Charter Partners Institute

Reinventing Education for the 21st Century
A Paradigm Shift

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A tremendous amount of energy and public discussion is devoted today to the topic of education transformation. There is a general consensus that public education is probably more important than at any other time in our history. At the same time our current system is letting us down as reflected in measures such as graduation rates and standardized test scores but also in the number of graduates (even college graduates) who cannot get good jobs while businesses complain of shortages of people with the skills they need. Many public schools and individual teachers are trying new things, and alternative vehicles including charter schools are emerging at an increasing pace.   And yet the problems persist and there is no consensus on an answer.

Our experience suggests that the answer requires a paradigm shift. The vast majority of efforts today are based on improvements within the current structure and pedagogy of education: longer days, smaller schools, smaller classes, changes in curriculum focus, curriculum additions including social emotional learning, interactive technologies including blended learning, teacher preparation, etc. However, the stresses on the system result from fundamental changes in society and the global economy that have introduced new requirements for education unlike any ever seen before. We cannot address these new requirements along with traditional needs without a complete reinvention of education.

Fortunately, the rich base of research and practice in education provides clear clues for what is needed as long as we are willing to step out of the box to tap knowledge and techniques that have previously been on the fringes of practice. In this paper we outline a new paradigm constructed from the ground up to fully satisfy all the requirements. We start by defining the problem in terms of the new requirements, and then outline an approach that responds to the problem.

Defining the Problem

When trying to find a creative solution, one of the most important steps is to understand what problem(s) one is trying to solve. This is not easy in education because we have a confusing mixture of concrete goals to improve including graduation rates and test scores but also more general feelings that graduates are not prepared to be productive in today's economy. It is hard to distinguish problems from symptoms. Our work and experience indicate that there are two fundamental problems underlying all the other issues:

1. Too many kids in today's schools, particularly poor and minority kids, fail to learn because the kids do not connect or engage with the institution and teaching methods offered within education, and
2. Graduates are not qualified for today's middle class and better jobs.

The first problem of engagement has far ranging consequences, and is probably the dominant factor undermining the success of public education today. Issues of boredom, high dropout rates, low test scores, disciplinary issues, and more are often traced to disengagement. Frankly, there are all kinds of new technologies and techniques known to education that are helpful to make learning more appealing. However, if kids are not engaged, they cannot be expected to learn much. In general, students become harder to engage as they age through the system. By adolescence many seem almost impossible to reach.

This disconnect is largely a consequence of circumstance and technology in today's society. Kids who are seeking to understand themselves and their future are bombarded today with media that portray the worse qualities of the human race. Thus, kids, especially those with no strong counter role models, are indoctrinated that happiness comes from being rich, from partying, from sports, and a variety of other misleading but tempting messages. Further, the perils and trials of their natural attempts to establish themselves within their social circles are greatly exaggerated by technologies that keep them always connected and draw them to constantly compete with each other for perceived social status, often in unhealthy ways. Finally, many kids will be experiencing difficult issues at home including dysfunctional families, sibling responsibilities, drugs, etc. To be successful, schools must overcome that cacophony of noise and confusion that is so distracting and also help students make sense of who they are, their own passions and strengths, and what is the best opportunity or direction for each in this world.

The second problem comes from changes in economics and global competition. At one time, business was pretty predictable, and companies competed mostly on scale and efficiency. Anyone with basic skills willing to work hard could get a good job. Now in the second decade of the 21st Century, however, we find ourselves in a fully integrated, technology-mediated global economy that drives constant, unpredictable change and unprecedented competition. The only way for companies to differentiate is to constantly improve and advance. In this environment work with any kind of routine will be automated or sent to a lower cost region, and companies need employees with skills to help them constantly advance including initiative, adaptability, creative problem solving, and innovation.

Our schools were designed to teach a fairly stable base of content in linear fashion. Graduates found jobs based largely on their basic understanding, and they applied and sometimes adapted that understanding to solve problems in their field. However, today graduates will be confronted with complex, ever changing problems that fit no neat subject or occupation and have no easy solution. Information is a commodity available to anyone, so what one knows has much diminished value. Graduates must learn how to learn whatever is needed when it is needed, to uniquely frame and understand the problem, and to work with others to develop novel solutions even when the path to take is ambiguous. These leadership skills are the same as those attributed to creative entrepreneurs. They are very difficult to integrate within a traditional school because they cannot be taught in any form of lecture or "do what I do" approach.

We note that both of these problems are new and fundamentally different from the problems our schools were designed to address. There has never been a need for schools to tackle either one of the problems in the way the need exists today. Yes, there are methods to push students to pass exams and graduate. However, without motivation and leadership, one does students a

disservice because they are not prepared for today's global economy. Nevertheless, it is challenging for educators to focus on problems including engagement and leadership that may seem esoteric when, for example, more than half the students in many high schools read below 6th grade level and may be disruptive or at least inattentive in class. Fortunately, solutions that truly engage students and nurture their leadership skills provide the spark for students to learn the more linear topics including basic reading and math.

Defining the Solution

Basic direction for the solution we seek can be found in modern understandings of management and psychology as developed and shared by people including Daniel Pink, Gary Hamel, Ed Catmull, Tom and David Kelley, Roger Martin, Mihaly Csikszentmihalyi, and Carol Dweck. For decades if not centuries, business also paid little attention to engagement and leadership. The challenge was to coordinate fairly straightforward work at scale, so extrinsic incentives including pay and bonuses along with threats were used. In other words, people did what they were asked because that is what they were paid to do. This worked pretty well for routine types of work (the kind now being automated or outsourced). Today we need employees to bring the best of their creative talents and persistence to the table, but we know they will not do that unless they are so intrinsically motivated that they *own* the work. Leading innovators today encourage and support employees by making them part of motivating missions (Apple), putting them in jobs that leverage their strengths (W.L. Gore), and giving them unprecedented freedom and flexibility (Google).

The same situation applies to students. To get their full attention over the huge distractions and confusions in their lives, and to get them to truly engage their *thinking* (not just memorization), we must create a learning environment where students own their learning. Certainly, there are ways to make lessons more interesting and entertaining. However, the only environment we have identified where student ownership of learning dominates is built on project-based learning (PBL) or inquiry-based learning. PBL is fairly well known within education. However, the label is applied to a wide range of activities that may fit the pattern of learning through inquiry or just reflect application of a given lesson in a project, and that are almost always implemented as learning techniques within the traditional education environment or paradigm where educators are comfortable.   Thus, the benefits vary widely. We are extending the proven benefits of PBL to construct an entirely different learning environment or paradigm that meets our need for student ownership of learning. Let us review the key characteristics of what we might call this student-owned learning environment.

First, learning activities are organized not around traditional subjects but around interdisciplinary, inquiry-focused projects in the spirit of true 100% PBL. Essentially, teachers look at everything students need to learn and construct a series of interesting projects that incorporate the needed competencies. Students develop their own solutions to each project, learning as needed as they go, and they also present their results in a formal public manner to their peers and other outside reviewers.

Second, teachers must give up a large measure of control in their classroom. Teachers have traditionally been taught that control of their classroom, or management of the learning, is

critical for success. However, to the extent that teachers direct or control what is learned, when, and how, students will never take ownership. In our solution students are given open-ended problems to solve along with the freedom and requirement to determine what direction they take and what specific perspectives and issues they address within the broad scope assigned. Students must be allowed to choose, try, and fail. Students also take the lead in finding whatever resources they need to address the problem, using original sources and other public information, technical experts who volunteer to be resources and mentors, online lessons, site visits, and any other resource they identify. Teachers become facilitators.   Once a project has begun, teachers are responding to the direction of their students, and teachers are usually learning along with their students.

Third, projects should be selected that fit the interests and strengths of the specific students and pose appropriate challenges. Dennis Littky, co-founder of Big Picture Learning, is famous for a situation where he had students in a failed high school reading comic books because that was the only thing that interested them. Over time, their reading improved, and they advanced into more traditional reading activities. The key is to *meet students where they are*, and then help them advance to where they need to be. In our student-owned learning environment teachers have almost infinite flexibility to select and develop projects that interest students, meet them where they are, and lead them to master important new competencies as they develop their solutions. This may seem challenging, but it is well within the capabilities of good teachers who are effectively trained. Remember that a given project will involve many components including research, collaboration, and communications, and we just need students to find at least one component that interests them to foster ownership.

Fourth, projects should be authentic. Students will not take ownership unless they perceive the project as something that will help them achieve their goals or get where they want to be. Artificial exercises including worksheets and textbook problems don't cut it. Students should be working on something that they understand needs solving, and they should be developing real, fully viable answers. In practice, this will be challenging because it may be hard to come up with projects that will lead students to learn certain topics. However, in a learning environment where authentic projects are the norm, projects can generally be made authentic enough that students will take ownership. For example, students working on a community project might formulate a robust plan and justification and formally share them with an official audience when it is not practical to implement their solution. Further, once students are engaged in a project, there may be opportunities for more traditional instructional activities if those activities are done only at the request of students when they are ready for that knowledge.

Fifth, projects should be assessed in an authentic manner. Traditional grades are really a way of ranking students against each other, and such ranking is not helpful for learning. Students learn to work the system, e.g. to figure out what the teacher wants and give it to him or her, rather than engage for learning. We also do not care what mistakes students make along the way as long as they master the skills that are important or dictated by standards. A competency approach to assessment makes more sense. Thus, we can catalog all the content and skills students need to learn, along with criteria and rubrics to evaluate performance, and record student progress on each when it occurs.

The first five criteria relate primarily to engagement of students. However, it is easy to see that the second problem, the need for leadership skills, is a natural fit in this learning environment. Students who are determining their own direction to solve authentic problems will be utilizing and practicing leadership skills including initiative, collaboration, critical thinking, problem solving, and innovation if they are effectively facilitated. Here are some further criteria to strengthen the leadership skills.

Sixth, the vast majority of project activity should be done within teams of 3-4 students (or perhaps more on certain activities). There are two key objectives here. First, we want students to experience the benefits and challenges of collaboration on authentic projects. This is an important leadership skill that is only learned through practice. Second, students working in teams will help each other through learning challenges (collaborative learning). If one truly lets kids go to do what they want, they will naturally work together to achieve shared goals—and, together, they will accomplish things no one imagined they could.

Seventh, teachers need to facilitate in a manner where students experience the creative problem solving process. In this way students learn leadership skills, including initiative, collaboration, problem solving, and innovation, as well as related habits of mind or dispositions, including grit and inquiry, as a natural part of their project activities. This is helped, for example, by leading students to start a new project with a determination of what they know and don't know, and then proceeding to determine how they can understand the don't knows. Teachers can help students through the process without giving answers by providing scaffolding including milestones, by asking good questions, and by introducing tools that help. (Many good tools are available from the design community and the lean entrepreneurship community.) Teachers must not be directive because every person will assimilate this largely intuitive process and the related skills and dispositions in different ways. Younger students can be given very challenging projects, but they will need more scaffolding to lead them through the steps toward a solution. As students advance, they will become confident and proficient in this process. Of course, teachers must be trained and supported to facilitate this process.

Eighth, schools can establish partnerships with local business and community leaders for resources and mentoring. This starts with a pool of experts who volunteer to serve as resources when needed. Beyond that, the ultimate way for students to prepare for future careers is to work on real company projects for real community leaders. It is common for schools today to seek business partners who will take student interns, offer site visits, etc. The challenge is that businesses do not have the resources or expertise to teach students basic work skills, and asking them to work with unprepared students leads many such partnerships to fail or leave a bad taste. For a business partnership to be effective for both parties, students must learn basic work and leadership skills *before* undertaking a partnership activity. The student-owned learning environment of our model provides ample opportunities for students to do that as long as the teachers are trained to nurture the right leadership skills during student project activities. Schools can take students through a progression of project activities from fairly straightforward problems developed by teachers, to students working on issues submitted by businesses, to students working on company projects at company sites, to students working on community issues they choose. Once students gain the right background from their school experience (that

might involve activities outside the school), they will be well prepared to be productive at a company, and both will realize value from the relationship.

Comments

Note that there is no room in this learning environment for a traditional "curriculum," meaning a schedule of what will be learned in what order and on what days. The focus instead is more competency based, where teachers help develop and steer a series of projects so that, over a period of time, students master predetermined competencies but in the order and time they naturally occur in the projects. This provides a highly individualized learning environment. Students can be working on different projects, projects can vary in length, and students always have the ability to choose specific directions within the broad scope of every project. Students with a special interest in the project can voluntarily do extra work or address more challenging issues, so there is no need for separate "honors" programs.

We have seen schools reap good benefit from this approach within pretty traditional school structures, even where students go to subject classes and get traditional grades. However, this is much harder to do as an add-on to a traditional school environment. The key is to maintain the student ownership of the learning with students in charge. There must be no compromises, or students will see through the charade and fail to engage, with subsequent loss of control.

The approach achieves full value where everything is aligned to create an authentic learning environment. Traditional course catalogs, fixed periods, and dedicated subject classes taught by the lone educator are nowhere to be found. The day includes large blocks of unstructured time where students work on different interdisciplinary projects and tasks and take breaks largely under their own direction within broad parameters. Much of the time might even be spent out of the building or in resource areas such as a maker space. A team of teachers and paraprofessionals works with a given cohort of students to guide and facilitate all their learning, even looping through different grades with their cohort. Any learning spaces are "owned" by the student cohort, and teachers have co-located offices nearby. In this way students are really managing their learning activities in their space, and teachers collaborate to constantly help each other with their challenging facilitation responsibilities. Teachers have time in the schedule to regularly meet with their cohort team and within larger groups of staff to review progress of students along with what is working and not working, and to constantly improve and adapt. Assessment is based not on grades but on the work completed (portfolios) and the competencies mastered along the way. If needed for an external audience, a form of grades can be synthesized later from the competencies mastered. Students also gain experience at teaching and mentoring when they share what they learned in their project with their peers and others at the school and when they, at times, create work products that are preserved as resources for other students. In our experience, because this environment requires a culture and working habits that are so counter to what educators have done for decades, it takes leadership with a strong vision to constantly reinforce the vision and approach and support both teachers and students until it becomes the norm for all.

The leadership skills and dispositions should be explicitly discussed, practiced, and assessed along with the academic skills and content. In today's world learning how to learn and how to

solve challenging problems is really more important for the future success of students than the academic standards, especially since someone with general understanding of a topic can research and learn specific facts and skills as they are needed from online resources.

The differentiation, collaboration, and ownership provide powerful tools to address specific student deficiencies.   In the situation of the students who are reading well below grade level, for example, teachers work to understand the students and get them started in some projects that meet their interest and current ability but will move them toward the final goal. While the reasons for students being behind are complex, a major factor is a historical lack of engagement that undermined learning along the way, even to the point of never getting a good base of understanding on the topic. Once students are engaged, they frequently make remarkable progress because they see the work as helping them get where they want to be. Further, in a team oriented environment, students will help each other in ways that no teacher can.   Thus, teachers are also able to assign students to teams where they can learn things from other team members and also gain confidence sharing their strengths. Teachers and students are able to devote time where it is needed since there are no requirements to spend a given period on any specific subject. Finally, individual and small group instruction utilizing targeted online tools and, when necessary, snippets of direct instruction fills the remaining gaps.

When students first embark within this environment, the reactions will be mixed. Some students who have been disconnected for years will enthusiastically engage. Some students who did well in traditional education might be hesitant. The problem is that they learned how to work the traditional system, and they don't see how they can do the same thing in the new environment. (They cannot!) Finally, there will often be some students who are so reserved and disconnected that they check out. They don't have the confidence to believe they can succeed in this environment. In all cases, it is important to support and nurture students who are reluctant, helping them identify interests they can pursue. However, make sure everyone knows that this will be a student-directed activity.   Don't back down, and keep reinforcing confidence that each student can do this in a way that is right for him or her. Over time, the reluctant students will pick up things from the environment, from the students who are active, and they will come around. Don't underestimate the power of a true collaborative, student-directed, inquiry-focused culture and learning environment to reach and engage all students.

It is interesting to see how the relationship between student and teacher plays out in this environment. Students see their teachers as more friends or mentors than as teachers, and often students address teachers by their first names. This is fully compatible with the powerful learning environment. It is not that students don't respect their teachers. Rather, students see teachers as mentors helping students achieve their goals rather than someone in control forcing them to do things with no recognizable connection to the student's future.

The challenges of managing the learning in this extremely flexible environment can be overcome with modern computer tools.   For example, we can utilize a database application that captures and documents everything students need to learn by competency along with appropriate rubrics and examples of student work. Student progress on each competency can be recorded when demonstrated, so that teachers can always review not only where an individual student stands but what progress a whole class or the whole school has made. We can also make excellent use of

modern learning aids including online and game-based learning tools to help our motivated students learn or refresh skills when they are needed for projects. In this way we move beyond using computers to automate the traditional learning environment and instead leverage computers to enable a powerful new paradigm of learning.

Evidence

The type of inquiry-focused, project-based learning environment that underpins our new paradigm has been extensively researched and shown to be superior to traditional learning approaches. Approximately 50 years of relevant education research is summarized in the book *Powerful Learning: What We Know About Teaching For Understanding*, edited by well-known researcher Linda Darling-Hammond (Jossey-Bass, 2008). This book, in turn, is summarized in a paper released by Edutopia that can be linked from our website (http://lventure.org/evidence/). While highlighting many advantages of PBL, these references point out how easy it is to slip from true PBL to doing projects. For example, on page 70 the book notes "it takes significant pedagogical sophistication to manage extended projects in classrooms so as to maintain a focus on 'doing with understanding' rather than 'doing for the sake of doing.'"

Our team has extensive experience with the approach, first with a one-week summer entrepreneurship program called eVenture. We encourage the reader to review the first video "Hands-on Engaging Learning at eVenture" on our web page (http://lventure.org/experience/). One can see students working hard but also having a lot of fun. Note how the students really light up when they talk about doing their own work during the confessional at the end of the video.   It is very impressive to see the level of development of business models achieved by students who have never done anything like this from one week's effort. One can find more about the eVenture program at http://charterpartnersinstitute.org/programs/eventure/.

We also had the experience of developing a student-directed project activity for all students in a local high school. In our case we helped establish a senior leadership project at Lincoln Leadership Academy Charter School in Allentown, PA (see http://charterpartnersinstitute.org/lincoln-leadership/). All students select a community or school issue of interest, form their own teams, and develop a novel solution to their issue as their senior graduation project. This provided us with direct experience in implementing student-directed project activities within a traditional school environment. Over time the students did learn a lot about themselves and began to develop interesting solutions to their issues. However, we noted that the Lincoln students took more than a year to achieve the transformation similar to what most eVenture students accomplished in a week. This reflects how the traditional teacher-directed environment at the school largely overwhelmed our attempts to have students take full ownership of their projects. This is consistent with what we have observed at a number of schools which try to add project-based learning to a traditional environment. They usually achieve an interesting and valuable experience, but fall way short of what comes from the full student-owned learning environment described here.

One school that has an effective implementation of the basic student-owned environment is Manor New Tech High, a public high school in Manor, Texas just outside of Austin.   We have a video providing a pretty good perspective on the Manor experience as the second video "Project-

based Learning at Manor New Tech High" on our web page (http://lventure.org/experience/). Manor has a high proportion of minority students who qualify for free lunches, and many of its students had serious disciplinary problems before enrolling. Yet, the school has a 100% graduation rate, and more than 90% of students scored proficient on the state exams in math and English (see http://lventure.org/evidence/) based on 2012 data. All these numbers are dramatically higher than those from the traditional high school in the same school district. Manor retains a lot of the form familiar to educators today, including subject classes and grades. However, the student-owned learning environment permeates everything. One can feel the energy and excitement upon entering the school. One can get a flavor of the palpability of student interest and the transformation to highly engaged learners, as well as the enthusiasm of the teachers, in the video.

Finally, the fourth video "Project-Based Learning at High Tech High" on our web site (http://lventure.org/experience/) is an interview with Larry Rosenstock, founder of the cluster of charter schools (K12) called High Tech High and based in San Diego. This school is very well known for its hands-on, learn-by-doing approach to learning. Students are given enormous freedom and also take great responsibility, and much of the learning is interdisciplinary. Again, this school has been extremely successful with a broad mix of students.

Challenge

The average educator will read this and say something like "it will never work; if you turn kids loose like that you will have chaos." Perhaps we would say the same thing if we had not experienced it ourselves and seen it working in regular schools with urban populations.

It is all about human nature. In traditional education, the educator to student relationship is "you learn what I learn, and you do what I do." All students are asked to learn essentially the same material in the same order. The focus on student *compliance* produces passive learners who are ill adapted for today's dynamic world with constantly changing expectations. Further, the only thing that will keep students involved in this environment is discipline, and a belief that somehow, sometime this will all provide some kind of advantage. Should we wonder why this is falling short?

In the new paradigm, the educator to student relationship is "you figure it out with my help." The work is adapted to each student's interests and abilities, and students get powerful intrinsic rewards when they experience success from their own initiative. Graduates will feel right at home in today's dynamic workplace after regularly being asked to take initiative, collaborate with peers, solve open-ended problems, and communicate their actions and results.   Teachers are working harder to manage the differentiation. However, they also feel good because they are using the full measure of their professional skills and seeing tremendous response from their students. Further, they have very few discipline and attention problems. It is much better for students <u>and</u> educators.

We have seen students from academic stars to the toughest challenges transformed. Certainly, there are more nuances that cannot be covered here. However, this new student-owned learning paradigm can be implemented at scale and at no higher cost than traditional education except

perhaps for transitional costs including the initial professional development for the staff. It fully addresses the key challenges (problems) of education today, and provides a new platform which can address more issues beyond the scope of this paper. It is designed to constantly improve and adapt to keep up with whatever needs and requirements the future brings. The question is whether educators have the will to do what is right for our kids and important for our collective future well-being, no matter the challenges and discomfort to us now.