

Summary of GenYES Research

Student-led Technology Professional Development

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Summary of GenYES Research

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The GenYES model of technology integration facilitated by student technology leaders started in the Olympia School District in Washington State in October of 1996 as a 5-year U.S. Department of Education Technology Innovation Challenge Grant. Extensive external evaluation was required and the Northwest Regional Education Laboratory (NWREL) provided the bulk of assessment tasks on the model, then known as “Gen www.Y”. After the grant completed, the Generation YES 501c(3) nonprofit organization continued to offer schools the opportunity to participate in the model and has continued the evaluation studies.

Five studies are summarized in this document.

1. **Twelve years of NWREL data and evaluation reports**, including the model’s effect on math and reading test scores in Washington state.
2. The **U.S. Department of Education Expert Panel on Educational Technology** evaluated 134 promising models of educational technology to see if improved learning occurred. After two years of intense evaluation only GenYES and one other model met all the Panel’s stringent criteria for an exemplary rating for an effective technology model for improved learning in K-12 schools.
3. The **University of North Texas evaluation** report of a recent large three-year Texas TARGET GenYES grant. Comparison of reading, math, and writing TAKS scores of GenYES and non-GenYES schools are reported along with a pre-post study of STaR technology readiness scores of hundreds of teachers who received their technology professional development from GenYES students.
4. The **Wexford Institute** evaluated the five-year College YES Program in 2015, funded by an Investing in Innovation Development Grant from the US Department of Education. In College YES, The Alliance for College-Ready Schools in Los Angeles used GenYES in one of the largest implementations of project-based learning to ever be studied.
5. **Michigan State University – Effective Technology Professional Development**

Conclusion: GenYES is the only technology professional development model where students play the major role supporting technology integration in the school. GenYES is possibly the most evaluated technology professional development program ever. Over one hundred TICG, TLCF, PTTT, and EETT grants have had a GenYES evaluation component attached to it. More than 40,000 teachers have collaborated with GenYES students to integrate technology to improve student learning. These studies have shown increases in student achievement and engagement, increases in teacher ability to teach with technology and understand how technology integrates into curriculum, and satisfaction that the GenYES model is an effective and powerful way to engage students and increase the authentic use of technology in schools.

Although this short summary of GenYES research concentrates on five major studies, there are literally thousands of pages of research results and many of these GenYES evaluation reports can be found on the Generation YES website:

<http://genyes.org/resources/research>.

1. NWREL Evaluation

Twelve years of data collected by the Northwest Regional Educational Laboratory (NWREL) from the nationwide GenYES project indicates:

“...the program is an effective alternative for schools wishing to integrate technology into their regular curriculum and increase their use of project-based, student-centered learning practices. The model provides individualized support for educators who wish to increase their use of technology without becoming distracted from the essence of their jobs -- building and delivering effective curriculum units and lesson plans.”

Impact on Classroom Technology Integration

More than 40,000 teachers have received technology integration support from trained GenYES students. Surveys done on these thousands of teachers reveal that they had overwhelmingly positive responses to the GenYES program and believed it had an impact on the way they would teach in the future.

- 89% agreed that as a consequence of GenYES, their students learned content better
- 97% would like to work with another GenYES student next year
- 98% reported that as a consequence of GenYES, they would continue rebuilding their lessons to make more use of technology
- 82% reported that the GenYES experience would change the way they teach in the future.

Impact on Student Academic Achievement

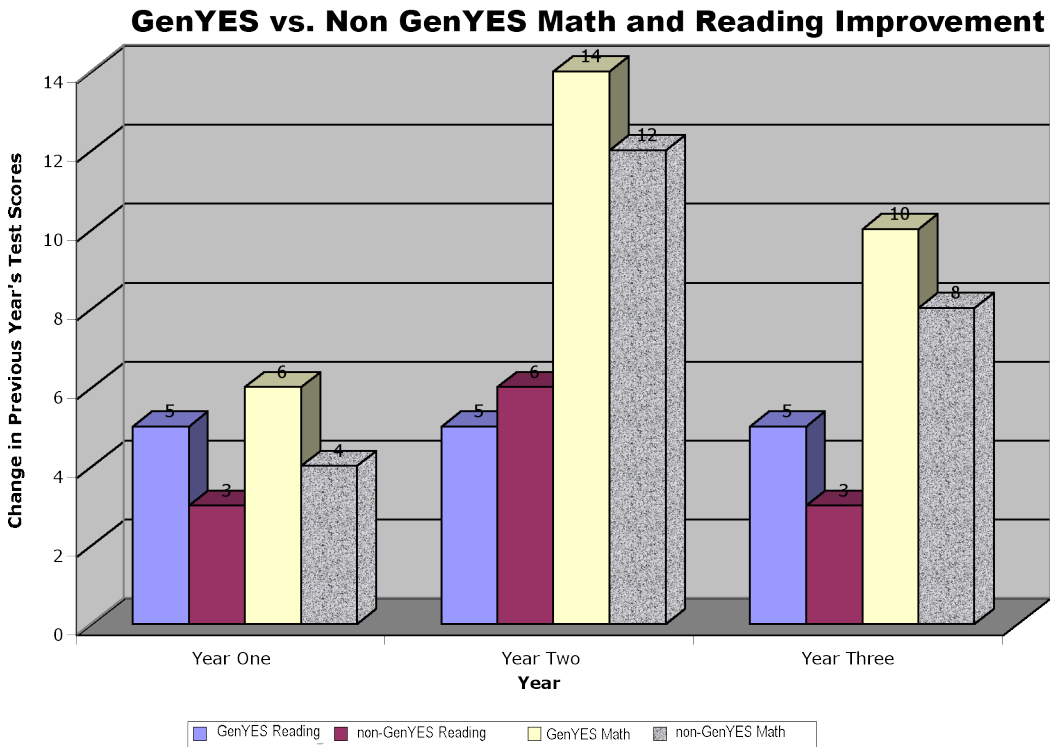
Another NWREL study compared students' standardized mathematics and language arts test results of those students who had taken the GenYES class with students who had not over a three period after the GenYES students participated in the program.

These tests were based on Washington state standardized tests given to these students as part of the normal events during the year. (GenYES students = 44, non-GenYES = 328)

- Over the three years, Math scores of GenYES students increased 22.7% compared to average increases of 11.1% for non-GenYES students.
- Language arts scores of GenYES students increased 6.8% compared to average increases of 5.6% for non-GenYES students.
- Math score achievement for GenYES students was significantly better [$p < .01$], with less than a 1% chance that this difference could have occurred by chance.

Citation: Coe, Michael and Ault, Phyllis, Students, Teachers, and Technology Building Better Schools: Generation www.Y Project Evaluation: 1996-2001, Northwest Regional Education Laboratory, Portland, OR, September 2001.

The following chart summarizes the data taken over a three-year period.



2. U.S. Department of Education Expert Panel Analysis

In 2001, GenYES received one of only two "Exemplary" awards for educational technology programs given by a USDOE Expert Panel on Educational Technology.

The Expert Panel on Educational Technology was established by the U.S. Department of Education "to oversee a valid and viable process for identifying and designating promising and exemplary educational programs so that practitioners can make better-informed decisions in their ongoing efforts to improve the quality of student learning." Over a 2-year period, the 18-member panel reviewed 134 educational technology programs based on following criteria:

1. Quality of Program
2. Educational Significance
3. Evidence of Effectiveness
4. Usefulness to Others

The U.S. Expert Panel's exemplary rating of GenYES concluded,

“The evaluation documents substantial learning gains on the part of participating students. The reviewers were impressed by the creativity of the project, creating a role reversal in which students help support the school’s technology infrastructure and partner with teachers in curriculum development. The latter is crucial to the success of the project and to fostering learning gains for all students in participating districts. While a few projects have taken similar approaches, this particular implementation is better conceived, more thoroughly implemented, and more carefully documented than other comparable programs.”

Other conclusions made by the Expert Panel about GenYES included:

- The program goals and designs are convincingly supported by research.
- There is compelling demonstration that the program develops complex learning and thinking skills.
- There is complete and compelling demonstration that the program contributes to educational excellence for all. GenYES was able to demonstrate that they have increased both the participation and the performance of underserved groups of learners.
- There is complete and compelling demonstration that the program promotes coherent organizational change.
- The research design carried out by the NWREL meets high standards of quality.
- There is compelling demonstration that the program is adaptable for use in multiple contexts.

These stringent criteria used by the Expert Panel closely parallel the current No Child Left Behind funding criteria. The states of Maryland, California, New York, New Mexico, Wisconsin, Kansas, Washington, Utah, Texas, and others have provided substantial EETT funds to districts implementing GenYES.

3. Texas Target Evaluation

The Educational Service Center in Region 20, Texas (in the San Antonio area) participated in a 3 year EETT funded grant. These Target projects included evaluation and annual reports. The GenYES model was implemented at over 38 elementary, middle and high schools. Texas School Technology and Readiness (STaR) model, LOTI levels, and the TAKS tests were used to evaluate the impact of the grant.

Texas Assessment of Knowledge and Skills – Impact in GenYES Schools

The Texas Assessment of Knowledge and Skills (TAKS) is a primary and secondary education standardized test used in Texas to assess student attainment academic skills required under Texas education standards.

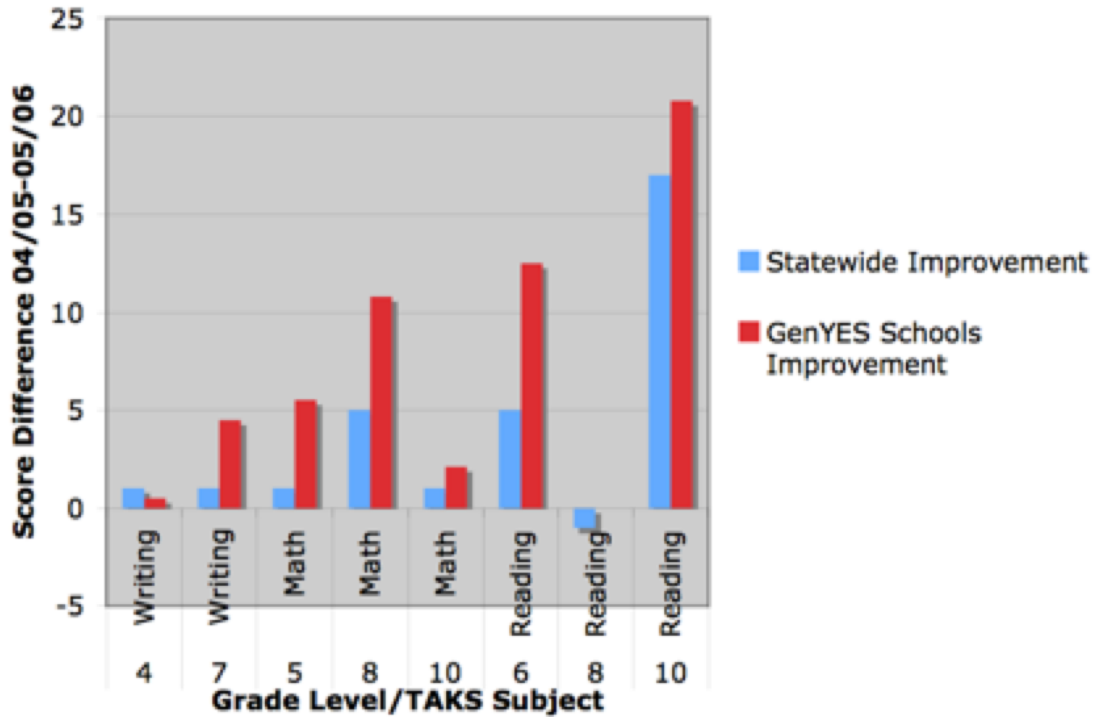
The final Target grant report compared the difference in TAKS test scores of the GenYES schools participating in this grant to statewide scores for the school years 2004/05 to 2005/06 (the third and final year of the grant). This data is summarized below:

Grade Level	TAKS Subject	Statewide Change	GenYES Schools Change	GenYES Improvement over Statewide
4	Writing	1	0.5	-0.5
7	Writing	1	4.5	3.5
5	Math	1	5.5	4.5
8	Math	5	10.8	5.8
10	Math	1	2.1	1.1
6	Reading	5	12.5	7.5
8	Reading	-1	0	1
10	Reading	17	20.8	3.8

GenYES schools made small but significant gains in reading, writing, and math scores. The largest score improvements were in the middle grades (5-8) where GenYES classes were most prevalent.

- These scores represent all students in the schools, not just GenYES students. Although it should be expected that some improvement would be seen from the GenYES model, a longer term and more detailed evaluation of test scores is needed.
- The schools with the lowest test scores and most students at-risk (Group 2) showed the most improvement. This can be seen in the detailed report.

GenYES School TAKS Improvement Over Statewide Scores



STaR - School Technology Readiness

The Texas School Technology Readiness (STaR) charts measure four key indicators of campus readiness for effective school technology use. These are:

- Teaching and Learning
- Educator Preparation and Development
- Admin and Support Services
- Infrastructure for Technology

The technology levels for each Key Indicator are listed in the table below.

Key Indicators	Early Tech	Developing Tech	Advanced Tech	Target Tech
Teaching and learning	6-8	9-14	15-20	21-24
Educator Preparation and Development	6-8	9-14	15-20	21-24
Admin and Support Services	5-7	8-12	13-17	18-20
Infrastructure for Technology	5-7	8-12	13-17	18-20

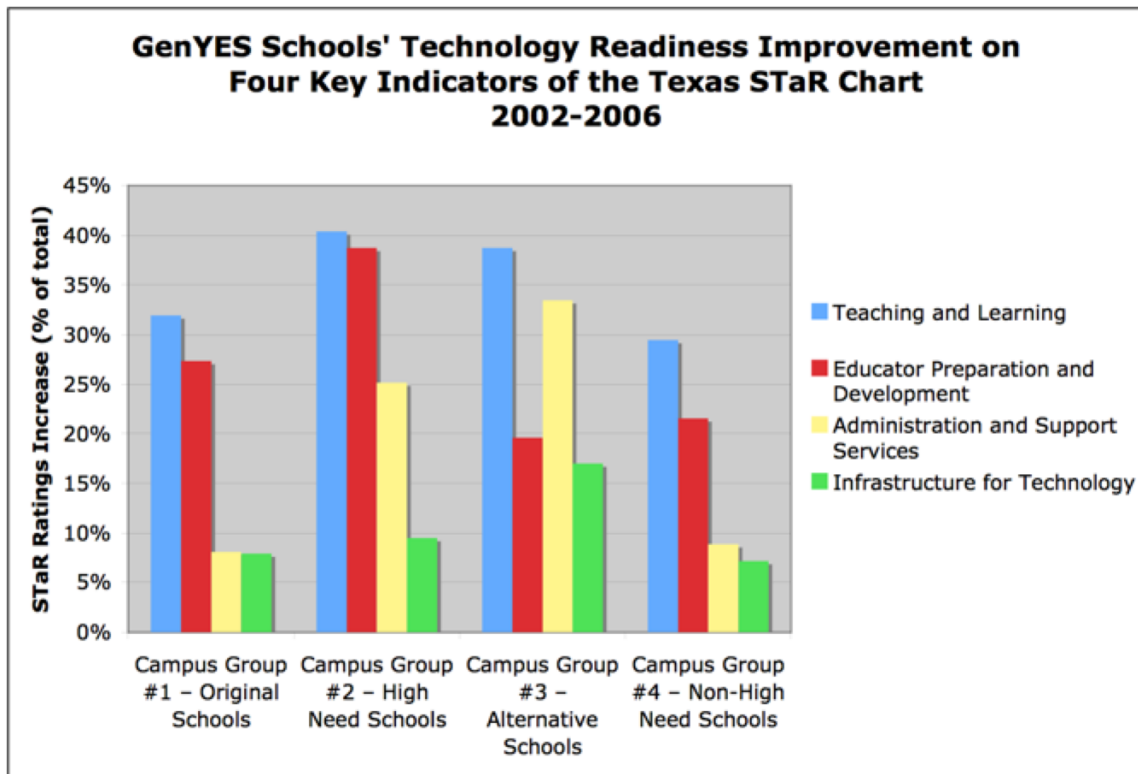
The Baseline STaR charts were completed prior to the Target grant and again in Spring 2004, 2005 and 2006. GenYES schools were broken into four groups that were rated using the STaR model.

The table and chart below shows the increase in the mean of the participating GenYES schools in each of the four GenYES groups in each of the four Key Indicators of the Texas Campus STaR Chart. Each school included in the data took both the baseline and ending survey (pre-post).

Key Area Means – Improvement Over Baseline (2002-2006)	Group #1 – Original Schools	Group #2 – High Need Schools	Group #3 – Alternative Schools	Group #4 – Non-High Need Schools
Teaching and Learning (0-24)	7.67	9.7	9.3	7.07
Educator Preparation and Development (0-24)	6.56	9.3	4.7	5.17
Administration and Support Services (0-20)	1.62	5.03	6.7	1.77
Infrastructure for Technology (0-20)	1.58	1.9	3.4	1.43

Highlights:

- All four of the STaR Key Indicator ratings increased in every GenYES group.
- The schools with the lowest test scores and most students at-risk (Group 2) showed the most improvement.
- Three of the four schools groups moved from Developing Tech to Advanced Tech in all four Key Areas. The non-high needs schools were already in Advanced Tech in two categories, but they moved up within the Advanced Tech category.
- High need and alternative schools made the biggest gains in all categories, in fact catching up to or exceeding non-high needs schools



Also noteworthy was that two STaR Key Indicators showed particularly high levels of improvement; these were the Teaching and Learning and Educator Preparation ratings. These two indicators are exactly what the GenYES model of professional development aim to address. The fact that Administrative and Support Services and Infrastructure for Technology ratings also increased makes GenYES all the more successful.

4. CollegeYES Final Performance Report

The Alliance College-Ready Public Schools, a charter management non-profit organization, participated in the CollegeYES Investing in Innovation (i3) Development Project. This includes a total of 20 charter middle and high schools in the Los Angeles

area who receive services from the Alliance College-Ready Public CMO. CollegeYES served students in grades 6th through 10th with an option for project participation in grades 11th and 12th. Partners in the project include GenYES, an expert in student technology leader programs and Wexford Institute (External Evaluator)

Through the use of Project Based Learning, Student Technology Leadership, Technology Integration, Teacher Professional Development and Alignment to Common Core Standards and ISTE Technology Standards, the CollegeYES project aimed to innovatively implement high quality standards and high quality assessments in students' science courses and Advisory courses.

CollegeYES Project Activity

During the 5-year span of the grant, all students in participating grade levels were required to create 2 technology-based projects each school year; one with a focus on science and one with a focus on College-Career readiness. Students created and submitted projects designed by teachers that were aligned to Buck Institutes for Education Project Based Learning Framework. Students submitted their projects to demonstrate their knowledge of academic content standards and mastery of 21st Century technology standards (ISTE technology).

Upon completion of their projects, students were required to upload their projects to the TechYES website. The TechYES website is an online project management platform that students used to "Plan", "Share", and "Assess" their projects against the ISTE technology standards. Students who submitted projects that demonstrated mastery of 21 of the 24 ISTE technology standards earned TechYES technology certification.

Each year, participating teachers created projects that were presented to students. These projects required students to respond to driving questions or problems and then create a digital project that would publicly shared and assessed for certification.

To support their CollegeYES work, science teachers, advisory teachers, and selected elective teachers, within the LEA, participated in professional development that covered topics such as:

- Designing and integrating PBLs into classroom instruction
- Integrating technology to support the development and creation of student projects
- The International Society for Technology in Education Standards
- Supporting ELLs in Science
- Using the TechYES online platform to manage student projects

- Next Generation Science Standards

Additionally, a selected group of students, known as Student Technology Leaders (STLs), supported their peers; 1) in creating projects, 2) learning new technologies to develop projects, 3) using the online platform (TechYES) for submittal of project, and 4) assessing student projects for technology certification. STLs in grades 6th through 12th provided trainings not only to students but to teachers and parents on technology tools and resources that supported the completion of student projects. Some of the trainings, led by STLs, were on presentation software and technology tools including, but not limited to, Prezi, iMovie, Google Slides, Google Drive, GoAnimate, and a variety of tech tools and resources that supported the work of the CollegeYES projects. Student technology leaders attended STL summer trainings, facilitated by GenYES and CollegeYES project staff, to learn new technologies, to learn to develop their leadership skills, and to prepare digital citizenship lessons to be shared with their peers each school year. Over the 5 year grant period the CollegeYES project had close to 500 student technology leaders supporting the CollegeYES project at their individual school sites. STLs grew to become key players in the success of the CollegeYES project as well as key players in supporting their schools transition to 1:1 technology environments.

CollegeYES Project Highlights

Over the the 5 year grant period the CollegeYES project served a total of 9,619 students. Each student served in the CollegeYES project was enrolled in at least one science course and one Advisory course that provided the opportunity for the student to access academic content and demonstrate their knowledge of the content through the completion of a student created technology-infused project. Additionally, students served, through the CollegeYES project, had the opportunity to submit at least 1 of their projects to the TechYES platform to be assessed for technology certification.

In total 20, 893 student projects were completed and submitted to the TechYES platform. Student technology leaders, CollegeYES facilitators, and teachers at each individual school site were responsible for assessing projects for technology certification. In order for a project to earn “technology certification” the project needed to demonstrate mastery of 21 of the 24 ISTE technology standards. Additionally, projects could also be recognized as a “highly qualified” project if the project demonstrated mastery of at least 15-20 of the ISTE technology standards.

By year 5, a total of 2,543 projects (12% of projects submitted) earned “technology certification” and 4,683 projects (22% of projects submitted) were identified as “highly qualified” projects. In total, 34% of the projects submitted either earned “technology certification” or were identified as “highly qualified”.

CollegeYES enabled:

- 495 students to become Student Technology Leaders in their school and support their Alliance school in integrating technology and project based learning in science courses and College Career Readiness courses.
- 9,619 students to innovatively utilize technology to access science standards and technology standards through the completion and submission of a digital project utilizing an online platform to manage their work.
- 2,477 middle school students to complete and publicly share 1 technology infused project to support their understanding of what it means to be College and Career ready in the 21st century.
- 7,331 high school students to complete and publicly share at least 1 project to support their understanding of what it means to be College and Career Ready in the 21st Century.
- 3,569 middle school students to complete and publicly share at least 1 technology infused project to demonstrate their knowledge of both science and technology concepts.
- 7,537 high school students to complete and publicly share at least 1 technology infused project to demonstrate their knowledge of both science and technology concepts.
- 20 CollegeYES schools have their Student Technology Leaders participate in 3 STL summer camp trainings.
- 20 CollegeYES schools to have at least one school representative participate in the CollegeYES professional development that focused on Designing projects aligned to the Buck Institute's for Education PBL framework, Technology Integration, College and Career Readiness Standards as defined by the ISTE Technology standards, and Supporting ELLs in science.
- Each of the 20 CollegeYES schools to develop their STL clubs and provide time for STLs to meet and collaborate on the CollegeYES project.

5. Michigan State University – Effective Technology Professional Development

Zhao, Yong, Frank, Kenneth A., Ellefson, Nancy C. “*Fostering Meaningful Teaching and Learning with Technology: Characteristics of Effective Professional Development*” in Meaningful Learning Using Technology: What Educators Need to Know and Do Edited by Elizabeth A. Ashburn and Robert E. Floden (pp. 161-179) Teachers College Press, Columbia University, 2006

Michigan State University researchers identified four large-scale efforts that were shown to be effective in affecting teachers’ use of technology and studied them:

1. The Project-Based Learning Multimedia Model (PBLMM)
2. The Galileo Education Network Association (GENA)
3. Project Information Technology (PIT)
4. The Generation Y Model (previous name of the GenYES model)

In this project, a unique on-site mentorship was developed. Students attended training sessions to become technology mentors and then worked individually with teachers to help them develop technology-focus projects. The training sessions were developed into a specific curriculum that was often taught as an elective in middle and high school and as an extracurricular unit for elementary students.”

The primary dependent variable in the MSU study was *Teachers’ Use of Technology*. Based on data collected from hundreds of teachers, the study determined several key factors positively influenced teacher’ use of computers. (p. 171)

Study Findings – What Factors Create an Effective Professional Development Experience?	Findings Related to Generation Y Model
<p>Time to experiment and “play”. “Use of computers was positively correlated (.3) with the extent to which a teacher was able to experiment with district-supported software.”</p>	<p>“In the Generation Y model, teachers had multiple opportunities to explore the use of technology with their student technology guides, who in turn could support teachers in solving any problems they encountered.”</p>
<p>Focus on student learning. “Teachers’ use of computers was positively correlated (.4) with the extent to which the content of professional development was focused on student learning.”</p>	<p>Generation Y: “...included a strong focus on linking technology directly to teachers’ curricula and teaching needs.” and “...addressed technology/curriculum integration by working with individual teachers one on one.”</p>
<p>Building social connections and learning communities. “Computer use was positively correlated (.2) with the extent to which teachers accessed other teachers’ expertise.”</p>	<p>“Generation Y taps a different network, the relationships between students and parents, to accomplish the same goals.”</p>
<p>Localizing professional development. “Computer use was positively correlated (.2 for each) with the extent to which professional development was provided locally, either in the classroom or school lab.”</p>	<p>“Generation Y... achieved this level of localization through its use of student technology mentors who worked with teachers to create individualized projects.”</p>

Recommended Actions

“Use of students who are interested in and have expertise in technology as assistants for teachers.” (p. 179)