Losing Our Way in Public Education

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Abstract

How Public Educational Policy Reform has Lost Its Way

American education has lost its sense of mission, its direction, its connection to real life, and its willingness to change its structure and administration. We do not attend to civic literacy, financial literacy, teamwork, project-based learning, and creation of global citizens. Graduates typically reject a sound grounding in history, geography, and the social sciences. The school day is still based on an industrial model of short, single subject classes, segregated by ages, and with little time or encouragement to work in, and be evaluated, as problem solving teams. We seldom give credit for student success in the arts, the science fair, the speech & debate leagues, history day, or community service learning. Adults use language to write poetry, short stories and novels, screenplays, grants, research reports, biographies and history. None of these are featured in most K-12 graduate requirements. In creating strategic plans we often craft goals and strategies in single statements designed to apply to all ages and grades - five year olds and eighteen year olds. The primary structural and governance reform arena – charter schools, are by all calculations funded for operations at 80% of that for traditional public schools. Almost nowhere do we believe that public charter students deserve to learn in publically funded facilities. A sound, objective, systems analysis would dramatically change how we structure and deliver and administer public education – with a practical commitment to education of the whole child, with well prepared teachers.

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REALITY CHECK

Public schools are enormously successful for large numbers of students. This paper is not about how public education is failing, but rather what is holding us back from reaching more students more effectively.

What is in the wagon? What's holding us back? One size fits all, control from the top, multiple layers of approval, red tape, high stake tests, no room for art or music, a short school day, a large factory of a school, an unattractive profession, power to influence the classroom….

MEGA TRENDS

Recently, the Hawai‘i Department of Education and the Board of Education have been engaged in the process of revising its strategic plan. A new plan was approved. Among its many challenges, are traditional structures and approaches that are being swamped by megatrends, and the information age.

Learning continues to be confined and defined as seat time in single subject, with single-age, short classes where students are atomized and assessed only as individuals. Success is defined as achieving individual proficiency on just two of the four major subjects – language and math.

Success in science is measured only by a final exam in biology. Student engagement and learning outside of the physical and temporal school is not formally recognized for graduation. No formal credits are awarded for success in the science fair, the speech league, history day, youth symphony, robotics competition, awards for achievement in the visual arts, or civic engagement and service learning.

Students who take history are not asked to write it. Students who take language arts are not asked to produce poems, or short stories, or novels, or screen plays, etc. Students who take science, are not required to engage in scientific analysis or problem based learning. S.T.E.M. does not require multi-disciplinary learning.

For many years, I was a senior judge at the State Science Fair. It is amazing what these project-oriented students can learn, explain, and achieve. They partner with mentors at MIT and Harvard, and all the best universities. They create computer models of the brain. They correct NASA calculations for asteroids. In all cases, these students had the motivation and the good fortune to have a great mentor/teacher at their school, and the grit to continue a scientific project for several years. In all cases, they stood as the tiny minority of students at their school with this kind of experience.

One major barrier to education reform is the lack of alternative assessments that replicate the real world of work and human aspiration. For example, we might identify some workforce needs as the following:

Workforce needs

- Ability to work as a productive team member;
- Ability and willingness to take risks;
- Ability to think creatively to solve problems;
- Ability to acquire new, unforeseen skill sets through ongoing training and micro-credentialing
- Ability to communicate outside of the immediate agency culture and structure.

None of these is integrated into any practical change in our public schools. The final version of the revised strategic plan (http://www.Hawai‘ipublicschools.org/DOE%20Forms/Advancing%20Education/SP2017-20.pdf) are mostly a reaffirmation of the status quo in assessments. The very same general strategic goal statements are applied to five year olds and eighteen year olds. Working and being assessed as groups - beyond team sports or band competition – is rare to nonexistent. Only individual testing is considered valid.

Another disconnect, perhaps a lost sense of mission, is what we could call the Essential Clusters of Literacy, i.e.

Essential Clusters of Literacy

- Financial, statistical, & economic literacy;
- Civic and citizenship literacy;
- Cultural literacy;
- Geographical literacy;
- Environmental literacy;
- Technical literacy;

Few would argue that these are not important for future adults. Yet, we are unable to go beyond token programs for small percentages of students to pursue these. We continue to invest in very industrial forms of “credits.” Higher education institutions often do not acknowledge that civic and citizenship education are part of its mission. If it were, all students would be required to take some course or courses – just as they are required to take language courses.

CONNECTING K-12 TO HIGHER EDUCATION

Teacher Recruitment and Retention

This has been an ongoing challenge for literally decades. The Hawai‘i Educational Policy Center prepared a 2008 report to the legislature exploring this issue. http://manoa.Hawai‘i .edu/hepc/pdf/Reports/SCR_56_HEPC_Interim_Report_0108.pdf

Among its findings at the time were that UH and other colleges were “producing” about 700 new teachers per year, and about 300-400 were retiring. If this were the whole story, over time, teacher shortages should decrease. This is not the case. Approximately 5% of teacher positions go unfilled each year. There are currently about 12,500 filled positions. Just in elementary classes (the easiest to fill) there are some 300 vacancies.

Not only it is difficult to recruit future teachers in general, it is especially difficult for the areas of greatest need: Special Education and high school. The College of Education and other university actors have been aggressively recruiting on campus, yet it is difficult to overcome the perception that teaching is not an attractive or lucrative profession.

The Hawai‘i Department of Education reports that retention of teachers after five years of service is consistently in the high forties to low fifties percent. Many reach retirement, and many leave the teaching profession altogether. It would appear that teaching is no longer perceived as a life-long career for half of our teachers.

Among the issues for the profession is the increasing amount of student debt for college graduates, and the difficulty living comfortably on a teacher’s salary. Addressing student debt might be an important strategy for recruitment, but it would not address the issue of people leaving the profession after five years.

An additional strategy that might be helpful would be an aggressive recruitment/credentialing effort targeting substitute teachers, seeking to move them into permanent teaching employment. Currently there are nearly 2,500.

Potential Collaboration with the Community Colleges

Of all the moving and varied parts of our higher education system, the Community Colleges are potentially the most flexible in adapting to the 21st century. Yet, when we look at the Literacy list, we cannot yet say that we, as a state, value these.

Higher Education Trends

- Porous membranes between institutions – CC instructors are often teaching on high school campuses; AA credits translating into 4 year campus credits; MOOCs taught from far away, and credited locally;
- Micro-credentials; competency based learning *and assessments*; (more like merit badges than Carnegie credits);

- Young adults (and their parents?) more likely to turn to Internet based video tutorials - short and targeted – than to sign up for a class;
- Declining interest in formal, terminal/traditional degrees;
- Higher education spread over several years – in an out, in and out.

Assuming there is some validity to this incomplete list, I see a potential overlap between the mission and educational programs of CC and our K-12 public schools, particularly high schools. Specifically, college level courses could be fill the following needs and model their implementation:

- The need to develop objective and authentic (non-bubble test) assessments for a wide range of group project learning – where all members of the group receive the same grade (this could be a % of a traditional class where the overall grade is still individual);
- The need to develop more syllabi that are multi-disciplinary;
- The need to experiment with a percentage of a graduation requirement that is a series of micro-credentialed, on-line skill and knowledge acquisitions, and which is not confined temporally to a single semester (i.e. you have 18 months to get your "merit badges" in X number of skills – to be evaluated by a qualified faculty member);
- The need to create and solidify individual portfolio demonstrations of competency in major areas of learning– what Hawai'ians might call Ho'oike;
- The formal recognition of out of classroom authentic learning;
- The integration of Essential Literacies as a requirement for all graduates.

In short, commonly embraced social goals for public education cannot yet bridge the mission gaps between K-12 schools and higher education.

UNFORGIVING DATA ON HAWAI'I

The Big Picture for Hawai'i: Based on the DBEDT Data Book

- 18,000 Hawai'i births a year. Thus, roughly 17-18K 4th graders needing preschool experiences.
- Over 7,000 fourth graders receive no preschool experiences.
- 14,000 enter public kindergarten each year.
- 9,000 emerge from public high schools each year…down by @ 5,000.
- Public School Enrollment about is about 180,000.
- At least 250,000 young Hawai'i citizens between the ages of 18 and 29 years, did not vote: plenty to have dramatically influenced any statewide election.
- No required arts instruction in elementary, middle or high school in HIDOE.
- No credit for success in the science fair, speech league, history day, service learning, Youth Symphony, etc.
- Strategic Plan goals same for 5 year olds, and 18 year olds.

In addition, we know that 57% of Hawai‘i public school students are considered disadvantaged. Nearly one in five high school students are chronically absent from school.

SCHOOL EMPOWERMENT

Recently there has been a movement toward decentralizing some powers to the school level through more funding and some flexibility. The new state Strategic Plan edges in this direction, and a new Governor's initiative blueprint pushes this idea further.

The ultimate school centered governance model can be found in charter schools. State law grants charters the following powers:

> "(f) The governing board shall be the independent governing body of its charter school and shall *have oversight over and be responsible for the financial, organizational, and academic viability of the charter school, implementation of the charter, and the independent authority to determine the organization and management of the school, the curriculum, virtual education, and compliance with applicable federal and state laws.* The governing board shall ensure its school complies with the terms of the charter contract between the authorizer and the school. The governing board shall have the power to negotiate supplemental collective bargaining agreements with the exclusive representatives of their employees."

This degree of autonomy is far from the norm in Hawai‘i for its department schools. The new state strategic plan does not allude to this as a model it wants to follow. THE BOE AND DOE have policies that explicitly place all financial and significant power above the school level…either at the district, or the Superintendent's office, or the Board itself. Many "waivers" require Board approval. HEPC did an analysis of Board policies relating to empowerment: http://manoa.Hawai‘i.edu/hepc/wp-content/uploads/HEPC-Analyzing-BOE-Policies-RE-School-Empowerment.pdf

Here is a typical policy that, on its face, is a common statement of responsibility. However, in the context of who makes important decisions, it is clear it is not the school.

"The superintendent shall be responsible for:
1. Serving as secretary to the board of education.
2. Performing all duties necessary to the proper conduct of the department, subject, however, to the approval of the board.

3. ***Planning, organizing, staffing, directing and controlling the educational program, finances, personnel and facilities of the department."***

Put another way, schools will not be making major decisions about planning, organizing, staffing, directing and controlling programs and finances.

One potential mechanism for expanding school powers could be the School Community Councils (SCC) at every department school. However, the department and the board are very explicit that the SCC is not to exercise meaningful authority:

"The School Community Council:
- Is not a governing board;
- Does not hire and fire the principal;
- Does not control school finances;
- Does not evaluate teachers or other staff;
- Is not a forum for promoting personal agendas; and
- Is not a body whose members "represent" constituencies."

Thus, trends toward school level flexibility and empowerment have not yet grown to the point where actual policies have changed.

EDUCATING THE WHOLE CHILD AND APPLYING RESEARCH – NOT REALLY

The inability to incorporate educational research into the mainstream of public education is chronic. Specifically:

- We fall short on providing quality preschool experiences for all our children;
- We continue to schedule intense subject classes for teens in the early mornings;
- We dismiss the arts as relevant to minority and disadvantaged students;
- We make no connection between the lack of engagement and voting in young people and poor citizenship and civics education;
- Project-based learning and authentic assessments are not yet integrated as common and essential features of public education.

The teenage brain

Consider how we address the realities of adolescence. The teenage brain, and this is true for all cultures and ethnic groups, has its own daily cycles and rhythms. Adolescents are nocturnal creatures. Teens are awake at night, but groggy until midmorning… And yet, we still cram many highly challenging academic subjects into the early school day. High schools are scheduled for the convenience of the system, but not for maximum learning by young adults.

How Big is too Big?

The size of the "learning community" has an impact as well:
A 2008 HEPC study comparing Hawai'i with 15 other states and U.S. averages, many which had more academically successful systems, found the ***most important factor was the size of the school.*** Hawai'i's schools are, on average, among the largest (enrollments) in the Nation. This makes it more difficult to shift power down the chains of command.

http://manoa.Hawai‘i.edu/hepc/pdf/Reports/SCR_118_SD1_HD1_HEPC_&_PPC_REPORT_DECEMBER_2008.pdf

Arts Instruction, General Academic Success, and Closing the Gaps

The National Center for Educational Statistics reports on art education policies among all the states. https://nces.ed.gov/programs/statereform/tab2_18.asp
In this 2015 data, we learn that:

- 45 states require arts instruction at the elementary level…but not Hawai‘i
- 45 states require arts instruction at the middle school level… but not Hawai‘i
- 44 states require arts instruction at the high school level… but not Hawai‘i
- 26 states require course credits in the arts for graduation… but not Hawai‘i.

Our State Department of Education has reported a dramatic increase in the number and percentage of students in recent years who have “disadvantages,” meaning they are English Learners, Special Education students, and coming from families that qualify them for free or reduced lunch. The current estimate is 57% of all Department students. It is significant that much of the research suggests that arts education has positive impacts on school success for disadvantaged children. Currently, there appears to be no overt strategy by either the State Board of Education or the Hawai‘i Department of Education to increase arts education in Hawai‘i public schools. The newly approved Board of Education strategic plan makes no mention of arts education as an essential element in whole student education.

In a longitudinal study of 25,000 secondary school students, those with higher involvement in the arts scored better on measures of persistence than their peers with lower arts involvement.

Art Facilitates cross-cultural understanding.

Arts experiences foster pro-social behaviors and social tolerance that help prepare students for life in an increasingly global and culturally diverse world. Ensemble performance, community mural painting, and other group arts experiences in which participants are from diverse backgrounds demonstrate particular value for developing cross-cultural understanding.

Art Builds community and supports civic engagement.

Arts programs foster a sense of community among participants that supports their personal, artistic, civic, and social development. They also offer a vehicle for effecting change in the surrounding community. Students who have had an arts-rich education volunteer more often and exhibit greater civic engagement than other students.

Art Fosters a creative community.

Students who study the arts in their school years are more likely to engage with the arts in later life as consumers, performers, or creators than their peers who receive no arts education. Additionally, researchers find that the more art forms students study, the greater their arts participation in adulthood."

Arts and Achievement in At-Risk Youth: Findings from Four Longitudinal Studies

With 57% of Hawai‘i public school students disadvantaged in one or more ways, you might think that educators would take note of the impact of the arts on those of low socioeconomic status. Not so.

In 2012 The National Endowment for the Arts published a study on the impact of the arts on at risk youth. https://www.arts.gov/sites/default/files/Arts-At-Risk-Youth.pdf
Among its findings:

"Academic Achievement
Teenagers and young adults of low socioeconomic status (SES) who have a history of in-depth arts involvement show better academic outcomes than do low-SES youth who have less arts involvement. They earn better grades and demonstrate higher rates of college enrollment and attainment.

"Among low-SES students:

1. Eighth graders who had high levels of arts engagement from kindergarten through elementary school showed higher test scores in science and writing than did students who had lower levels of arts engagement over the same period.

2. Students who had arts-rich experiences in high school were more likely than students without those experiences to complete a calculus course. Also, students who took arts courses in high school achieved a slightly higher grade-point average (GPA) in math than did other students

3. In two separate databases, students who had arts-rich experiences in high school showed higher overall GPAs than did students who lacked those experiences.

   Better GPAs were also observed among high-SES students who had earned arts credits in high school: 3.17, on average, compared with 2.97 for the high-SES students who had earned few or no arts credits, and 2.84 for the full sample.

4. High school students who earned few or no arts credits were five times more likely not to have graduated than students who earned many arts credits.

5. Both 8th-grade and high school students who had high levels of arts engagement were more likely to aspire to college than were students with less arts engagement.

6. Arts-engaged high school students enrolled in competitive colleges — and in four-year colleges in general — at higher rates than did low-arts-engaged students.

   Even among high-SES individuals, college-going rates were higher if students had engaged in arts-rich experiences in high school, according to a separate database. Ninety-four percent of the high-arts group went on to a four-year college, versus 76 percent of the low-arts, high-SES group.

7. Students who had intensive arts experiences in high school were three times more likely than students who lacked those experiences to earn a bachelor's degree. They also were more likely to earn "mostly A's" in college.

   Even among students of high socioeconomic status, those with a history of arts involvement earned "mostly A's" at a higher rate than did students without an arts-rich background (55 percent versus 37 percent)."

CITIZENSHIP EDUCATION

A New 2016 Report from the Education Commission of the States shows Hawai'i on low end of civic education efforts. "States including **Rhode Island and Tennessee** establish the purpose and goals of civic and citizenship education in state law. **Pennsylvania** not only specifies that students learn "their solemn duty and obligation to exercise intelligently their voting privilege and to understand the advantages of the American republican form of government as compared with other forms of government,"1 but further specifies required courses and areas of study within civic education. The scope of civic learning commonly includes federal and state institutions and structures, historical documents such as the Constitution and Bill of Rights, principles of democracy, rule of law, elections and voting, rights and responsibilities of citizenship, and flag etiquette."

On the other end of the spectrum, state statutes may establish **only a basic** course requirement or recommendation and allow school districts to develop specific guidelines. **Hawai'i and D.C.** statutes establish a minimum requirement that social studies be offered as a course of study. Vermont specifies a minimum course of study that includes citizenship, history, and Vermont and United States government. Similarly, South Carolina requires one year of instruction on the United States Constitution. Virginia requires local school boards to establish character education aligned with state board curriculum guidelines.
http://www.ecs.org/ec-content/uploads/Companion_Report_-_50-State_Comparison_-_Civic_Education.pdf

It should be noted that the University does not include in its perceived mission an obligation to further educate young adults on civics, citizenship, and democracy.

COMPETENCY-BASED, PROJECT-BASED, AUTHENTICALLY ASSESSED LEARNING

Basic Policy Questions

There are many complex layers to implementing competency--based and project--based learning, including creation of authentic assessments.

The level of school. Is there a difference between competency and project based learning at the elementary level – where one teacher is responsible for all subjects – and a middle or high school environment – where there are distinct subjects, realms of knowledge, disciplines, and teacher credentials? If the answer is yes, how would we talk about and address these two educational delivery environments?

Out of school success. Looking at middle and high schools, is it possible to recognize and incorporate authentic learning contexts, such as success in music performance, success in visual arts, success in the science fair, success in History Day, and success in the Speech League? If the answer is yes, are there ways to provide both funding and "equivalency credits" for success in these areas?

Progressive, sustained projects. Is it possible to create a progressive series of competencies and projects from elementary through high school that does not require a major overhaul of the State's GLOs, Learning Objectives and Benchmarks? If the answer is yes, can Complex Areas be tasked with creating these?

Doing what adults do. Is it possible to look at how adults use specific areas of learning as a guide for constructing the progressive series of competencies and projects culminating in a mature portfolio upon graduation? For example, rather than learning *about* history, would it be possible to require students actually write history – a biography, a history research paper, the history of an event or a place? Rather than learning *how to read and write English in a generic sense,* would it be possible to require students to produce a set of poems, short stories, a novel, a screen play, a play? Rather than learning about biology, would it be possible to require that all students pose a scientific hypothesis and then design and implement experiments to prove or disprove it?

Authentic assessments. We do not judge competency in music through a written test – experts listen to the audition or performance. We do not judge a hula competition through a written test – experts, kupuna – watch and judge. We do not admit any athlete to a team via a written exam – they must try out. And for awarding high quality teachers a special national credential – great and experienced teachers observe and judge. The essential question is whether it is possible to use experienced and expert assessors – such as the judging at the science fair – as a supplement to traditional assessments.

The World Bank Analysis. In 2003, The World Bank articulated what it felt were the shifts needed in public education: The World Bank's publication, *Lifelong Learning in the Global Knowledge Economy,* contrasted the characteristics of traditional and lifelong learning models in this way: (World Bank, 2003, p. 29)

Traditional Learning	Lifelong learning
The teacher is the source of knowledge.	*Educators are guides to sources of knowledge.*
Learners receive knowledge from the teacher.	*People learn by doing.*
Learners work by themselves.	*People learn in groups and from each other.*
Tests are given to prevent progress until students have completely mastered a set of skills and to ration access to further learning.	*Assessment is used to guide learning strategies and identify pathways for future learning.*
All learners do the same thing.	*Educators develop individualized learning plans.*
Teachers receive initial training plus ad hoc in-service training.	*Educators as lifelong learners. Initial training and ongoing professional development are linked.*
"Good" learners are identified and permitted to continue their education.	*People have access to learning opportunities over a lifetime.*

THE Curriculum Development Perspective: The Importance of Inquiry Many educators are coming to embrace the importance of inquiry in the development of educational policymaking, systems development, governance, curriculum development, professional development, and student learning. These levels of inquiry speak not only to an individual student or classroom, but the very process by which educational systems and schools change. Any educational system or curriculum that does not set as its goal these in-depth levels of inquiry is at a great disadvantage. The following was developed by the University of Hawai'i's Curriculum Research and Development Group:

Inquiry Modes	Description
Curiosity	Search for new knowledge in spontaneous probes of environments
Replicative	Search for new knowledge by validating inquiry through duplication of known operations
Technological	Search for new knowledge in satisfaction of a need through construction, production, and testing of procedures, strategies, and tangible artifacts
Authoritative	Search for knowledge new to the seeker in established knowledge found in devices and people
Evaluative	Search for new knowledge about the capacity of the products of technology to meet valuing criteria
Descriptive	Search for new knowledge through creation of accurate and adequate representation of things or events
Inductive	Search for new knowledge in data patterns and generalizable relationships in data association—a hypothesis-finding process
Deductive	Search for new knowledge in logical synthesis of existing knowledge—a hypothesis-making process
Experimental	Search for new knowledge through testing predictions flowing out of hypotheses
Theoretical	Search for new explanatory knowledge through synthesis of multiple hypotheses

Comprehensive Assessments Increasingly educators are promoting a broad and comprehensive definition of assessment and evaluation. The importance of high quality, innovative, inquiry--based and project based assessments and evaluation methods are central to the holistic development of a system, a school and a student. An important lesson of No Child Left Behind is that a narrow definition of assessment (i.e. high stake multiple choice tests in two or three subjects) leads to a narrow and counterproductive curriculum that cannot speak to the needs of the whole child.

Comprehensive, Articulated Curricula Central to the promotion of 21st century learning may be development of a fully articulated, sequential, discipline--based inquiry curriculum from preschool through grade 12. This curricular component might embrace the themes of many forms of literacy for Citizen and Society. Student citizens evolve out of a broad and authentic experience in the sciences, technologies, and humanities. As products of this curricular experience, students meet local, national and international standards, become prepared for post--secondary studies, become sophisticated and critical users of electronic and other informational media, become eager continuing learners, become able contributors to society, and become ready to take leadership roles when needed. There is a spirited ongoing debate on how to connect the dots between theoretical broad policies.

What is Project Based Learning (PBL)? Project Based Learning is a teaching method in which "students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging and complex question,

problem, or challenge. The Buck Institute for Education (http://www.bie.org/blog/gold_standard_pbl_essential_project_design_elements) identifies the following Essential Project Design Elements:

- **A Challenging Problem or Question**
- **Sustained Inquiry** - Students engage in a rigorous, extended process of asking questions, finding resources, and applying information.
- **Authenticity** - The project features real-world context, tasks and tools, quality standards, or impact – or speaks to students' personal concerns, interests, and issues in their lives.
- **Student Voice & Choice** - Students make some decisions about the project, including how they work and what they create.
- **Reflection** - Students and teachers reflect on learning, the effectiveness of their inquiry and project activities, the quality of student work, obstacles and how to overcome them.
- **Critique & Revision** - Students give, receive, and use feedback to improve their process and products.
- **Public Product** - Students make their project work public by explaining, displaying and/or presenting it to people beyond the classroom. http://www.ascd.org/publications/educational_leadership/feb08/vol65/num05/Project-Based_Learning.aspx

Author Jane David discussed the ideals and the realities of PBL:
What Research Says About … / Project-Based Learning Jane L. David

"WHAT'S THE IDEA?

The core idea of project-based learning is that real-world problems capture students' interest and provoke serious thinking as the students acquire and apply new knowledge in a problem-solving context. The teacher plays the role of facilitator, working with students to frame worthwhile questions, structuring meaningful tasks, coaching both knowledge development and social skills, and carefully assessing what students have learned from the experience. Advocates assert that project-based learning helps prepare students for the thinking and collaboration skills required in the workplace.

Project-based learning creates opportunities for groups of students to investigate meaningful questions that require them to gather information and think critically. Typical projects present a problem to solve (How can we reduce the pollution in the schoolyard pond?); a phenomenon to investigate (Why do you stay on your skateboard?); a model to design (Create a scale model of an ideal high school); or a decision to make (Should the school board vote to build a new school?).

"WHAT'S THE REALITY?

Although projects are the primary vehicle for instruction in project-based learning, there are no commonly shared criteria for what constitutes an acceptable project. Projects vary greatly in the depth of the questions explored, the clarity of the learning goals, the content and structure of the activity, and guidance from the teacher. The role of projects in the overall curriculum is also open to interpretation. Projects can guide the entire curriculum (more common in charter or other alternative schools) or simply comprise a few scattered hands-on activities. They might be multidisciplinary (more likely in elementary schools) or single-subject (commonly science and math). Some are whole class, others small group, and some individual.

Fully realized project-based teaching ***has never been widespread in mainstream public schooling.*** Teachers have little training or experience in the approach. Moreover, the time demands of projects, especially in today's context of standards, high-stakes tests, and pacing guides, understandably discourage many teachers from venturing into the kinds of collaborative student investigations that form the foundation of project-based learning. Because teachers tend to find this approach difficult to implement with low-performing students and may lack supporting technology, it is less likely to be embraced in high-poverty schools, which could increase rather than lessen existing inequities."

CONCLUSIONS

The essential purposes of a public education system, to develop, stimulate and inspire the life of the mind, nurture logic and a love of learning, and prepare a generation for responsible and successful lives, seem to have given way for easy to measure tests. Institutional convenience and affordability transcend what we know about learning and schools.

We are being held back from moving faster and farther with vestiges of a crusty, factory model of regimentation. We acknowledge but can't quite seem to adopt and incorporate research on the brain and learning.

The school empowerment movement, and its ultimate expression through the charter schools, holds promise. Yet the world, and the needs of keeping up, will not wait forever. Real progress may come if and when the educational establishment can embrace genuine, research-based improvements.

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