New Tech Schools and Student Achievement

January 2013

In the following report, Hanover Research assesses the extent to which educational technology influences student achievement, specifically in relation to New Tech school models. The report analyzes student outcomes in graduation rates and attendance; examination performance; postsecondary performance and outcomes; engagement and discipline; and stakeholder satisfaction. We highlight the most relevant, recent research findings and news articles to provide a comprehensive overview of the possible benefits of creating a high school with the New Tech model.

HANOVER RESEARCH

TABLE OF CONTENTS

EXECUTIVE SUMMARY AND KEY FINDINGS

INTRODUCTION

The rise of technology in the workspace and educational realm has fundamentally altered the delivery of K-12 education, and the trend seems to be expanding in both scope and influence. For example, in July 2012 Apple Inc. reported that 1.5 million iPads were used in K-12 education.[1] Further, the University of Delaware currently offers a Master of Education in Education Technology, "based on the assumption that new media and the Internet can have a positive effect on teaching and learning."[2] Despite uncertainty in the educational sector as to the efficacy of technology in the K-12 classroom, this is a phenomenon whose influence is on the rise.

One increasing popular model of technology integration in public schools is through the New Tech model. Founded in 1996, the first New Tech high school in Napa, CA has quickly expanded into a network of over 100 high schools throughout the country. This model "has proven successful across diverse student populations in urban, rural, and suburban public high schools… [and] is emerging as one of the fastest-growing approaches to transforming high school education in the U.S."[3] One of the administrators and original supporters of the Napa New Tech high school explains that:

> Technology is as much as part of our lives, and especially our student's lives, as pencils were a part of the lives of yesterday's students. Making technology a part of today's student environment just makes sense… There are few jobs today that do not require technology skills and the ability to be creative, collaborate with others, be a good team member, and take responsibility for your work.[4]

In this report, Hanover explores the outcomes associated with the New Tech school models. Certain organizations, such as the New Tech Network or the Center of Excellence in Leadership of Learning at the University of Indianapolis, have conducted research into the effectiveness of New Tech schools in recent years. However, given the newness of these school models, these findings may only examine the outcomes of a few high schools and are somewhat limited in scope. Given this fact, Hanover also includes information from local news sources that offer insight into the effectiveness and popularity of New Tech high schools throughout the country.

---

[1] Norris, C. and Soloway, E. "Want Increased Student Achievement Using iPads?" District Administration. July 24, 2012. http://www.districtadministration.com/article/want-increased-student-achievement-using-ipads

[2] "Master of Education in Educational Technology." University of Delaware College of Education & Human Development. http://www.udel.edu/education/edtc/index.html

[3] Hufstader, L. "United States Assistant Secretary of Education Visits Napa New Technology High School." *Napa Valley Patch*. September 11, 2012. http://napavalley.patch.com/articles/united-states-assistant-secretary-of-education-visits-napa-new-technology-high-school

[4] Rhodes, B. "Learning about today's new tech schools." *Napa Valley Register*. December 27, 2010. http://napavalleyregister.com/lifestyles/columnists/betty-rhodes/article_68caa002-1164-11e0-9d7b-001cc4c03286.html

The report is organized into two main sections: a literature review on trends based on theory in Section I; and a more in-depth analysis of data to support student engagement, achievement, and satisfaction due to the New Tech model in Section II. In this second section, we organize our findings by dividing examples and case studies into the categories of greatest interest to our member, as listed below:

- Attendance, Dropout, and Graduation Rates
- Examination Performance
- Postsecondary Success and Workforce Readiness
- Engagement and Discipline
- Stakeholder Satisfaction: Parents and Students

KEY FINDINGS

- The 2010 report from Project RED found that "schools employing a 1:1 student-computer ratio… outperform other schools, and reveal significant opportunities for improving education return on investment by transforming teaching and learning." Further, the study reported that ubiquitous technology in high schools somewhat or greatly improved college enrollment, AP course enrollment, plans for higher education attendance, graduation rates, and rates of high school course completion.

- One increasing popular model of ubiquitous technology integration in public schools is through the New Tech model. Founded in 1996 as one high school in Napa, CA, the model has quickly expanded into a network of over 100 high schools throughout the country. However, many of these high schools have only been in operation for one or two years, and therefore have not produced enough data for strong conclusions regarding the effects of the New Tech model on student outcomes.

- The high schools in the New Tech Network have demonstrated impressive attendance and dropout rates. For example, in their 2010-11 summary report, the Network reported an average attendance rate of 95 percent and an average dropout rate of only 3 percent. Further, the Network reported an annual graduation rate of 97 percent and a four-year cohort rate of 86 percent. Similarly, the Center of Excellence in Leadership of Learning found that the New Tech high schools in Indiana had higher attendance and graduation rates than comparison traditional high schools or the state averages.

- Although little testing data is available for many of the newer New Tech high schools, some older initiatives have demonstrated success. In Indiana, New Tech students outperformed both the comparison traditional high school group and the state-wide average on both the Algebra I and English 10 End of Course Assessments in 2010-11. Similarly, at Manor New Tech High School in Texas, students not only significantly increased in their average scores on the TAKS test from grade 8 to grade 11, but also exceeded local and state-wide averages.

- One of the main objectives of the New Tech model is to prepare students with the appropriate skills and knowledge to succeed in postsecondary education or the workforce, and the initiative appears to be working. The National Student Clearinghouse tracked students from the five New Tech high schools with a graduating class in 2009, and found that 91 percent of these students had remained in college. Of the 11 schools with a graduating class in 2010, 88 percent of students who had continued to postsecondary education were still enrolled

- In a survey of New Tech alumni, the majority of New Tech model components were rated as valuable or extremely valuable for meeting the demands of college or the workforce. Further, over 60 percent of survey respondents noted that they were prepared or extremely prepared for all postsecondary courses or requirements. Specifically, over 90 percent of respondents noted being prepared or extremely prepared for college-level English, working collaboratively, using technology, and working with diverse groups in their college courses.

- The project-based learning strategies of the New Tech model facilitate increased interaction and collaboration among students and teachers, thus positively influencing student engagement. One study found that "Students showed the highest levels of engagement when they were collaborating with their peers to complete rigorous projects while teachers solicited feedback in order to improve the rigor or relevancy of projects." This increased student engagement has also led to decreased student discipline issues in some New Tech high schools, including reduced rates of suspensions and bullying.

- Finally, both parents and students appear to be satisfied with the New Tech high schools. For example, a parent at Gary New Tech in Indiana was cited for explaining that both he and his son are happy with the school: "It's one school he doesn't complain about. I think it's awesome to use technology and teams to arrive at the achievement of a goal."

- Many quotes and articles demonstrated that students overwhelmingly favor the New Tech model to the traditional school model. While some students noted that they were nervous or apprehensive about the switch to the project-based learning model, the majority of students reported satisfaction and enjoyment with the new system. Further, many students noted that they appreciated understanding why they were learning certain material, and how it would apply to their future plans.

SECTION I: BACKGROUND LITERATURE REVIEW

In this first brief section, Hanover examines general arguments for the presence of technology in education, and then more closely reviews the history, structure, and some general outcomes of the New Tech high school model.

TECHNOLOGY IN EDUCATION

As school districts attempt to develop strategies to improve student achievement across all grade levels, it must be emphasized that technology is only part of the solution. Like any tool with great potential, technology can be used effectively or without efficacy, either transcending previous limits of educational delivery or squandering resources of time and funding. An October 2012 report by the American Association of School Librarians notes that "when used appropriately, educational technology is a tool to assist with implementation of the Common Core Standards, help raise graduation rates, and prepare students for life beyond K-12 education. Technology employed in isolation, without direct instruction, or highly qualified guidance, fails to address these concerns."[5]

The International Society for Technology in Education (ISTE) also notes that correct implementation of technology is essential, as demonstrated by many different research results. ISTE has identified seven factors for "successful implementation" of educational technology, which include:

- Effective professional development for teachers in the integration of technology into instruction is necessary to support student learning.

- Teachers' direct application of technology must be aligned to local and/or state curriculum standards.

- Technology must be incorporated into the daily learning schedule (i.e., not as a supplement or after-school tutorial).

- Programs and applications must provide individualized feedback to students and teachers and must have the ability to tailor lessons to individual student needs.

- Student collaboration in the use of technology is more effective in influencing student achievement than strictly individual use.

- Project-based learning and real-world simulations are more effective in changing student motivation and achievement than drill-and-practice applications.

- Effective technology integration requires leadership, support, and modeling from teachers, administrators, and the community/parents.[6]

---

[5] Cordell, D., Eckhardt, S., Hauser, J., and McGriff, N. "Educational Technology in Schools." American Association of School Librarians. October 2012, p. 2.
http://www.ala.org/aasl/sites/ala.org.aasl/files/content/aaslissues/positionstatements/AASL_Ed_Tech_WhitePaper.pdf

[6] Bulleted points taken verbatim from: "Technology and Student Achievement – The Indelible Link." ISTE Policy Brief. International Society for Technology in Education. June 2008, p. 3.

Specifically, these bulleted points highlight the importance of implementing project-based learning alongside new technologies and ensuring that the professional development of teachers who deliver these new technological instructional approaches keeps pace with their evolution.

One general source of information related to the effects of increased technology on student achievement is the 2010 report from Project RED. This survey was the first large-scale national study designed to "identify and prioritize the factors that make some technology implementations perform dramatically better than others." The project, which was a joint endeavor sponsored by Intel, Apple, the Pearson Foundation, and other organizations was supported by the American Association of School Administrators and the National School Boards Association. The report found that "**schools employing a 1:1 student-computer ratio and the key implementation factors outperform other schools, and reveal significant opportunities for improving education return on investment by transforming teaching and learning**."[7]

Many findings from their study may be summarized in Figure 1.1 on the following page, which tracks the effects of ubiquitous technology in high schools on college enrollment, AP course enrollment, plans for higher education attendance, graduation rates, and rates of high school course completion. As demonstrated below, **each of these indicators was reported to have somewhat or greatly improved due to the influence of technology**.

These findings highlight that 66 percent of respondents reported that dual or joint enrollment in college has greatly or somewhat improved due to the presence of ubiquitous technology. More importantly, 58 percent of respondents reported that the number of students who established plans to attend post-secondary educational institutions greatly or somewhat increased. Further, 54 percent of respondents noted that graduation rates greatly or somewhat improved, and nearly 60 percent stated that course completion rates in high school greatly or somewhat improved.

---

http://www.k12hsn.org/files/research/Technology/ISTE_policy_brief_student_achievement.pdf
[7] "The Technology Factor: Nine Keys to Student Achievement and Cost-Effectiveness." Project RED. 2010, p. 4. http://pearsonfoundation.org/downloads/ProjectRED_TheTechnolgyFactor.pdf

Figure 1.1: The Role of Ubiquitous Technology in High Schools
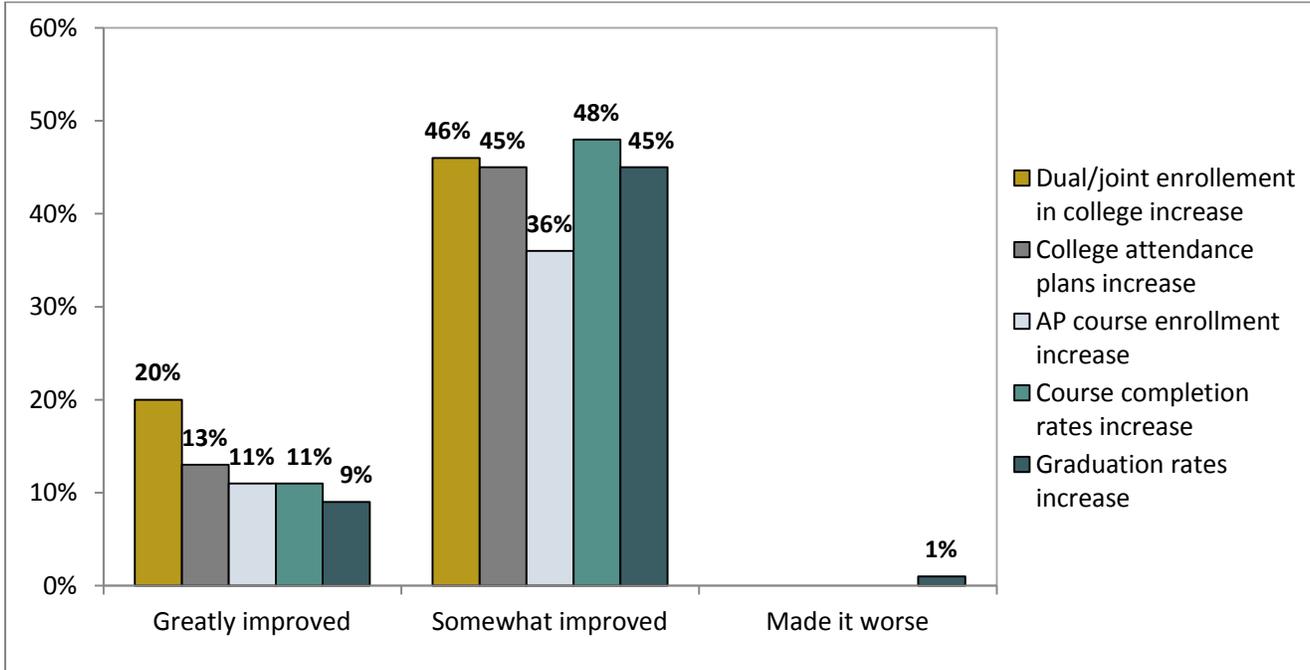
Source: Project RED[8]

NEW TECH HIGH SCHOOLS

The New Tech high school model is one of many innovative strategies recently designed to provide students with ubiquitous technology in hopes of engaging students and producing greater student secondary and postsecondary outcomes. The concept of a New Tech high school was originally started in Napa, CA in 1996 with one high school. Since then, over 100 New Tech high schools have started, all with similar components that have demonstrated success in improving student achievement, attendance, and engagement. The design of New Tech high schools is focused on seven critical principles, including:

- Small schools size (not to exceed 400 for grades 9-12);

- Curriculum designed around collaborative learning environments and the project-based learning model;

- Integrated technology with a 1:1 student to networked computer ratio;

- Industry-school partnerships designed to provide critical career awareness and professional skills to high school students;

- Professional development for teachers and staff that is on-going, diverse in content but focused on project-based learning instructional strategies;

- Staffing model that allows for the principal's autonomy in hiring, fully-dedicated faculty, a New Tech Foundation advocate on site, and an IT Administrator to support school systems; and

---

[8] Ibid, p. 92.

- Environment that is physically separated from other school models to create a unique identity and provide classrooms with diverse learning environments.[9]

While each New Tech high school can identify unique learning outcomes, the school-wide outcomes chosen by the original New Technology High School provide a comprehensive example of the focus of these schools. Their learning outcomes include:

- Technology and Information Literacy
- Critical Thinking and Logical Reasoning
- Written Communication

- Work Ethic and Professionalism
- Oral Proficiency
- Collaboration
- Curricular Literacy[10]

While the following section of this report will examine the various outcomes of New Tech students in greater detail, Figure 1.1 below provides a brief overview of the value of the New Tech model. Alumni of a New Tech high school were asked to rate the value of various components of their high school in relation to their success in high school, postsecondary education, and the workplace. The survey used a four-point scale, with a "one" representing "not at all valuable" and a "four" representing "very valuable. As demonstrated in Figure 1.1, the average responses for each New Tech component are between three and four, most oftentimes closer to four. This indicates that New Tech alumni found a significantly high value in the majority of the model's components.

Figure 1.1: Alumni Ratings for Value of New Tech Program Components

	HIGH SCHOOL	POSTSECONDARY EDUCATION	CAREER
Using technology as a tool for learning, communicating, and work.	3.78	3.72	3.84
Having a one-to-one computer ratio in the classroom.	3.73	3.48	3.61
Taking college courses while still in high school.	3.70	3.78	3.51
Using real world projects to make classroom learning relevant and interesting.	3.70	3.58	3.69
Experiencing an environment that required high levels of personal responsibility, respect for others, and time management.	3.69	3.72	3.80
Attending a small school where you are well known by peers and teachers.	3.65	3.05	3.35
Regularly presenting information in front of groups.	3.59	3.54	3.64
Working with teams on large projects (collaboration).	3.48	3.29	3.61

[9] Bulleted points taken verbatim from: "Case Study of Manor New Tech High School: Promising Practices for Comprehensive High Schools." The E[3] Alliance. October 15, 2009. P. 6. http://www.e3alliance.org/pdfs/MNTH%20WP%20110409%20.pdf
[10] "New Technology High School." New Tech Network. 2010. http://www.newtechnetwork.org/sites/default/files/ntn_school_sheet_napantfinal_823__2.pdf

	HIGH SCHOOL	POSTSECONDARY EDUCATION	CAREER
Successfully completing an internship.	3.17	3.21	3.31
Reflecting on and describing your abilities in a digital portfolio.	3.03	2.71	2.93

Source: Rockman, et. al.[11]

The New Tech Network has also examined the outcomes and perspective of New Tech alumni. In their 2010 report "Alumni Perspectives: Exploring the Impact of New Tech High Schools on College and Work Readiness," the Network notes that "alumni consistently reported a range of impacted skill areas, including intrapersonal outcomes, such as self insight and resilience, as well as a range of skills for 21st century success, such as critical thinking, communication, collaboration, and technology skills." [12]

---

[11] Rockman, et. al. "New Technology High School Postsecondary Student Success Study." Center of Excellence in Leadership of Learning. February 6, 2006. P. 9. http://cell.uindy.edu/docs/NTHS/NTHSStudentSuccessStudy.pdf

[12] Lee, P. "Alumni Perspectives: Exploring the Impact of New Tech High Schools on College and Work Readiness." New Tech Network. November 22, 2010. P. 2. http://www.newtechnetwork.org/sites/default/files/news/ntn_alumni_reportv4_0.pdf

SECTION II: EFFECTS OF NEW TECH ON STUDENT ACHIEVEMENT

This section analyzes and synthesizes the findings of both individual New Tech schools and larger educational organizations that examine the effects of the New Tech high school model on student achievement across a number of different factors. As previously noted, due to the relative newness of the New Tech movement, extensive analyses have not been conducted into the effectiveness of this school model. Through publications from the New Tech Network and interesting quotes from local newspapers, Hanover sought to include information related all of the variables of interest to our member. The following section is divided into five subsections:

- Attendance, Dropout, and Graduation Rates
- Examination Performance
- Postsecondary Success and Workforce Readiness
- Engagement and Discipline
- Stakeholder Satisfaction

ATTENDANCE, DROPOUT, AND GRADUATION RATES

Although many New Tech high schools have only been in operation for one or two years, statistics relating to student attendance have shown improvements over traditional public schools. The New Tech Network has demonstrated impressive attendance and dropout rates across the approximately 100 high schools. For example, in their 2010-11 summary report, the Network reported an **average attendance rate of 95 percent and an average dropout rate of only 3 percent**. Further, the Network reported an annual graduation rate of 97 percent and a four-year cohort rate of 86 percent.[13]

Similarly, The Center of Excellence in Leadership of Learning (CELL) at the University of Indianapolis compared the attendance of students in the state's New Tech high schools with rates at traditional public schools. For the 2010-11 academic year, **the overall attendance rate at the New Tech high schools was 95.6 percent – greater than the attendance rate of comparison schools**, at 94.6 percent. Further, CELL reported that New Tech high schools had consistently high attendance rates over the previous four-year period. In examining graduation rates, CELL found that the graduation rate for New Tech students in 2011 was 92.7 percent. This was significantly higher than the state-wide average for Indiana, which was 84.5 percent in 2009-10.[14]

---

[13] "New Tech Network Outcomes 2010-11." New Tech Network.
    http://www.newtechnetwork.org/sites/default/files/ntn_resultsdocx.pdf
[14] "IN NT Research Key Findings – 2010-11." Center of Excellence in Leadership of Learning.
    http://www.newtechnetwork.org/sites/default/files/news/in_nt_data_key_findings_final.pdf

One example of this success in attendance and graduation rates is Manor New Tech High School outside Austin, TX, which has witnessed impressive attendance and graduation rates since opening in 2007. A publication on the 2010-11 academic year notes that the school had a 97 percent attendance rate and a 100 percent completion rate, and all students from the class of 2010 were moving on to enroll in postsecondary education. For the class of 2011, 97 percent of students were graduating with immediate plans to attend a college or university.[15]

Similarly, the original New Tech High School in Napa, CA reported a 95 percent attendance rate in the 2009-10 academic year.[16] In Durham, NC, Hillside New Tech High School was the only high school in the Raleigh-Durham-Chapel Hill region to achieve a 100 percent graduation rate for the 2010-11 academic year. In comparison, the average graduation rate for the state of North Carolina was 77.9 percent.[17]

As with many of the other statistics examined throughout this report, data from the 2012-13 academic year and subsequent years will allow for a more comprehensive review of the effectiveness of the New Tech model in improving attendance and graduation rates.

EXAMINATION PERFORMANCE

Similarly, data related to the improved exam performance of New Tech students is not frequently published. As many of the schools only have a freshman class during the first year of implementation, it may be difficult to see strong improvements in student test scores before they have been enrolled at the New Tech school for an entire year.

Some data is available regarding student scores, however. CELL found that in the 2010-11 academic year, a greater percentage of New Tech students passed the End of Course Assessments (ECA) than students at comparison high schools. Further, in the 2009-10 academic year, New Tech students outperformed both the comparison group and the state-wide average for Indiana on both Algebra I and English 10 ECAs. A greater percentage of New Tech students passed these assessments.[18]

MANOR NEW TECH HIGH SCHOOL

Similar results have been found at Manor New Tech High School in Texas. As the school has been enrolling students since 2007, it has therefore been able to publish more comprehensive testing results than many newer New Tech schools. Below we examine data provided by Manor New Tech in relation to student achievement.

---

[15] "Manor New Technology High School." Powerpoint. New Tech Network.
http://www.newtechnetwork.org/sites/default/files/news/texas_ppt_10-11.pdf
[16] "New Technology High School." New Tech Network. 2010. Op. cit.
[17] Leese Glusco, J. "Durham school only Triangle school to graduate 100 percent." WRAL. October 11, 2011.
http://www.wral.com/news/education/story/10246359/
[18] "IN NT Research Key Findings – 2010-11." Center of Excellence in Leadership of Learning. Op. cit.

Since the first cohort of students entered the New Tech high school, there have been significant increases in student achievement on the Texas Assessment of Knowledge and Skills (TAKS) tests. Figure 2.1 below displays the percentage of students at Manor New Tech High School meeting the standard TAKS score across grade levels. As demonstrated, **the number of students performing well on the TAKS test increased in all subject areas**.

Data is provided only for the graduating class of 2011, but this same trend was also reported for the graduating classes of 2010 and 2012.

Figure 2.1: Percent of Students Meeting TAKS Standard Score, Class of 2011
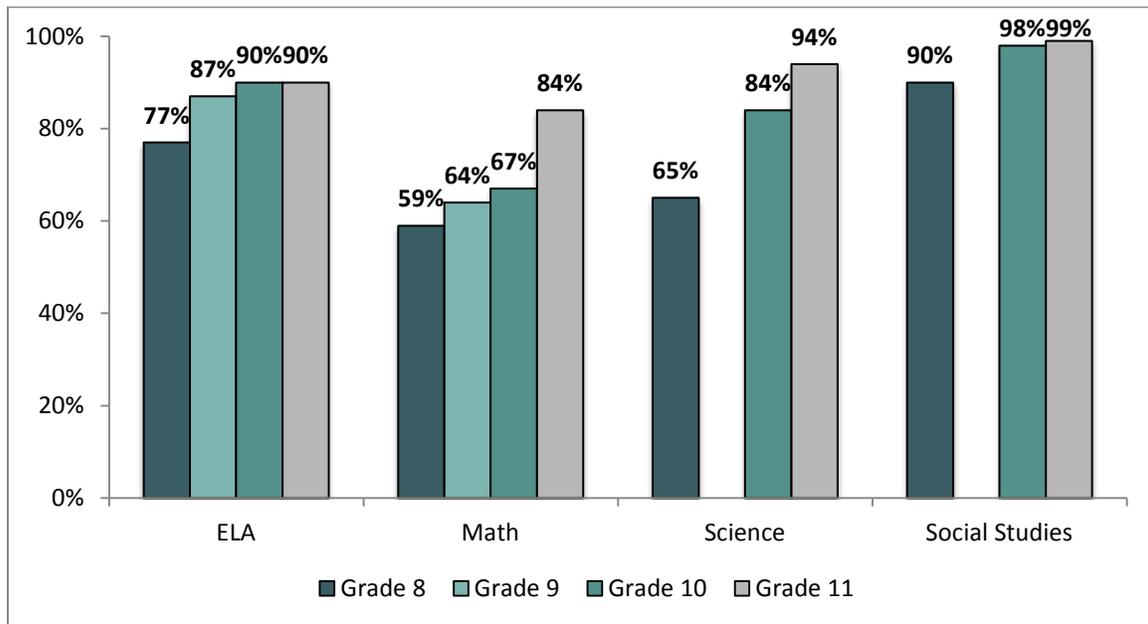
Source: Manor New Technology High School[19]
Data for Science and Social Studies tests are not available for grade 9.

As discussed above, strong improvements in average student test scores were not always apparent after one year at the high school, but become more obvious as students continued their tenure at Manor New Tech. By grade 11, students had significantly improved their average test scores in all academic areas from grade 8.

The percentage of Manor New Tech High School students earning passing scores on the TAKS tests also exceeded local and state-wide averages. The two charts presented in Figure 2.2 on the following page displays the percent of students from Manor New Tech High School (MNTHS) that earned passing scores on Math and Science TAKS tests, in comparison to the traditional Manor High School and the state of Texas averages. As demonstrated, **MNTHS students outperformed both the traditional high school in their district and the state average scores**.

---

[19] "Manor New Technology High School." Powerpoint. Op. cit.

Figure 2.2: Percent of Students Earning a Passing Score on TAKS Tests
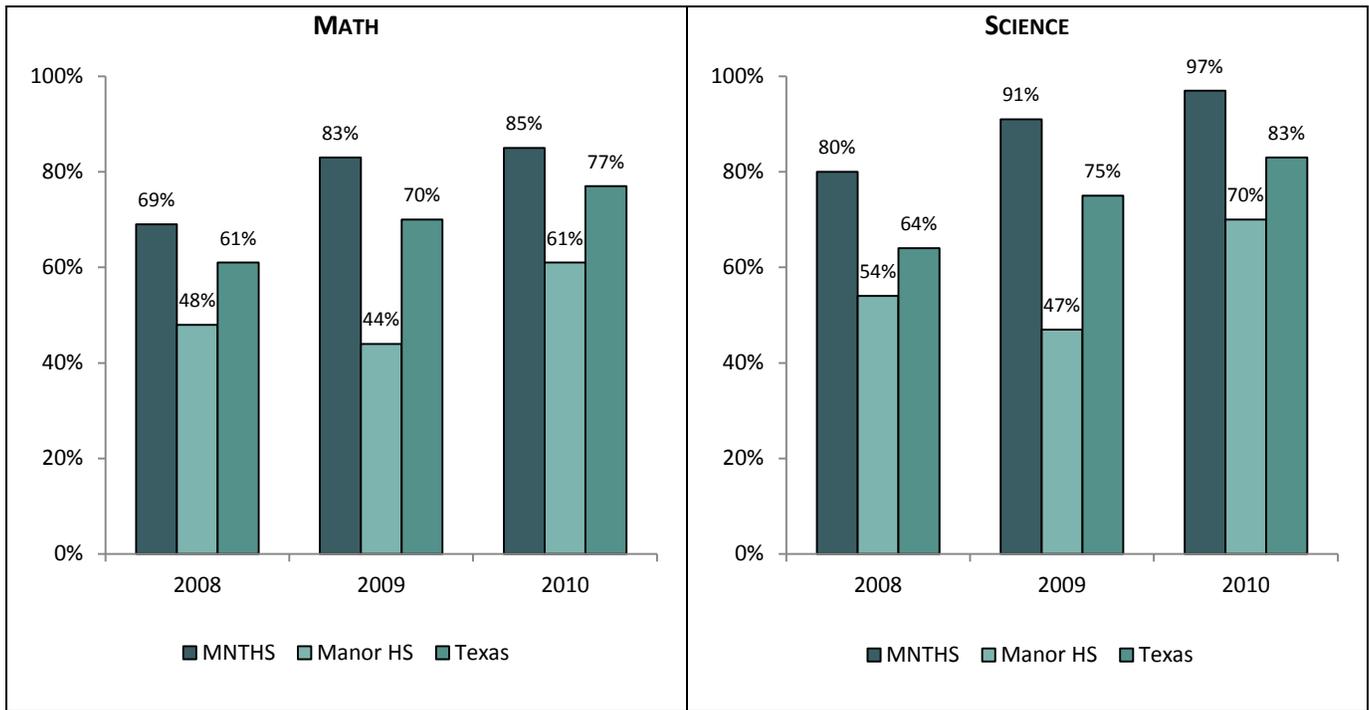
Source: Manor New Technology High School[20]

INFLUENCE OF PROJECT-BASED LEARNING

Improvements in student learning are partially attributed to the project-based learning strategies employed by New Tech high schools. For example, an October 2012 article in *Education Week* noted that the "deep" blended learning found in project-based learning encourages students to "take responsibility for their own learning, to make work and community connections, to produce quality work product, and to demonstrate their learning to a broad community."[21]

This blended learning occurs frequently through project-based learning in innovative classes that combine various academic subjects to engage students and help them understand the connections between their subjects. For example, Viking New Tech High School in Indiana offers a bio-tech class that combines biology and computer applications. Students are assigned to create biology projects using various technologies, thus also learning how to use computer programs as they complete their projects.[22] Similarly, one teacher at Gary New Tech, also in Indiana, combines geometry and graphic arts in her course. Recently, students completed a "My Dream House" project, which involved working with a local contractor and other professionals to design homes for a former housing project in the community.

---

[20] Ibid.
[21] Vander Ark, T. "10 Strategies to Promote Deeper Learning." *Education Week*. October 17, 2012.
   http://blogs.edweek.org/edweek/on_innovation/2012/10/10_strategies_to_promote_deeper_learning.html
[22] Janssen, S. "Group projects boost New Tech Learning." *The Journal Gazette*. October 15, 2012.
   http://www.journalgazette.net/article/20121015/LOCAL04/310159997/1002/LOCAL

Although the teacher noted she was initially hesitant about the changes brought about by New Tech, she explained that her students were excited and engaged in completing these types of projects.[23]

Similarly, at Pinckney New Tech in Michigan, some grade 9 students are enrolled in an American Studies course that combines English and history subjects. In one notable project, students created movie trailers with updated versions of the *Romeo and Juliet* story based in a World War I setting. The students researched the topics, wrote the screenplays, and shot and edited the film. Students were then required to create a presentation for their class that would "demonstrate their mastery of the subject matter and explain the connections between the themes Shakespeare explored in the play and the history of the war."[24]

However, such project-based learning must be intentionally designed to incorporate numerous academic subjects and align to the overarching goals of the New Tech model. A 2008-09 report from the New Tech Network notes **the importance of fidelity to the New Tech model in improving the academic achievement of students**. The report explains that "There is at least a moderate relationship between New Tech model fidelity and student achievement," with fidelity of implementation evaluated through the New Tech commitment criteria. For example, among schools determined to have a high level of fidelity to the New Tech model, six of seven surpassed comparison schools in grade 9 Reading scores and six of eight schools surpassed comparison schools in grade 10 Reading scores.

However, schools found to have low to medium fidelity to the New Tech model did not have as impressive of student achievement scores. Of seven schools, only four surpassed comparison schools in grade 9 Reading. Further, none of these schools surpassed comparison schools in Algebra I scores.[25]

POSTSECONDARY SUCCESS AND WORKFORCE READINESS

One of the most prominent and influential goals of the New Tech initiative is to "enable students to gain the knowledge and skills they need to succeed in life, college, and the careers of tomorrow."[26] Although few New Tech high schools have been in operation long enough to track the success of their graduates in postsecondary education or the workforce, some schools have reported promising results. For example, the original New Technology High School in Napa, CA, reported a 95 percent college acceptance rate of graduating

---

[23] McCollum, C. "Gary New Tech humming along in its second year." *The Times of Northwest Indiana.* September 24, 2012. http://www.nwitimes.com/news/local/lake/gary/gary-new-tech-humming-along-in-its-second-year/article_967543f4-725b-5a1e-894a-7e448b794c10.html

[24] Tynan, D. "Teaching the New Tech Way." *Ed Tech Magazine.* October 23, 2012. http://www.edtechmagazine.com/k12/article/2012/10/teaching-new-tech-way

[25] "Student Achievement Results: Model Fidelity and Achievement Results, 2008-09." New Tech Network. http://www.newtechnetwork.org/sites/default/files/news/ntn_fidelity.pdf

[26] "About us: What we do." New Tech Network. http://www.newtechnetwork.org/about_newtech

students in the 2009-10 academic year, demonstrating the students' impressive levels of preparation and application credentials.[27]

The New Tech Network's 2010-11 annual report on student outcomes boasts impressive postsecondary success of former students. The National Student Clearinghouse tracked students from the five New Tech high schools with a graduating class in 2009, and found that 91 percent of these students had remained in college. Of the 11 schools with a graduating class in 2010, **88 percent of students who had continued to postsecondary education were still enrolled**.[28]

One report of New Tech high schools in California published in 2006 surveyed recent alumni to gauge perceptions of their preparation for postsecondary education or the workforce. The study found that 89 percent of responding alumni had attended some form of postsecondary education upon graduating from their New Tech high school, including community colleges, four-year colleges or universities, or professional or technical institutes.[29]

The New Tech Network's 2010 report "Alumni Perspectives" examined how the New Tech model prepared students for the "rigor and challenges" of postsecondary education or the workforce; what skills and knowledge were most valuable to students in their postsecondary activities; and how the New Tech model influenced students' goals and career interests. In Figured 2.3 and 2.4 on the following page, alumni rate the value of various New Tech model components in preparing them to meet the demands of postsecondary education or the workforce. While the New Tech components were rated differently in relation to college demands and work demands, the three components of "critical thinking," "oral communication skills," and "working in groups" were highly valued for both settings.

---

[27] "New Technology High School." New Tech Network. 2010. Op. cit.
[28] "New Tech Network Outcomes 2010-11." Op. cit., p. 1.
[29] Rockman, et. al. Op. cit., p. 3.

Figure 2.3: Value of New Tech Model Components on Meeting College Demands

Component	Extremely valuable	Valuable	Little value	No value	Not applicable
Access to technology	75%	22%			
Critical thinking	53%	44%			
Oral communication skills	59%	34%	6%		
Working in groups	69%	19%	9%		
Written communication skills	41%	47%	13%		
College courses	63%	22%	9%	6%	
Internships	28%	25%	28%	9%	9%
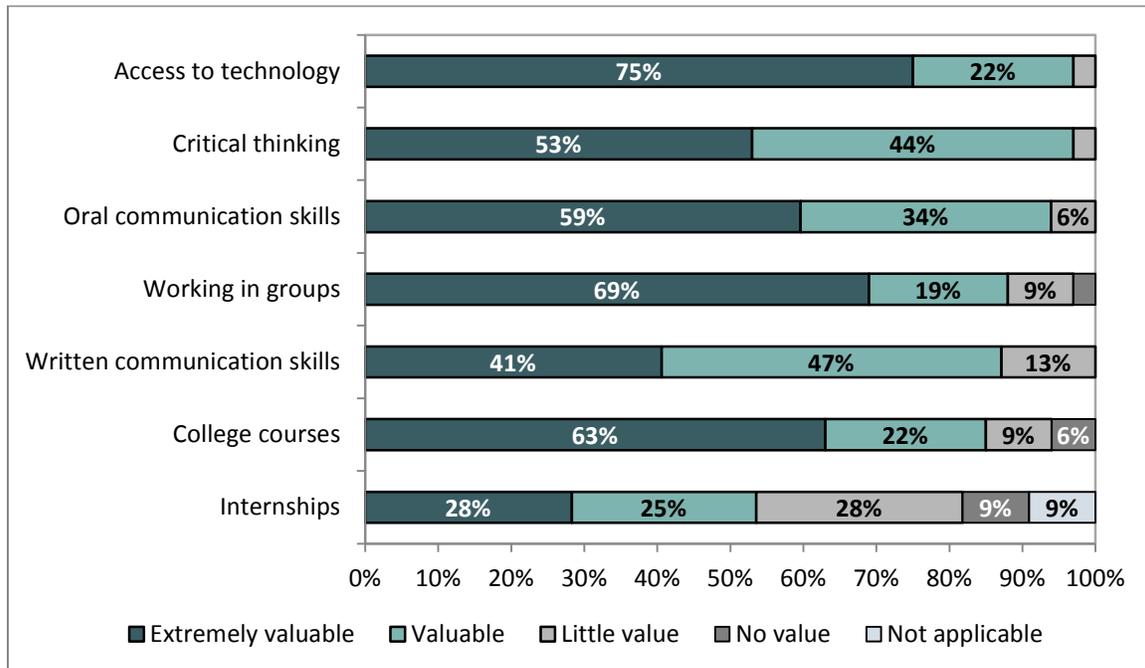
Source: New Tech Network[30]

Figure 2.4: Value of New Tech Components on Meeting Work Demands

Component	Extremely valuable	Valuable	Little value	No value	Not applicable
Oral communication skills	71%	21%	7%		
Working in groups	68%	25%	7%		
Critical thinking	54%	39%	7%		
Written communication skills	43%	43%	11%		
Access to technology	61%	21%	18%		
College courses	43%	14%	32%		7%
Internships	32%	14%	29%	7%	18%
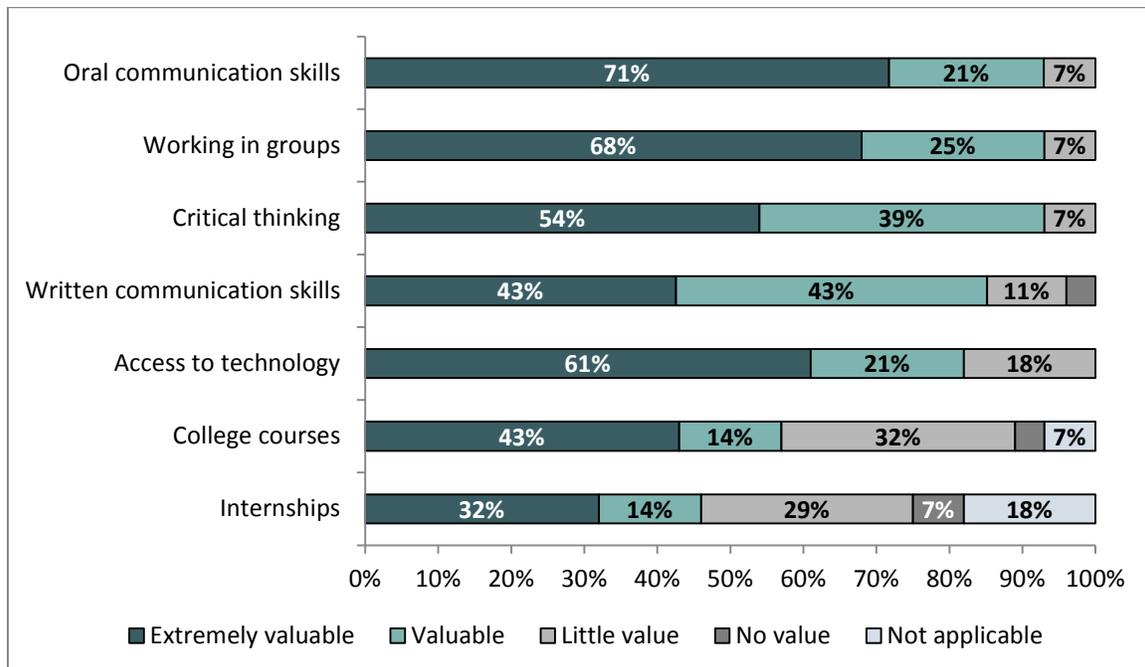
Source: New Tech Network[31]

---

[30] Lee, P. "Alumni Perspectives: Exploring the Impact of New Tech High Schools on College and Work Readiness." Op. cit., p. 11.
[31] Ibid., p. 12.

Figure 2.5 below then examines the level of preparation reported by New Tech alumni in relation to introductory college courses or the requirements of postsecondary education. As demonstrated, **over 60 percent of survey respondents noted that they were prepared or extremely prepared for all courses or requirements**. Specifically, over 90 percent of respondents noted being prepared or extremely prepared for college-level English, working collaboratively, using technology, and working with diverse groups in their college courses. Interestingly, nearly 35 percent of students reported they were not prepared or only a little prepared for college-level math courses.

Figure 2.5: Level of Preparedness Upon Entering College of New Tech Alumni
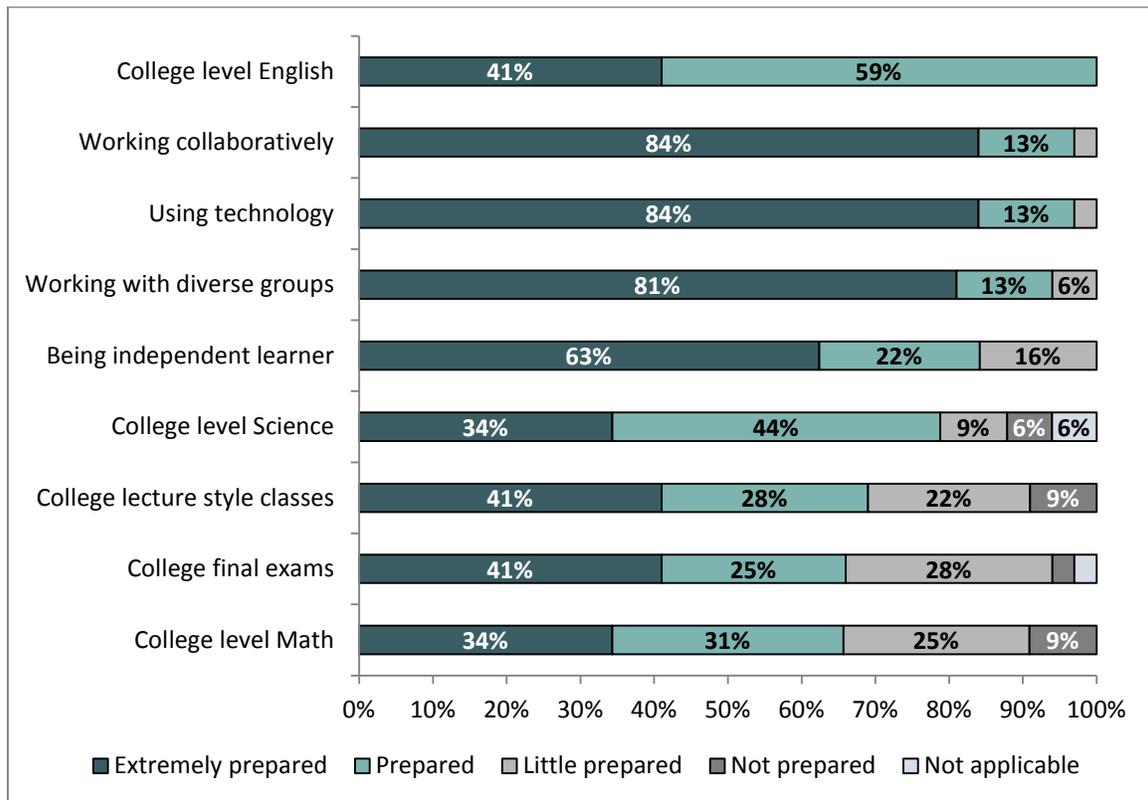
Source: New Tech Network[32]

While all New Tech schools focus on developing college and career ready students through the previously examined characteristics, some schools give students grades in their development of these skills and knowledge. For example, students at Applied Tech in Montebello, CA are evaluated along seven additional grades beyond their coursework. These include:

- Level of work ethic;
- Ability to collaborate;
- Ability to work in a team;

---

[32] Ibid., p. 13.

- Critical thinking skills;

- Written communication skills;

- Oral communication skills; and

- Numeracy.[33]

Other benefits of participation in New Tech high schools noted by alumni included collaboration skills, global awareness, self-directed learning, and setting goals for the future. The previously examined report by the New Tech Network explained that nearly all alumni said they would choose to enroll in a New Tech high school again if they had to return to high school again: "**Citing the skills they acquired, the supportive relationships they developed, and the exposure to diverse people, cultures, and careers, alumni said New Tech has well prepared them for college and work**."[34]

In conclusion, the report states that the impacts of New Tech high schools are directly aligned with the four dimensions of college and career readiness (key cognitive strategies, key content knowledge, academic behaviors, and contextual skills and awareness). Further, students developed cognitive abilities that allowed them to succeed after high school, including creativity, evaluation, and perspective taking. As demonstrated in the previous figure, students also reported that their experiences in New Tech schools prepared them for college level academics, including the format, requirements, and rigor of their courses.[35]

New Tech high schools also frequently partner with local employers to ensure students are learning relevant skills. For example, at Niles New Tech Entrepreneurial Academy in Michigan, administrators collaborate with the CEO of a local machining and fabrication company. This collaboration benefits both parties, as it allows the school to receive feedback on developing a stronger curriculum and allows the company to develop interest among qualified students for manufacturing careers.[36]

ENGAGEMENT AND DISCIPLINE

ENGAGEMENT

The project-based learning strategies of the New Tech model facilitate increased interaction and collaboration among students and teachers, thus positively influencing student engagement. For example, an observation of the implementation of the New Tech model at Van Wert High School in Ohio notes that "Instead of quiet students sitting in rows of desks listening to a teacher lecture, New Tech students are noisy, interacting with each

[33] Hsing-Huei Chou, Elizabeth. "Students Set Their Own Rules at New Technology High School." EGP News. September 29, 2011. http://egpnews.com/2011/09/students-set-their-own-rules-at-new-technology-high-school/

[34] Lee, P. "Alumni Perspectives: Exploring the Impact of New Tech High Schools on College and Work Readiness." Op. cit., p. 15.

[35] Ibid., p. 22.

[36] Rohman, Katie. "Manufacturers struggle to find skilled workers." *Leader Publications*. August 8, 2012. http://leaderpub.com/2012/08/08/manufacturers-struggle-to-find-skilled-workers/

other and teachers while desks are clustered in group settings to facilitate collaboration."[37] Similarly, administrators at Wayne New Tech in Indiana have found that project-based learning and flexible learning environments have resulted in increased student engagement. Integrating various academic subjects into one course "increases [student] engagement… They see the relevancy in what they're doing. It's not just opening a book and reading a chapter anymore."[38]

Interviewed New Tech teachers noted the importance of various features of the New Tech model in encouraging student achievement, with **project-based learning as the most influential factor**. Dr. Adrian Vegas, the principal at New Tech Odessa in Texas, explains that "the New Tech Network educational design of teaching that engages, technology that enables, and an educational experience that empowers… has transformed our kids from being passive learners to active participants in the creation of their own learning."[39] Similarly, CELL found that "Students showed the highest levels of engagement when they were collaborating with their peers to complete rigorous projects while teachers solicited feedback in order to improve the rigor or relevancy of projects."[40]

In a survey and interviews conducted by the E^3 Alliance, a research collaboration between the Austin Area Research Organization, the University of Texas at Austin, and Austin Community College District, teachers similarly explained that strategies such as small group workshops encouraged student responsibility, flexibility, and the ability to work in groups. Small group work also "enabled more student choice and greater opportunity for experimentation, which in turn, heightened student engagement."[41]

Project-based learning has been proven as effective in increasing student engagement by encouraging and requiring all students to participate. Although students are participating in group work, each individual student receives a grade for their own work. One teacher from Taylor High School in Indiana explains that "There are several components in every project that require each individual student to do his or her fair share in order for the project to be successful." **Not only does this help engage students, but it prepares them for the responsibilities of postsecondary education and employment**: "Working on projects in teams, students are accountable to their peers and acquire a level of responsibility similar to what they would experience in a professional work environment."[42]

---

[37] Mosier, D. "New Tech: Challenges, opportunities." *The Van Wert Independent*. October 25, 2012.
http://thevwindependent.com/?p=30591#more-30591

[38] Janssen, S. "Wayne New Tech designed to engage students." *The News-Sentinel*. October 3, 2012.
http://www.news-sentinel.com/apps/pbcs.dll/article?AID=%2f20121003%2fNEWS%2f310039981%2f1054

[39] "Dr. Adrian Vega, New Tech Odessa." New Tech Network. October 29, 2012.
http://www.newtechnetwork.org/news/dr-adrian-vega-new-tech-odessa

[40] "IN NT Research Key Findings – 2010-11." Center of Excellence in Leadership of Learning. Op. cit.

[41] "Case Study of Manor New Tech High School: Promising Practices for Comprehensive High Schools." Op. cit.

[42] Fipps, L. "Project-based Learning Teaches Responsibility, Respect." *Kokomo Perspective*. August 16, 2012.
http://kokomoperspective.com/kp/news/project-based-learning-teaches-responsibility-
respect/article_96d037dc-eb97-11e1-8eec-0019bb2963f4.html

Teachers also noted the value of project rubrics in helping students identify the "know" and "need to know" learning points, and well as project reflections in allowing students to offer feedback. These strategies engage students in their coursework and positively influence student learning.

Further, teachers reported that the ubiquitous technology in a New Tech high school may engage students, although teachers must ensure effective use of laptops or other technologies. The E[3] report found that "Teachers observed that taking advantage of new media, while sometimes challenging to the veterans, was critical to maintaining student engagement and adjusting to variations in learning style."[43]

DISCIPLINE

This increased student engagement has also led to decreased student discipline issues in some New Tech high schools. In Indiana, the Center of Excellence in Leadership of Learning found that New Tech students received fewer in-school and out-of-school suspensions that students at comparison schools.[44] These data findings can be found in Figure 2.6 below.

Figure 2.6: Comparison of Frequency of Discipline

	NEW TECH STUDENTS	COMPARISON STUDENTS
In-School Suspensions	11.4%	17.2%
Out-of-School Suspensions	10.0%	13.1%

Source: Center of Excellence in Leadership of Learning

Similarly, Highland High School in Arkansas saw a **decreased presence of bullying and disciplinary issues after implementing the New Tech model**. Annette Scribner, the New Tech Director, explained that as students are given more responsibility and learn to take ownership for their education, "bullying in the high school has virtually stopped." Scribner believes this is because students are communicating with one another more frequently and learning to work collaboratively with their peers. The high school's principal agrees: "The kids are communicating more, and we aren't seeing the resistance and bullying."[45]

STAKEHOLDER SATISFACTION

This sub-section examines the satisfaction of two stakeholder groups: parents and students. The majority of this information is drawn from quotes by individuals in newspapers related to their opinions of their local New Tech high school.

---

[43] "Case Study of Manor New Tech High School: Promising Practices for Comprehensive High Schools." Op. cit., p. 14.

[44] "IN NT Research Key Findings – 2010-11." Center of Excellence in Leadership of Learning. Op. cit.

[45] Brosius, J. "Going Highland-tech: New Tech program encourages student involvement in learning." *Three Rivers Edition*. October 25, 2012. http://www.arkansasonline.com/news/2012/oct/25/going-highland-tech-new-tech-program-encourages-st/?f=threerivers

PARENT SATISFACTION

Numerous newspaper articles on the New Tech Network website quote satisfied and engaged parents. For example, a parent at Gary New Tech in Indiana was cited for explaining that his son loved his school: "It's one school he doesn't complain about. I think it's awesome to use technology and teams to arrive at the achievement of a goal."[46]

In March 2012, enrollment for a New Tech high school opened near Waco, TX to obvious parent approval: Over 130 parents and family members "camped out" for two nights in order to secure their child a spot in the new school. One parent noted the lack of strong educational opportunities in the area as their incentive for helping their child get into the New Tech school.[47] Similarly, administrators at Niles New Tech Entrepreneurial Academy in Michigan expected over 100 parents to line up early to try to secure spots for their children on the enrollment morning.[48]

More generally, literature has examined the preferences of parents in relation to technology in education. According to a study released in September 2012 by the Leading Education by Advancing Digital (LEAD) Commission, "**the majority of parents and teachers of K-12 students support greater use of technology in education**." In fact, that the study found that these stakeholders "increasingly believe that school systems should be doing more to improve access to technology in education." [49] In a poll of 883 parents of K-12 students, the LEAD Commission found the following trends:

- 92 percent of parents believe that schools' integration of technology in teaching and learning is important to the education of American students today.

- 64 percent of parents believe that the role of technology in educating students will become much more important during the next 10 years.

- 63 percent of parents responded that the country is somewhat or far behind the curve when it comes to American public schools' use of technology in education.

- 71 percent of parents believe a greater use of technology would be helpful in connecting learning inside and outside of the classroom.

- 76 percent of parents would choose to spend $200 per student for an Internet-connected device over $200 per student for new science textbooks.

---

[46] Carlson, C. "New Tech breathes new enthusiasm in Gary classrooms." *Post-Tribune*. August 19, 2012. http://posttrib.suntimes.com/news/lake/14530817-418/new-tech-breathes-new-enthusiasm-in-gary-classrooms.html

[47] Cheng, C. "Parents camp out to get students into new high school." ABC News Channel 25. March 23, 2012. http://www.kxxv.com/story/17243779/parents-camp-out-to-get-students-into-new-high-school

[48] Haupert, C. "Line up for New Tech Saturday." *Leader Publications*. February 23, 2012. http://leaderpub.com/2012/02/23/line-up-for-new-tech-saturday/

[49] "Poll Finds Support for Use of Technology." LEAD Commission. September 2012. http://www.leadcommission.org/poll-finds-overwhelming-support-for-greater-use-of-technology-in-k-12-education-among-teachers-and-parents-a-diverse-sampling-of-u-s-teachers-and-parents-strongly-believe-schools-should-increase-ado

- 90 percent of parents believe that home access to high-speed Internet gives students a big or moderate advantage when it comes to classroom performance.[50]

STUDENT SATISFACTION

The New Tech Network reports **high levels of satisfaction among students**. For example, in the summary report from the 2010-11 academic year, the Network reported that 93 percent of students at New Tech High in Napa, CA either strongly agreed or agreed with the statement "My experience at New Tech was positive." Only 7 percent of students disagreed with the statement, and no students reported strongly disagreeing.[51]

Many quotes and articles demonstrated that students overwhelmingly favor the New Tech model to the traditional school model. While newspaper articles or publications noted that students were nervous or apprehensive about the switch to the project-based learning model, the majority of students reported satisfaction and enjoyment with the new system. For example, one freshman boy at Viking New Tech in Indiana noted "I tell my friends, Dude, I'm having a blast… And I'm learning."[52]

Further, **many students noted that they appreciated understanding why they were learning certain material, and how it would apply to their future plans**. One sophomore at Taylor High School in Indiana explains: "We learn lessons about subjects we're going to use in the real world… Teachers show us how we're going to use the information in the future. That helps you put into perspective what you need to learn in school and why."[53]

Similarly, students enrolled in their first year at Niles New Tech Entrepreneurial Academy in Michigan had positive responses to a survey of their new school system. In a confidential survey, 78 percent of students reported that they were proud of their school and the people in it. Further, over 75 percent of students responded with "quite a bit" or "very much" to the question "How much has your experience at this school contributed to growth in the following areas?" for numerous skills, including:

- Public speaking

- Thinking deeply and critically

- Using technology

- Working well in groups

- Preparing for college or the workplace[54]

---

[50] Bulleted points taken verbatim from: Ibid.

[51] "New Tech Network Outcomes 2010-11." Op. cit., p. 6.

[52] Dougal, K. "VWCS board, community members learn about New Tech at Indiana school." *Times Bulletin Publisher*. November 5, 2011. http://timesbulletin.com/main.asp?SectionID=2&SubSectionID=4&ArticleID=169706

[53] Fipps, L. "Project-based Learning Teaches Responsibility, Respect." Op. cit.

[54] "New Tech students: it's working." *Leader Publications*. November 28, 2012. http://leaderpub.com/2012/04/10/new-tech-students-its-working/

In conclusion, the principal of Bogalusa New Tech High School in Louisiana describes the general atmosphere of a New Tech school: "I've been in different schools through the years... I've never seen students who are happier than students who are here. They like being here. We give them a safe environment. They're challenged in every subject that they take, and they enjoy that."[55]

---

[55] "Innovative learning: New Tech High prepares students for future." New Tech Network. December 11, 2011.
http://www.newtechnetwork.org/news/innovative-learning-new-tech-high-prepares-students-future

PROJECT EVALUATION FORM

Hanover Research is committed to providing a work product that meets or exceeds member expectations. In keeping with that goal, we would like to hear your opinions regarding our reports. Feedback is critically important and serves as the strongest mechanism by which we tailor our research to your organization. When you have had a chance to evaluate this report, please take a moment to fill out the following questionnaire.

http://www.hanoverresearch.com/evaluation/index.php

CAVEAT

The publisher and authors have used their best efforts in preparing this brief. The publisher and authors make no representations or warranties with respect to the accuracy or completeness of the contents of this brief and specifically disclaim any implied warranties of fitness for a particular purpose. There are no warranties which extend beyond the descriptions contained in this paragraph. No warranty may be created or extended by representatives of Hanover Research or its marketing materials. The accuracy and completeness of the information provided herein and the opinions stated herein are not guaranteed or warranted to produce any particular results, and the advice and strategies contained herein may not be suitable for every member. Neither the publisher nor the authors shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages. Moreover, Hanover Research is not engaged in rendering legal, accounting, or other professional services. Members requiring such services are advised to consult an appropriate professional.

1750 H Street NW, 2nd Floor
Washington, DC 20006

P 202.756.2971 F 866.808.6585
www.hanoverresearch.com