Advancing the Ideas of John Dewey: A Look at the High Tech Schools

Jennifer R. Pieratt

Abstract

Over the course of the past 100 years the work of John Dewey has been studied by philosophers, educators, and politicians. He has been hailed by some and blamed by others for the evolution of educational reform in America. His influences can still be seen in schools today ranging from Progressive approaches to child-centered curriculum to project-based learning. While Dewey offered many philosophies about education, he rarely suggested methods for implementation. The High Tech schools in San Diego, California approached this challenge left behind by Dewey in the design of their schools. This article will address the theories of Dewey in practice, through the lens of the High Tech model.

The Context

In the current era of accountability, standardization has become the norm. From state mandated standards to district scripted curriculum, the individual child has been lost at the hands of removed politicians and administrators. Teachers have lost the freedom to individualize their classrooms to meet the needs of their students, and instead they contribute daily to the mass production line that we call "American education." As a result of No Child Left Behind, education now lacks the element of personalization necessary to create meaningful learning experiences for students. There is currently a dire need for reform that revisits a child-centered approach to teaching and learning, as suggested by philosopher John Dewey. This approach must consider the particular needs of every child and strive to create relevant learning experiences that have enduring value. This task mirrors the ideas of Dewey at the turn of the twentieth century and has become increasingly more difficult to implement in the face of current educational legislation. This charge re-

quires schools to restructure the traditional model and teachers to reconsider pedagogical implications. While some schools have attempted these changes, there are many challenges which accompany such adjustments. Therefore, it is worth studying schools which have not only successfully implemented the ideas of Dewey, but have advanced them as well.

A New Model: The High Tech Schools

The High Tech Schools: An Overview

The vision for High Tech High (HTH), a charter school in San Diego, CA, grew out of the progressive belief that if all students were given the opportunity to be engaged and taught real world skills, academic achievement would follow. With a clear mission in mind, HTH founder Larry Rosenstock, hired the first staff of individuals to put the goals of a hands-on school in motion. The teachers hired to open HTH shared Rosenstock's vision of a school based on the principles of "Personalization, Teacher as Designer, Adult World Connection and a Common Intellectual Mission." Through these principles, a school culture was established to empower all student populations through inclusion and culturally relevant pedagogy, in a project-based learning environment. In 2000, High Tech High opened its doors at the Point Loma Naval Station, with the first class of 200 ninth and tenth graders. Since its opening, HTH has been frequently featured in the national media and hailed by politicians, researchers, administrators and even Oprah, as an approach to school reform for improving student achievement. High Tech High has received numerous awards of distinction and last year, 100% of its students were accepted to colleges around the country. Over the course of seven years, due to its success, the school has grown to become a village of two other high schools, two middle schools, an elementary school, an online learning hybrid program, and two satellite villages which include high school and middle school campuses in north and south county San Diego.

The inspiration for the High Tech schools grew out of Rosenstock's experiences as a teacher in Boston's public schools. He remembers "My students had been 'tracked' into vocational education because of their race, language ability, and socioeconomic level. They were seen as having no intellectual future, yet many had great academic capacity" (Ashoka). Thus began his involvement in the drafting of the Federal Perkins Vocational Education and Applied Technology Act and the beginning of The New Urban High School Project. This project utilized school-to-work strategies as a springboard for whole school reform. It was believed that reform efforts such as these would better prepare students for college, as opposed to the mediocre education students were receiving in vocational education programs. According to *The New Urban High School: A Practitioner's Guide* (1998), schools under this project adhered to the following design principles: "(1) personalization; (2) adult world immersion; (3) contexts for reflection; (4) intellectual mission; (5) community partnership; and (6) teacher as designer." Combined with these expe-

riences and the work of Dewey, Rosenstock believed that a hands-on approach to learning could provide the academic rigor necessary to provide under-represented students the opportunity to attend college.

Design Principles that Echo Dewey

The model for the High Tech Schools was designed based on the principles of *Personalization, Teacher as Designer, Adult World Connection* and *Common Intellectual Mission*. All four of these principles have direct connections to the work of Dewey and what he suggested was needed to make schooling effective. While The High Tech schools have been effective in putting these theories into practice, they have also advanced Dewey's ideas as they have been successful under the current era of accountability, stringent with mandated content requirements.

Personalization

In *Experience and Education*, Dewey discusses the shortcomings of traditional education which imposes curriculum on children, when schools should be tailoring the curriculum to create meaningful learning experiences for individual students. Dewey (1937) suggests that the philosophy he proposes supports a "fundamental unity in the idea that there is an intimate and necessary relation between the process of actual experience and education" (p. 7). This relationship fostered a child-centered curriculum by allowing teachers to develop activities that would make connections between content and the world of the child; thus creating more meaningful learning experiences for the individual student. In *Democracy and Education* (1916), Dewey defines these experience as: "that reconstruction or re-organization of experiences which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience . . . an activity which brings education with it makes one aware of some of the connections which had been imperceptible." In other words, education must be viewed as a continuing reconstruction of experiences to allow for a higher level of understanding.

In *Experience and Education* (1937), Dewey is adamant about warning that not all experiences are educational and that in order for experiences to be meaningful, basic foundations must be in place; these aspects include "selecting the kind of present experiences that will live fruitfully and creatively in subsequent experiences" (p. 17). Under this type of curriculum students would engage with the content in a way that will allow the knowledge gained to withstand the test of time. These types of learning experiences were evident in lessons at the High Tech schools, as one ninth-grade Humanities teacher states: "When I am planning a project I follow the process of Backwards Design, which allows me to develop essential questions that will promote enduring understanding for my students. It is my goal that they will remember what I teach them, not just on a test or in a final product of a project, but when they walk out my door and are a grown adult" (M. Clark, personal communication, August 18, 2008). Through observations it became increasingly clear that all teachers in the High Tech system follow a similar approach to teaching and

learning, as students could be found moving around the room working diligently to answer the essential questions on the board. Without these types of experience in school, students will continue to remain removed from the curriculum and not reach the level of enlightenment possible.

Dewey (1915) explains that if a child lacks organic connection, he or she will view the curriculum as merely symbolic, induced from without and therefore dead and barren. While the words of Dewey may seem extreme to some, his argument for the need to create meaningful learning experiences for students is valid. Reba Page (2006) agrees and adds that reconstructing the school's curriculum to support a deep familiarity between students and elements of the world will allow youth to learn how humans, across the world and over time, are connected in knowledge. In an interview, a tenth-grade student stated "I love High Tech High because it's all about me. I never imagined I would have learned as much as I did this year. The content and people I will remember for the rest of my life" (C. Rosales, personal communication, June 15, 2008).

While Dewey's language differs from that of the High Tech design, he refers frequently in his work to what has been termed *Personalization* by the High Tech system. High Tech defines this as a school where each student has his or her own staff advisor who monitors the student's personal and academic development and serves as a point of contact for the family. In addition, students receive individual attention and are provided with a personalized curriculum to best meet their needs. While Dewey believed that the school must be an extension of the home, he also believed that teachers must know their students, including their "capacities, interests and habits" (1897, p. 17). The role of the Advisor is crucial in this element of personalization in that it is an additional adult attempting to connect to the children and assist in their development through their schooling experiences. Dewey (1937) also believed that a teacher must survey the abilities and needs of the particular set of students he or she is working with and then create the conditions for meaningful learning opportunities. Through differentiated teaching, High Tech teachers are able to create the type of learning experiences that are meaningful for each child. Dewey (1900) critiqued traditional teacher education for its lack of "individuality" because according to him there was no opportunity for adjustments to varying student capacities and demands. The principle of Personalization was designed to be one of the foundations on which High Tech would build its schools because it prides itself on addressing Dewey's concerns by striving to offer students a curriculum and learning environment that truly meets their individual needs.

Real World Connection

Dewey often discussed the value of vocational education in schools and argued that such skills should be taught to all students. In *The School and Society* (1900), Dewey discusses at length the value of teaching through occupational skills, as they often reflect the interests of the child: "by giving a larger place to occupation we should secure an excellent, perhaps the very best, way of making an appeal to the child's

spontaneous interest" (p. 136). Not only would vocational skills pertain to the interests of the children, but they would also prepare them with valuable skills that surrounded them every day, especially for their future in the workforce. Rosenstock, founder of the High Tech schools, could not have agreed with Dewey more, thus inspiring one of the design principles for the High Tech schools as "Adult World Connection." Dewey (1900) acknowledged criticisms of his support for vocational education, as people often argued occupations were out of place in school because they were "materialistic, utilitarian or even menial in their tendency" (p. 23). But Dewey continued to argue that they could serve as a vehicle for teaching curriculum and preparation for students' futures in society.

High Tech believes that "students experience some of their best learning outside the school walls" (High Tech). The High Tech schools facilitate the connections that Dewey so frequently referred to by: requiring every eleventh-grade student to complete an internship, providing opportunities for students to interact with professionals through weekly "power lunches," helping students in advisement to focus on career preparation, and giving every student the chance to shadow professionals in their field of interest on an annual "career day" field trip. In addition, High Tech teachers strive to integrate these real-world connections into the curriculum by bringing guest speakers into the classroom or taking the students into the field to show students that the skills they are learning have a purpose in preparing them for the "real world." Dewey (1900) often advocated that vocational skills had a place in the classroom and that they were "not just practical devices or modes of routine employment, [but instead were] active centers of scientific insight into natural materials and processes, points of departure whence children shall be led out into a realization of the historic development of man" (p. 19). The High Tech approach to educating students according to Dewey's suggestion is unique. At any given time a visitor to these schools will find students participating in activities that range from using power tools to collaborating in project design meetings. It is believed by both Dewey and the High Tech administration that by teaching these real-world skills, students will have the preparation necessary to be a carpenter or a businessman; it is the democratic duty of the school to prepare them for the opportunity to have a choice in their future.

Common Intellectual Mission

Dewey often critiqued the structure of schools at the turn of the century for not educating students equally; some were prepared for an academic track, while others were prepared for the workforce track. A major argument of Dewey was that if more practical activities were taught in schools; education would be taught through occupations and not for occupations. Dewey argued that the integration of industrial skills in school should be part of everybody's education, "not just special provision for those who were singled out to become the modern equivalents of hewers of wood and drawers of water" (Peters, 1977, p. 112). Dewey (1900) saw this structure of schools, which he referred to as "specialization," to be responsible for the division

into "cultured people" and "workers" (p. 27). He argued that there was a great value to preparing all students with the academic skills formerly taught only to "scholarly students." Dewey was concerned that students were often turned away from traditional academics, instead of taking a more humane approach, which Reba Page (2006) acknowledges as "knowledge as tangible, material resource that humans make and use when they wrestle with problems in everyday life" (p. 52). As a teacher in Boston's public schools, Rosenstock saw what Dewey so often referred to in his work. As a former carpenter, Rosenstock was a vocational educator who saw his students separated by race, language, and socioeconomic status. He believed in the abilities of all students to learn and valued vocational skills as a way to go about teaching students life skills through the curriculum. Always with his aims of education at the forefront of his agenda, Dewey saw the traditional separated school structure as a threat to a more democratic society. He believed that integrating vocational skills into all children's education could prove to be the great equalizer needed to create an improved society. Similarly, Rosenstock decided that the High Tech schools would not track students, and instead would function under a model of inclusion.

While the tracking debate did not begin until after the death of Dewey, he was arguably one of the first opponents of tracking in schools. In *Democracy in Education*, Dewey discusses "a human curriculum built on diversity and the common good" (p. 144). The High Tech schools reflect Dewey's sentiment that schools have the ability to unite rather than divide students and society. As a result, the High Tech schools invented what Page (2006) calls practices that honor connections rather than reproducing social classes through the curriculum in schools; at High Tech schools this principle is called a *Common Intellectual Mission*. At the High Tech schools there is "no distinction between 'college prep' and 'technical' education; the curriculum qualifies all students for college and success in the world of work" (High Tech). This is done by following what the schools have termed "An Inclusion Model." Under this model all levels of students are placed in the same classroom, ranging from students who would typically be in honors courses to students with severe learning disabilities. Students are then offered the same curriculum and learning opportunities with differentiation to suit their needs. Regardless of students' abilities, they are asked to work cooperatively, because it is believed by the High Tech schools that all students can learn from one another. The High Tech schools pride themselves in preparing all students for college, with a 100% college acceptance rate in 2008 (High Tech). While not all students may chose to continue on to college upon completion of High Tech High Schools, they are all prepared with workforce skills, which is something that Dewey felt was extremely important in a democracy. In *Democracy and Education* (1916) he concludes, "democracy cannot flourish where assumptions about class are the chief influences in selecting subject matter instruction" (p. 200). At the High Tech Schools, diverse students accepted by a random lottery are all provided with the same learning opportunities by not being separated by tracks, regardless of socioeconomic status or learning abilities.

This model is rare in schools today, but it provides an alternative to traditional schooling that is undemocratic according to Dewey.

Teacher as Designer

Dewey knew that this task of a reformed education was not a simple one and he recognized that in order for it to be implemented effectively, it must depend upon the classroom teacher. He believed that it was the responsibility of the teacher to really know the child, in order to facilitate the proper learning experiences. Dewey (1938) stated that "it is the business of the educator to see in what direction an experience is heading [and] . . . judge what attitudes are actually conducive to continued growth and what are detrimental" (pp. 32-33). In order for this to take place, a teacher must know what is going on in the mind of the student and then guide him or her in the right direction. According to Dewey (1900), this could only be possible for teachers if they remained concerned with "the ways in which subjects may become a part of experience; what there is in the child's present that is usable with reference to it; how such elements are to be used; how his own knowledge of the subject matter may assist in interpreting the child's needs and doings, and determine the medium in which the child should be placed in order that his growth may be properly directed" (p. 23). Dewey was very clear that the role of the teacher was not a passive one, but in fact was one of constant active engagement with the student. The structure of the High Tech schools lends itself nicely to this type of teacher-student interaction that Dewy refers to. With only 25 students in a classroom and only 50 students total, High Tech teachers are able to work closely with students on a daily basis. Peters (1977) adds that Dewey explained that basing education upon personal experiences would require more frequent and intimate contacts between the teacher and the student than ever existed in traditional education (p. 107). Dewey uses this premise throughout his work to argue for reorganization of schools to better allow for this type of interaction, by having smaller schools and classrooms that would allow teachers to work more closely with their students. The High Tech schools, despite the growth in demand for them, have committed to remaining small, with a 1:25 student-teacher ratio, in order to support close working relationships between students and teachers.

According to Dewey, the teacher must begin with the interests of the child and find ways to create meaningful learning experiences that connect what is learned in school to the experiences of the child. High Tech teachers are given a great deal of flexibility in designing their course material, allowing them to integrate student interests and develop meaningful learning experiences. Textbooks are not used in the school and worksheets are seen rarely. With thousands of teacher applicants a year, educators flock to High Tech schools because of the flexibility and creativity it offers them. One tenth-grade teacher notes "I am so fortunate to teach here. I have taught in traditional schools for over 15 years, and this is by far the best place I have been. While I refer to the standards for project design, I don't feel forced to

teach to them. Instead I have the freedom to find ways to make connections to my kids" (J. Howard, personal communication, May 20, 2008). When this does not happen, in the case of traditional education where students are taught material for the sake of learning it, the teacher has not fulfilled his or her duty, according to Dewey.

Dewey greatly valued interaction in education and viewed all learning as social; therefore, it was the role of the teacher to facilitate the proper environment through learning experiences. According to Dewey (1938), "An experience is always what it is because of a transaction taking place between an individual and what, at the time constitutes his environment. The environment, in other words, is whatever conditions interact with personal needs, desires, purposes and capacities to create the experience which is had" (pp. 41-42). Dewey (1938) adds that "a primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual learning experiences by environing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth" (p. 35). A common expectation of High Tech teachers is that they create learning environments that are conducive to learning, by fostering climates of trust where students feel comfortable to take risks, ask questions, and challenge themselves to learn. At any given time an observer will find classrooms filled with students collaborating on a project or holding an open discussion. The theme is always the same: students observed seemed relaxed, willing to ask questions, and confident to seek answers. Teachers were rarely found lecturing in front of the classroom, and instead were frequently seen sitting down at a table with students or located in a circle with students discussing a controversial topic. High Tech teachers not only design their own curriculum, but also design environments that support the learning experiences that Dewey speaks of frequently.

In the *Child and the Curriculum* (1900), Dewey explains that these learning environments are created when the teacher understands the capacities of the children and then sees to it that day to day the conditions of the classroom lead to a fuller culmination of the child's abilities. Dewey revisits the idea of classroom conditions in 1938 when he critiques traditional education for assuming that a certain set of conditions was desirable in a classroom, when in fact this inability to adapt to the needs of individual student's needs leads to a process of "accidental teaching and learning" (p. 45). In Dewey's eyes the ideal teacher would remain aware of the needs of every child and create classroom conditions that allow them to reach their potential. The High Tech schools pride themselves on their teachers' abilities to know the needs of every student. This can be seen to an observer by the multiple options of project products or the daily conferencing that occurs between the teachers and students. One teacher notes "it's impossible to not know every one of my students well. I only have 50 student all day, 25 at a time, and I have them for two hours, so we spend a lot of time together. We work closely together on projects and I know what they are capable of doing and where they need help" (M. Clark,

personal communication, August 18, 2008). Since the teacher is seen as the designer at High Tech schools, each is granted the flexibility needed to design projects and classroom practices that support the needs of every student.

The Later Influences of Dewey: Project-Based Learning and the HTH schools

The High Tech schools are most well-known for their model of teaching and learning through Project-Based Learning (PBL). This method of teaching dates back to the works of John Dewey, which greatly influenced William Kirkpatrick, creator of the Project Method (Hirsch 1996). In this type of learning environment the curriculum is designed by the teachers to integrate grade-level content, real-world skills, and student interests in hopes of better engaging students in the learning process. PBL allows for the implementation of what Dewey (1938) discusses throughout *Experience and Education*, by allowing a hands-on approach to teaching and learning. Examples of such projects include anything from a Humanities teacher assigning students to design a music video for the work of Shakespeare to a Math or Science teacher asking students to build a canoe with power tools. Within every project, benchmark assignments are established to check for understanding, and assessment is conducted throughout the learning process. This type of progressive education depends on the concept of personalization that must be implemented by the classroom teachers. Through close-working relationships, teachers quickly become aware of the needs and abilities of students in their classes and personalization allows teachers to differentiate the curriculum based on this knowledge. For example, while all 25 students will be assigned the same project, the teacher may scaffold benchmark assignments for lower students and offer challenging assignments for higher students, but all students will get to the same destination of a similar finished product. PBL provides an opportunity for students to have a great deal of freedom and to integrate their interests, creativities, and strengths into the classroom. While students often work cooperatively with their peers, they also work very closely with their teachers, who serve as mentors in the learning process.

Through PBL teachers are also provided the freedom to design projects based on student interests and inquiries. Influenced by Romanticism, Dewy often argued for the need to teach to student impulses and desires. Because teachers know their students so well, they are able to create projects that can truly engage students in their learning by connecting to the curriculum. Dewey (1900) also believed that inquiry would result in gaining information for the child. Again, tailoring projects to the interests and questions of the child will promote life-long learners.

The High Tech school design also lends itself nicely to interdisciplinary projects that integrate different types of curriculum. In *Waste in Education* (1900), Dewey argues that there is a need for unity and connection among the disciplines. At any given time an observer at the High Tech schools will find teams of students and teachers working together on a project. The collaboration fostered by PBL

provides students with academic and social connections in their work that Dewey believed were lacking in traditional models of education.

High Tech schools are unique in that through this type of teaching, worksheets and textbooks are not necessary and therefore aren't used. Dewey (1900) disliked textbooks because he felt that learning material was not translated into terms that connected to the child's present life; as a result he believed that textbooks created a lack of organic connection with the child and the curriculum and a lack of motivation for the child in the learning process. The High Tech design of PBL acknowledges that textbooks are too removed from student interests and do not allow for flexibility and personalization. Similarly, content standards are not an emphasis for student learning. While the California content standards are often covered through project work, they are not the driving force. The one-size-fits-all model that is offered by standards is in direct opposition to the work of Dewey and the High Tech schools, as the individual student is lost in that approach to teaching. Also, the High Tech schools view projects with the mindset of "depth not breadth," again an approach to teaching and learning that often contrasts with standards. Dewey (1900) believed that "when much ground is covered there is a tendency for the work to become over symbolic. So much of this material lies beyond the experience and capacities of the child . . . that he does not get any real penetration into the material itself" (p. 125). Through projects, students are able to dive into the content and explore and experience the curriculum in depth. While many offer a critique of this style of teaching and learning, it is one that the High Tech schools have found to work efficiently, as reflected by their standing as a top-performing school in California (High Tech).

Responding to Critics & Advancing Dewey's Ideas: Putting Theory into Practice

In attempting to translate Dewey's ideas into practice, very little has been lost and in fact much has been gained. The High Tech schools can serve as a model for other schools attempting reform in the current age of accountability. Not only have The High Tech schools been effective in implementing the ideas of Dewey, they have been able to advance them by proving that they can be effective under current legislation. The High Tech schools offer an alternative model that strikes the seemingly impossible balance of progressive education and a more conservative standards-based education. While Dewey identifies most with a liberal platform, he is difficult to place into any one political category. As a result, both liberals and conservatives criticize his theories in education. According to Fishman (1998), conservatives find his goal of growth too open ended because it is not connected to an established curriculum. In the current era of educational reform focused on accountability and a standardized curriculum, it is no wonder that Dewey is frequently used as a scapegoat. Dewey's ideas supported a completely individual and personalized curriculum, which could not be further from the type of curriculum supported by conservative reformers of today. Fishman (1998) adds that liberals, too, criticize Dewey because

they find him too controlling in his social aims. In order for students to reform society, Dewey believed that they must be taught to support the common good, which reflects our democracy. While this approach allowed for a personalized curriculum and individual growth, which most liberals would support, it is often criticized for being too directed. The High Tech schools offer a counterargument to both ends of the political spectrum, by successfully striking the balance between content and experience, as proven by student success, discussed later in this section.

Dewey was also criticized for the emphasis placed on the role of the teacher, as he ultimately believed the teacher must be responsible for creating and facilitating the type of meaningful learning experiences needed to reform schools. Luckily, Rosenstock, much like Dewey, was able to look beyond such myopic assumptions and design a school which supported the teacher as a designer of meaningful student learning experiences. Ravitch (2000) complains that "the messianic belief in the school and the teacher actually worked to the disadvantage of both, because it raised unrealistic expectations" (p. 459). According to critics like Ravitch, it is unrealistic to expect teachers to be responsible for personalizing curriculum, integrating vocational skills, and producing students who were responsible for reforming society. While critics argued that such expectations for teachers were too high, Dewey strongly believed in the role of the teacher and argued that with proper training and under a reformed curriculum and school structure, it was possible. Rosestock agreed with Dewey's optimism and was able to design a school that was structured to support teachers to do just as Dewey suggested. This required clearly aligned design principles, a small school structure, and teacher flexibility and support necessary to foster the desired learning environment and experiences.

While many criticize Dewey's ideas for not providing academic rigor, High Tech schools are proof that his ideas are in fact effective. Critics such as Hirsch argue that curriculum cannot depend on the interests and development of the child, because those are not reliable for providing the knowledge necessary to truly educate a child. Critics such as Norris go so far as to claim child-centered curriculum to be "anti-intellectual" (p. 28). While Dewey would say a curriculum that focuses on development is the antithesis of what his critics argue, many still see it as too open and lacking rigor because it strays so far from the traditional material taught in school. Norris also states that this type of teaching does not truly educate because it is "focused on feeling, not content" (p. 29). High Tech schools provide evidence contrary to such criticism. Currently, all students who attend High Tech schools upon graduation are eligible to attend both private and University of California schools, showing that they have mastered the academic expectations of prestigious universities. In addition, High Tech schools are noted for being top performing schools in the state, displaying proficiency with state-level content standards. Graduates of High Tech schools do not only leave the campus with excellent academic achievement, they also leave with life skills that will serve them in the workforce. A local business member in San Diego who participated in the High Tech internship pro-

gram stated that "High Tech students are responsible, innovative, work well in an adult environment and have impressive work-skills." No doubt this is due to the design principles of the school, which support close working relationships with adults, peer collaboration, and real-world skills in the classroom.

While the ideas of Dewey are not revolutionary, their successful implementation in the current era of accountability is. Many schools have strived to teach project-based learning, as influenced by Dewey and Kilpatrick, while other schools have "gone small," with detracked or integrated vocational education. However, these schools have often failed in their execution, as going Deweyan is a great challenge under current legislative circumstances. Many schools struggle with striking the balance between developing meaningful learning experiences while striving to adhere to state standards. This task is a difficult one, which is why so many have historically failed, as the critics reminds us. While there are risks in school reform, there are great rewards as well. High Tech schools prove that it is possible to implement Dewey's ideas from over a century ago. They also provide us with hope that Dewey's ideas can be advanced under additional challenges, such as current educational legislation.

Future Research

Because there are so many moving pieces at work in the High Tech schools, there are many areas for future research in this approach to education. Owing much to the concepts of Dewey, the High Tech model has many variables that are believed to contribute to their success. It would be beneficial to the field of educational research to understand, if held constant, which variables are those that prove to be most successful in schools; is it PBL or small schools? Is it "choice schools" or special features such as personalization? The list goes on, but it would be important for those seeking to reform schools to make them more successful to understand just what is it about Dewey and the High Tech model that works.

Another area for research hinges on a critique of the High Tech schools that has recently developed, as the first school has now graduated its first class from college; what happens to students after they graduate from the High Tech system? Many argue that while PBL is great for younger students, it is not realistic preparation for the university environment, which is based on a traditional approach to teaching through lectures and textbooks. Also, many argue that a child-centered approach to education does not truly prepare students with the knowledge they need for their future. Many want to know how High Tech students do in college; do they adjust, or has this style of teaching done them a disservice? Do they fail in college due to "culture shock" or are they successful? Little research has been done on what happens to High Tech students after graduation and this information could be very useful, not only to the High Tech schools, but also for others who are interested in reforming schools to better meet the needs of our future citizens.

Conclusion

While Dewey has received much criticism for his lasting influence, a century later it is interesting to see his ideas in action and being successful. The High Tech schools offer a unique approach to teaching and learning and have created a name for themselves among reformers, politicians, scholars, and practitioners alike. Among many other elements, through project-based learning and a child-centered curriculum, these schools have found a way to not only integrate the philosophies of Dewey but also to advance them in the face of challenging circumstances. While this model has proven effective for the High Tech schools thus far, it is one that continues to grow and inspire and offer areas for research as we continue to strive for educational reform in the current era of accountability.

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Jennifer R. Pieratt is a doctoral candidate in Educational Philosophy at Claremont Graduate University.