be fully voice-programmable and self-navigating. Improvements in navigational aids, sensors, digital cameras, and “smart computers” will lead to cars that don’t require active piloting or a driver, except in rare circumstances, similar to commercial aircraft. The next time you are on an airplane, remember that the pilot and co-pilot are there mostly for takeoff, landing, and emergencies. Computers actually fly the plane. (http://www.ted.com/talks/lang/en/sebastian_thrun_google_s_driverless_car.html)

**Gaming in Education**

I believe education has worked very hard since the 1983 *A Nation at Risk* report to improve teaching and learning through changes that have been incremental in nature. That is about to accelerate to the innovative level on its way to the transformational level in my opinion. The impetus will come in part from the digital gaming industry.

Advancements in the world of gaming have been built around applications and technologies that are being adapted to K-12 education. Therefore, understanding what is happening with game apps is an important preamble to understanding the innovative and transformational changes that are about to occur in education.
I recently asked a large group of administrators—mostly superintendents and principals—how many of them had heard of *Angry Birds*. Many had. By my informal count of raised hands:

- 80% of them had heard of *Angry Birds*
- 80% of that 80% had played *Angry Birds*—about half in the past 48 hours

These weren’t elementary or middle school students. They were senior K-12 education administrators! But I don’t blame them one bit. Playing a game like *Angry Birds* is both entertaining and engaging. In fact, there is increasing evidence that gaming is engaging to the point of being addictive for some people.

Wikipedia reported on May 9, 2012, that *Angry Birds* had hit one billion downloads. Estimates at time of writing were that *Angry Birds* was being played at the rate of over 300,000,000 minutes per day, amounting to 200,000 years of time played to date.

How did I discover *Angry Birds*? From my 6-year-old grandson, Grant, who plays expertly and often. Grant loves the fact that the games get progressively more difficult as he masters the levels. Each game reacts to his demonstrated ability and adapts its content to his individual needs to ensure that he remains challenged, interested, and engaged—and rewarded—for each level of proficiency he attains.

Grant’s 4-year-old brother, Brady, wanted to play too, but he was not quite at the *Angry Birds* “readiness level,” so to speak. Luckily, his big brother helped him out, showing him how to play, and coaching him enough so he could try out the beginner level. That was enough to hook Brady, who also became enthralled with the game. Then, to use education-speak, he “took responsibility for his own learning.” Young Brady was determined to learn, improve, and enhance his own ability level. It is what the Learning Criteria, developed in partnership between the International Center and Successful Practices Network, would refer to as examples of “learner engagement” and “stretch learning.”

There is also increasing evidence from neuroscience that game-based learning is a potentially powerful tool for learning and brain health. My co-author on a book about the brain, Dr. Paul D. Nussbaum, emphasizes the importance to cognitive health of such brain-stimulating activities as gaming in order to grow “dendrites” and build “brain density.”

In a discussion on “What Can *Angry Birds* Teach Us About …? At the Forefront of *Angry Birds* Research” on the Educational Games Research website, an anonymous blogger made what I think is an interesting observation:

*Angry Birds* and other popular mobile games will probably continue receiving attention from researchers, with efforts likely to include discerning design details that can be adapted to more educational endeavors, as well as a continued commitment to incorporating the game itself into academics. Research always lags pop culture. By the time several thorough studies of *Angry Birds* are published, if any ever are, the game will likely have faded in popularity and been replaced by the next new thing. (http://edugamesresearch.com/blog)

Let me share another example, called *Sushi Monster*. This free app from Scholastic challenges children to use their mental math and reasoning skills in a timed, multi-level contest. Students feed their Sushi Monsters by choosing two numbers that, when added or multiplied, result in the number that the monster wants to eat. When the monster has been fully fed students move on to feeding a new monster. The game adjusts the level of difficulty to individual ability. Students earn the right to win awards and continue play at increasingly challenging levels.

I suspect that *Sushi Monster*’s many thousands of young users are having too much fun engaged in their own learning to realize they are actually doing timed arithmetic drills. I also think that *Sushi Monster* provides a hint about why game-based learning will impact the education system as an innovative—if not a transformational—change.
Game-based learning holds great promise for K-12 instruction and learning because of:

- the power of games to engage students in their own learning.
- the integrated, individualized, and adaptive nature of gaming technology,
- the connection to the world that most students live in—and actively and enthusiastically learn from—outside of school.

Changes in the Workplace vs. Education

Although we have been working hard since 1983 to improve our education system, the solutions have not been adequate. I believe a central reason is that we are all caught in an outdated paradigm, because the primary purpose of school has historically been to prepare students for academic success in the next grade or level of education.

The current impetus for higher and different standards is to prepare students for the world beyond school, for which the business community has been leading the charge for three decades. Education has begun to catch up with the Common Core State Standards, which are designed “for college and career readiness.”

But what does “career ready” mean in an ever-changing workplace? That globalized and digitized world in which our students will work will have fewer routine jobs, and those jobs will be low paying. Routine jobs that are rules-driven and involve standardized problem solving can be digitized, automated, and outsourced to countries with low wages.

It is the non-routine jobs for which we must prepare our students, for their future economic well-being and the nation’s. Doing so will require some fundamental changes in how we think about “school” and how we educate students.

While the world outside of school has been transformed by technology and other changes, most school improvement has been incremental in nature. It is time to take bold steps and begin to institute next practices in our schools.

Guides for Change Management

What should next practices look like and how must leadership prepare for them? To help us visualize where we need to go in the years immediately ahead, I offer three conceptual models to guide ongoing discussions and collaborative efforts.

Inevitably and unfortunately, leadership at all levels is going to be asked to improve student performance with fewer financial resources. For that reason, I begin with the Effectiveness and Efficiency Framework™.

The Effectiveness and Efficiency Framework can be used to compare the efficiency (cost) with the effectiveness (student performance) of a wide variety of tools, strategies, professional development activities, organizational configurations, and procedural decisions. The data gathered can be used to guide policy and allocation of resources at the school, district, and state levels. The efforts that produce the greatest improvements for the least cost (Quadrant D) should be given priority.

This approach differs substantially from basing decision making on existing categorical funds and collective bargaining agreements and can lead to a reshaping of those agreements and a realignment of funding sources.
The next conceptual model is the Rigor/Relevance Framework®. My colleagues and I created the Rigor/Relevance Framework to help teachers increase the level of academic rigor and real-world relevance in their curriculum, instruction, and assessments, thereby raising student achievement.

The Rigor/Relevance Framework is divided into four quadrants. (International Center for Leadership in Education, Using Rigor and Relevance to Create Effective Instruction.)

**Acquisition (Quadrant A)** represents simple recall and basic understanding of knowledge for its own sake. Students gather and store bits of information and are expected to remember or understand this acquired knowledge. Knowing that the world rotates or that Shakespeare wrote Hamlet are examples of Quadrant A knowledge.

**Application (Quadrant B)** represents application of knowledge. Students use acquired knowledge to solve simple problems, design solutions, and complete work. Knowing how to use math skills to make purchases and count change are two examples.

**Assimilation (Quadrant C)** represents more complex thinking than Acquisition, but still knowledge for its own sake. Students extend and refine their acquired knowledge to be able to use it automatically and routinely to analyze and solve problems and organize data. Quadrant C embraces higher levels of knowledge, such as knowing how the U.S. political system works or analyzing the benefits/challenges of cultural diversity.

**Adaptation (Quadrant D)** represents a high degree of application. Students think in complex ways and apply the knowledge and skills they have acquired across disciplines to solve problems that have multiple possible solutions. When confronted with perplexing unknowns, students are able to use acquired knowledge and skills to devise solutions and take actions that further develop their abilities and understandings.

All four quadrants have value, but Quadrant D brings the greatest value in preparing students for success in life.

In combination, the E/E Framework and the R/R Framework are two powerful and useful models for 21st century visioning, planning, and decision making regarding next practices in an era of economic challenges and rapid change. What we need to do next is to align our thinking and conceptually merge the Evolution of Change Model with the two frameworks.

The multi-layered approach can be a guide to support the types of strategic decisions that education leaders will need to make in facing the challenges ahead. Here is the key question that leaders must answer:

What incremental and then innovative and transformational changes will ensure that we provide our students with learning that is rigorous, relevant, effective, and efficient—at a time when budgetary pressures limit our options?

**Pursuing Next Practices**

There continue to be many helpful incremental changes, but also some significant and encouraging innovative changes in our schools. These innovations—heading toward transformational changes—are what I consider to be next practices.

As we pursue next practices, we must make sure that everything we do:

- falls in Quadrant D of the E/E Framework—highly effective and highly efficient.
- moves toward Quadrant D of the R/R Framework—high rigor and high relevance.
- will help us move to innovative and transformational practices.
Here are some examples of the three types of change in various areas of responsibility.

**Scoring of Essays**

1. **Incremental Change**
   Staff are trained in how to improve and standardize their grading of essays across disciplines.

2. **Innovative Change**
   Essays are machine-scored. In 2012, the Hewlett Foundation completed a study of nine different programs using 22,029 student essays and found that all were more accurately and consistently scored than by human scoring. (http://dl.dropbox.com/u/44416236/NCME%202012%20Paper3_29_12.pdf)

3. **Transformational Change**
   Machine-based essay scoring will occur while students are actually writing their essay. Students are shown the errors and how to correct them and are given stylistic and structural suggestions on ways to improve their writing in the future.

**Professional Development**

1. **Incremental Change**
   Tech-savvy teachers design an assessment that all staff take to measure their competency with common technology applications (Word, Excel, etc.) and instructional technology (smartboards, game-based learning, etc.). Based on performance, staff members are assigned to a beginner, intermediate, or advanced group for a day-long training conducted by students to improve their skills.

2. **Innovative Change**
   After completing the training described above, all educators are assigned a student mentor to assist them. The students receive academic credit for their service.

3. **Transformational Change**
   The staff members identified as “advanced” and tech-savvy students are given an extended period of time to design the instructional delivery system for the following school year, which must be based in Quadrant D of the E/E Framework.

**Technology in Schools**

1. **Incremental Change**
   Computer labs, where students visit once during the week.

2. **Innovative Change**
   One-to-One Computing, where the school provides each student with access to their own individual computer throughout the day.

3. **Transformational Change**
   Bring Your Own Technology, where each student brings their own personal technology devices to school to assist in their learning.

**Change—Systematically**

We do need to change our schools and our school systems—before someone changes them for us. And we need to change them to a more transformational model. K-12 education must move past the incremental changes that have already happened and move toward the innovative changes that are currently happening and the transformational changes that will or should happen in the not-too-distant future. To do this, we must systematically reflect on, map out, strategize about, and then align the progression of changes in all aspects of our education system and schools in support of student achievement.

**REFERENCES**


www.corestandards.org

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