

# **A Tale of Two Schools**

## **From *Learning for the Future:* *A Roadmap for Schools in the 21st Century***

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### **The Old School**

The school in which I work is, as of this writing, 172 years old. The walls of one of our meeting rooms feature some photographs of students and teachers from around a century earlier. I sometimes use those pictures in my presentations to jumpstart a discussion on the old school. What really stands out from the photographs are the faces. Schoolmasters invariably glare at the photograph with very angry faces, and the students' expressions seem to oscillate between sadness and fear, epitomizing what was clearly the norm in human relationships at school at that time. (Educators have joked that in some schools, similar photographs taken now would show the exact opposite—sad, fearful teachers and angry students.) Fortunately, that oppressive environment has gradually given way to more humane schools, with improved relationships between instructors and students. However, many of the underlying structures that provided the foundations for that type of school are still largely in place.

The event that clearly separated the old from the new school in our subsequent analysis is the invention and widespread use of the Internet. What we will now call the “old school” refers to schools in the pre-Internet era, which is still the predominant model in many schools and districts. The past tense in the list of old school characteristics below can easily be replaced by a painful present tense in many cases.

The general underlying characteristics of the old school are directly linked to the previous knowledge paradigm:

- **Possessing knowledge had value:** Sir Francis Bacon said “knowledge is power,” and the traditional educational system relied heavily on the acquisition of, and, more often than not, the memorization of, knowledge. Knowledge was physically centralized, in schools, universities, libraries and other centers of learning, and people with no access to them were prevented from learning.
- **There was a content-based curriculum:** It follows logically that school curricula were predominantly focused on content. A cumulative sequencing of that content was the road to higher-order learning, and was also a prerequisite to progressing along successive courses of study.
- **Core subjects dominated the curriculum:** A heavy emphasis on the languages, mathematics and, to a lesser extent, science as core subjects underscored the need to acquire certain basic central knowledge as an essential condition for learning the rest.
- **Higher studies consisted of specialization:** Gradually, as students progressed through the years, subjects became more and more specific in the complexity of

the knowledge acquired, as an essential prerequisite to university studies, which in turn narrowed down the focus of specialization even further.

- **The teacher was at the center:** Because of the emphasis on content and a model of information scarcity, the teacher role was pre-eminent. Thus, teachers started off from an automatic position of self-invested power stemming out of the fact that they were the sole possessors of knowledge, so learning was heavily dependent on the teacher involved. This could be especially painful in elementary school, where a single teacher had complete power over the learners, and the proficiency of the instructor determined whether children lost or gained a year of learning at school. There was a yearly ritual of parents breathlessly awaiting the moment when teaching assignments were announced to learn whether their sons or daughters would be in the classrooms of “good” or “bad” teachers. The parents knew that this simple administrative decision could have a major impact on their child’s life.

- **There was an overwhelming focus on reading and writing:** Since the almost exclusive medium for transmitting and sharing knowledge was the book and other written texts, reading (decoding that knowledge) and writing were the main skills to be acquired and perfected over the years. Despite the fact that many students, even though they had other talents, were unable to master these skills to the level required and therefore were outcasts in the school system, success in school was heavily dependent on how well students could read and write. These two skills constituted the Holy Grail of education, not only in that they held the key to learning in all subjects, but also in that they helped develop analytical skills that were deemed essential for the learning process in general.

- **Learning was almost always assessed by performance on sit-down written tests:** In their various “flavors” and “colors,” written tests were almost the only way to assess whether students were benefiting from instruction and progressing according to the school mission. Evaluation at school consisted of a seemingly endless sequence of written tests, and students gradually perfected their mastery of test-taking. Teachers in this environment were faced daily with students’ ageless battle cry when attempting to present any topic: “Will this be on the test?” As they progressed through school, a sort of evolutionary process took place, and students became uncannily able to maximize their efficiency, learning only what was required to score well on tests. Standardized tests, measuring certain dimensions of the learning of vast numbers of students for comparison and benchmarking purposes, were particularly maligned, in that they became the quintessential measure, however inadequate, of scores-driven instruction. They stressed out teachers and students alike, not to mention administrators, who operated under the threat of school sanctions if scores did not improve. Once again, students who did not perform well under these conditions found themselves hopelessly ostracized in schools, at risk of being labeled as learning disabled and sent away to be dealt with by special education teachers, in a process that, despite

the best efforts of these specialists, irreparably undermined their self esteem.

- **Students were always grouped by age:** Sir Ken Robinson, a renowned school reform advocate and creativity specialist who has lately gained rock star status in the world of education, illustrates clearly an issue that has been taken for granted in the school system—that students should be grouped by age in nearly impermeable grade levels—when he says that school structure orders students exclusively by “date of manufacture” (Robinson, 2006). Ability, learning style and interests, save in specific learning environments seen as reform efforts, have no bearing whatsoever on the way students are grouped to engage in learning.

- **Students were expected to learn material “on time”:** It was common for teachers to admonish their students to study for the test in such a way that they knew all the material on a certain day. Mastering content and skills within the timeframe that fits the sequencing specified by the teacher was more important than the learning itself. When students who did not perform well clamored for a retest, or some other form of assessment that gave them more time or a second chance to master their learning, any teacher who agreed was accused of being a pushover. Schools created an artificial cowboy duel culture in which students have one chance to draw and fire, and if they miss, they suffer the consequences.

- **Progress was calculated using averages:** Within an environment in which grades ruled, marks that determined the success of students at school were determined in most cases by calculating an average that included complicated weighting formulas. Thus, generally, a single failure during the grading period represented an indelible blemish for students, even if they eventually became proficient in the material. End-of-term summative examinations added to the dramatic make-or-break scenario: they determined whether a student received a passing grade, or at least contributed heftily towards the final average. Students who progressed well throughout the grading period could have a single “bad day” that drastically affected their final grade. Jay Cross, in his seminal book *Informal Learning* (2006), is quite drastic in dismissing the exacerbated importance assigned to grades. He calls it “academia's deep, dark secret: outside of the school system, grades are meaningless.”

- **Mistakes were not allowed:** Mistakes were stigmatized in the learning process. It is widely known and well accepted that trial-and-error and learning from one's own mistakes is a secure path for learning and acquiring proficiency, especially in a fail-safe environment like the one that schools can provide, where mistakes are inconsequential and not detrimental to learning. Despite this, schools have instituted an implicitly repressive environment that progressively stifles students' creativity, curiosity and spontaneity for fear of being ridiculed. (Chess grandmaster Aron Nimzowitsch transcended the game with his statement that a threat is stronger than the realization of that threat.) One all-too-common conduct that teachers observe in children of all ages is that they appear to be disengaged and literally “switch off” because they would much rather be labeled as lazy than

be considered dumb.

- **Knowledge was meticulously compartmentalized:** The subject structure was pervasive in schools, especially at the high school or secondary level. Learning was rigorously classified into subjects, and little or no interaction was encouraged between different subjects and departments. Interdisciplinary projects were rare events, reserved to the realm of progressive or experimental programs.

- **There were clear and well-defined outcomes that indicated academic success:** The old school had very clear markers for success, based on the Gaussian curve (or bell curve) that separated those who were academically able from those who were not (and who were sometimes explicitly referred to as “learning disabled”). Schools needed to produce graduates who would be able to succeed in a predominantly left-brained analytical world where knowledge and precisely defined core skills were paramount to progressing in university studies and gaining a secure foothold in the workplace. The market demanded specialists, and prospective employers were more interested in proficiency than in potential.

The above attempt to objectively dissect and expose the underlying basic premises under which the old school operated reinforces the need for change. Most of the barebones facts about school systems seem to be at cross purposes with the new knowledge paradigm and the changes taking place. But it would be naïve to think that teachers and educational leaders have conspired over the years to create schools that would remain immune to the passage of time and would operate in denial of current trends. But however unintentional it was, the reality that needs to be faced is that schools have not kept up with the times.

The first step in trying to modify the prevailing mindset is to acknowledge that there are deeply embedded convictions about what is right and wrong in education, and that they have given rise to a model that seems to have become woefully inadequate. These lists of “old school” and “new school” characteristics are intended as a sobering wake-up call to the magnitude of the changes that have to be implemented if we are to reform schools in a way that makes them meaningful and relevant in the 21st century. But this is just the beginning of the story.

## **The New School**

Whenever we think about the “new school” we are immediately tempted to think in terms of technology and modern buildings. However, despite the fact that modern building design and the introduction of technology seem to be the icons of change, it is clear that what we can see is only the tip of the iceberg, and that the real and more profound changes that are needed are somewhat more intangible but far more important.

In many cases, the main features of the “new school,” and the characteristics of the old school are mutually exclusive:

• **Lifelong learning is the primary goal of the educational system:** The possibility of accessing infinite knowledge with just a few keystrokes and the incontrovertible fact that the Internet has become a limitless repository of knowledge have forever changed the fundamental premise of teaching and learning. In the present, and to an almost unimaginable extent in the near future, anybody will be able to learn everything that the best researchers in the field know about any topic or theme. Contrary to the old paradigm, in which knowledge needed to be acquired from finite sources and remembered, in the new scenario the most important skill by far is to be able to efficiently and effectively find, sort through and learn from the abundance of information that is available. After being a “wishful thinking” phrase included in most school mission statements for ages, “lifelong learning” has become a feasible reality, and educators are being challenged to take those words on the wall and make them the main objective of the educational system.

• **Education is more about learning than teaching:** Contrary to some of the deepest conceptions about schooling, the most important and relevant process in schools is not teaching, but learning. Education was synonymous with teaching, and the focus of all efforts was and often still is centered on refining teaching techniques, with the explicit goal of getting content and skills across to the learners, based on the assumption that learning takes place mostly within the formal environment of schools. Lifelong learning inevitably alters the landscape. If we need to prepare our students to continue learning for life without teachers around who will provide access to that knowledge, the educational process necessarily has to shift the focus onto the learner. A new pedagogy needs to reassess the need to develop these lifelong learning skills, centering much more on the learning process and on how students will be able to learn for the rest of their lives utilizing the resources available. (Interestingly, the word pedagogy, associated now with the process of teaching, is derived from the Greek *paidagogos*, which refers to a servant who made sure children went to school and did their homework.)

• **Every child can learn:** Despite the many astounding technological advances and substantial improvements in education in general, perhaps the greatest finding of the 21st century is that every child can learn. Contrary to the deeply ingrained model of the Gaussian curve that separated the capable from the incapable, it is now accepted by most education experts, that every child has a different learning style and that it is no longer on the student’s shoulders to adapt to a one-size-fits-all model of schooling. Instead—and this constitutes a massive cultural shift—schools have to provide for each student and assume responsibility for every child’s success. Coming from a model in which students had to learn in the ways and times mandated by the teacher, or not learn at all (“My way or the highway!”), this fundamental change brings forth an unprecedented challenge. The adjustments needed to effect this change are not just cosmetic modifications of teaching methods, but a complete overhauling of the present system to tailor instruction to the needs of each student. Needless to say, this student-centric

approach requires that teachers fill a completely different role than the one they were trained for. Even more importantly, some teachers may have chosen the profession based on a hopelessly outdated job description.

- **Our students are different from us:** Neuroscience is still an emerging science, but many experts are asserting that the very different stimuli that the younger generation is being exposed to may result in their brains being wired differently ([www.earthsky.org](http://www.earthsky.org), [www.nimh.nih.gov](http://www.nimh.nih.gov)). The current generation of students have developed in a digital world that bombards them with a multiplicity of inputs. Consequently, our students are different from the ones that the educational system prepared us to teach. They have developed different thinking patterns and learning styles, and the old tools in the teachers' toolboxes are insufficient to deal with them. Marc Prensky's (2001) digital natives and immigrants metaphor is a good example of one dimension of the challenge: adults' relationship with the digital world is a skill that has been, at best, learned late in life, and therefore it will always surface with an "accent" that betrays the feeble and fragile nature of the knowledge, just as immigrants who learn a new language as adults might speak it with grammatically correct phrases, but will never speak it like native speakers.

- **Customized education is necessary:** Largely because of expected outcomes that were anchored on what were deemed to be undisputable indicators for success according to the industry model, schooling was, and still largely is, delivered in a homogenous, one-size-fits-all style that does not cater to the particular needs and learning styles of each individual. If we operate under the axiom that every child can succeed and that the school should work on detecting each child's talents, it is obvious that the educational system must become increasingly customized to meet the needs of every child. As soon as we realize the implications of the previous statement and compare it to the current system of standardized tests and universally applied methods, we can grasp the magnitude of the change required, not only in teaching strategies but also in the more profound philosophical approach that entails humbling ourselves to find the best way to develop the talent of every child, and not expecting them, explicitly or implicitly, to conform to external parameters that define successful learning.

- **New skills need to be taught:** Beyond the deeper philosophical issues that call out for a new pedagogy, there is a dire need to start teaching some of the new skills associated with the 21st century model of teaching and learning. There are various frameworks and taxonomies to this effect, but regardless of the specific breakdown of these skills and what we call them, the completely different nature of the knowledge model based on infinite abundance, the limitless availability of digital content that includes multimedia, unprecedented opportunities for collaboration, and a 24-hours-a-day, seven-days-a-week, 365-days-a-year connected world redefine the skills that need to be taught at schools. Just to give one example, an essential skill in the current scenario is the ability to search for information, filter it, distinguish what is relevant from what is not, and spot erroneous or biased content amidst an overabundance of data. Schools largely

expect students to acquire these skills by themselves, and mistakenly assume that taking students to the computer lab and telling them how to search in Google is enough. Our evaluations are always meticulously designed so that they include all the information that students have been told to study—not more, not less. Math and science students often bemoan the existence of a single extra piece of data in a numeric problem that they do not need for its solution. If we want them to develop an almost intuitive capacity for weeding out unneeded or wrong data, we should, for instance, as a simple and direct measure, from a very early stage in the educational process, make sure that all tests and evaluations contain more data than needed, and that, occasionally, some of it is either erroneous or biased.

- **Learning is ubiquitous:** Another marked difference in the new school from the norm in the old school, is that learning does not take place only within the classroom. Extracurricular activities, sports, drama, art and music programs, just to name a few of the most common options that schools currently offer, will no longer be viewed as add-ons, but rather as integral and essential components within the educational process. A new curriculum must explicitly address learning opportunities that take place outside of the classroom and restructure the school day so that these other interactions are scheduled in order to achieve the learning objectives of the school.

- **Brain-based learning techniques will become more prevalent:** Researchers are gaining ground in terms of new pedagogies and educational theories in all areas, but by far the “killer app” when it comes to practical applications for the classroom has to do with neuro-developmental research. As researchers learn more and more about the inner mechanisms of the brain and how humans learn and acquire knowledge, we can expect to see mainstream implementations of this theory make their way into classroom practice. At this point, some software (most notably Fast ForWord reading software, which is based on neurocognitive research) is already available and proving to be effective, but most real-life applications are in the early stages or still under development. As the natural extension of a customized education system, brain-based learning promises not only to deliver the best teaching approach for each learning style, but also an improved capacity to learn through early stimulation and scientific assessment of each student’s talents and abilities.

- **Different learning environments will be utilized:** Even though the introduction of technology and physical changes in the school buildings are the least important changes needed in the 21st century environment, it is still true that the new school will have a very different layout. Technology will have a far greater presence, and all students will, in the near future, use their own personalized computing devices that will allow them to connect to the Internet. Harvard professor Richard Elmore (2006) notes that the ambiance in most corporations and businesses provides clear messages about their products and their corporate image, and that in schools, the current disposition of most classrooms also, regrettably, betrays the way in which we conduct business:

student desks rigidly face the front, where the teacher stands at the center. We can expect that schools not only will have modified curriculums but also will look different in order to provide appropriate spaces for this different paradigm.

This list of new school characteristics could literally go on forever. These characteristics are not intended to be a laundry list of themes to be tackled, but they underscore the fundamental differences between the old school and the new school, and the magnitude of the changes needed.

Any exercise in envisioning the future will draw attention to the abyss between the current educational system and what the future will bring into our classrooms. The formidable task that teachers, administrators and policy makers are faced with is trying to provide ways for our students to become productive citizens in this not-so-new century.