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THIS ISSUE’S FOCUS

Learning After School
Learning Outside of School

We may think the responsibility or connection to our students and their learning begins and ends with the school day, but the reality is perhaps much different from that. Teachers feel pressured to forfeit the time essential for in-depth learning, parents and families as a group have growing basic needs that are more difficult to meet (for clothing, food, shelter), and there are fewer occasions for children to interact in open-ended activities with peers. Qualities of life experienced outside of the classroom have an impact on the learning that happens in the classroom.

In response, more schools and communities are expanding opportunities for children. Some are natural extensions of the school day; others are more implicitly connected to a student’s ability to learn.

There is great potential for linking school and community programs, or offering extended explorations for students who are eager to learn more. By integrating these programs with service agencies, local volunteers, area resources such as museums and science centers, we can provide children with safe, supportive environments that directly benefit the student and ultimately benefit the broader communities of schools and families.

The answers to some of our biggest problems are often more within our grasp than we’ve realized. You may not have any connection to the after-school possibilities in and around your school, but the articles in this issue will inspire you to find out more.
Design Challenges
INCORPORATING AN AFTER-SCHOOL LAB PROGRAM

by Christy Kervin

Students are spread throughout the classroom discussing their favorite carnival games. What do they like about the games? What makes them challenging? What brings people back to them time and time again? The students are conversing in depth; they talk with great excitement as they brainstorm ideas for the creation of their own carnival games.

Back in December, my principal asked if I would be interested in running an after-school lab program for seventh-grade students. The first thing that came to my mind was a program based in environmental science, as that is my background. Much to my surprise that was not the case: instead, electrical engineering would be the topic.

For a moment I looked at her in disbelief, wondering why on Earth she would ask me to do such a thing. I had no experience or education (or clue) on the topic. But, I am always up for a challenge and willing to try new things if my students can benefit. So my principal and I attended an informational meeting for a program called DesignLab.

Future engineers

DesignLab is an after-school electrical engineering program offered to middle-level students by University of Massachusetts Lowell’s Future Engineers Center. The program is geared to engage kids in the engineering design process to solve open-ended challenges. The design challenges are based on the Informed Design process, in which guided investigations build students’ knowledge and skills needed to complete projects.

At the informational meeting there were examples of projects that had been created in DesignCamp (a summer camp based on concepts similar to DesignLab). Among the projects were safes that were wired with buzzers to sound when they were opened, spin art machines, submarines, and Frisbees that light up. These and many other projects were all designed and built (including the wiring) by students.

While at the informational meeting I felt nervous about jumping into such a program. Having no knowledge of electrical engineering, the thought of teaching it to students was intimidating. Students working hands-on to solve open-ended design challenges sounded really exciting, however, and in the end, my excitement about the program and the thought of the experiences my students would have outweighed my fear of not being familiar with the material.

I must admit that I was second-guessing myself when they pulled out a soldering iron.
DesignLab

The principal and I decided DesignLab would be a great addition, providing students with an opportunity to participate in an engaging, hands-on after-school science program. Several weeks after applying, we learned our school was among those chosen to participate in the DesignLab pilot program.

The program was established to train teachers for five weeks before the actual DesignLab begins in the classroom. The teacher training is geared to familiarize teachers with tools and information, but most importantly, to demonstrate the processes the students will undergo while working in the program.

All of our training was hands-on. Many times it felt like we got to play to figure out how things worked. We were problem solving as we created our examples and learned about the program. We also learned about electricity during this time including building switches, circuits, and wiring.

I must admit that I was second-guessing myself when they pulled out a soldering iron. I thought, “What am I getting myself into? That cannot be safe!” After the fifth week of our training, I felt comfortable and confident enough to run DesignLab successfully and safely at my school (although I was still a little nervous about the soldering irons).

UMASS Lowell’s Future Engineers Center provided materials for the projects. There were enough materials for twelve students. We have over 340 seventh graders at our school and I wondered how that would work out. Students were not selected for the program based on their performance in science class; rather, they were selected based on their interest in the program and desire to try something new. We hoped to have at least half of the participants be girls. We sought students who could make a commitment to weekly two-hour sessions after school for ten weeks. So many students were interested that we ended up with a waiting list for the program.

Applying new skills

Throughout the ten weeks the students were introduced to a lot of concepts, such as the basics of electricity, charges and wiring series, and parallel circuits. As they learned about these new topics they always participated in hands-on activities to reinforce the material. While they were learning about circuits, for instance, students experimented with wiring a circuit to cause a light emitting diode (LED) to light up.

As the weeks went on, the material became more complicated. Students were asked, for example, to create on/off switches and slide switches for the lights, or to wire a circuit for three LEDs.

As the students learned about electricity, they were asked to solve open-ended design challenges. The challenges included the design of their own switch (on/off or push button), a bedroom alarm system (alerting intrusion with a buzzer sound when the door opens), a light-up Frisbee (wired with an on/off switch and three LED’s) and an electrical carnival game (an open-circuit game, wired so that when the circuit is closed, a buzzer sounds—similar to the board game Operation).
Creativity and independence

Each of the design challenges posed a different set of requirements for students. As they progressed through the program, the requirements become more open-ended, leaving the students with a lot of room for creativity.

Working together to solve problems allowed students more opportunities to be successful. In such a small setting, students got to know each other very well.

With this particular group of students, it was interesting to see that in some way or another each student shone. One student might have been great at wiring circuits and another at stripping wire. They really seemed to know who to check in with when they were having trouble in a specific area. The informal setting seemed ideal for such interactions.

Although the idea of running an electrical engineering program was very intimidating at first, I am so thankful that I was part of it. In the end I had enough knowledge to teach my students what they needed to know to be successful in the program.

I will admit that at times I was unsure how things were going to work, but my students’ ability to pick up on things really surprised me. When they were working on their bedroom alarm systems, I couldn’t picture what the alarms would look like. But before I knew it, my students were demonstrating how they worked. That is when I had an “ohhhhh, I get it now” moment.

Despite my initial nervousness and intimidation with the topic, DesignLab was such a great experience for all of us. Luckily for me it is an eighteen-month commitment and I have two more sessions to complete in the pilot program. The next two sessions are on different topics, so I have a lot more to learn.

My students are excited and looking forward to the next session. And as for the soldering irons, I was so nervous the first time we worked with them—I was sure that the slight smoke they created would set the fire alarm off! It never did and the kids were a lot more responsible with the equipment than I could have imagined.

To learn more about UMASS Lowell’s DesignLab visit their Web site at http://www.designlab.org/.

Christy Kervin is a seventh-grade earth science teacher in Dracut, Massachusetts.
The After-School Corporation (TASC) is a nonprofit organization that supports after-school programs in New York City schools and works to expand learning experiences beyond the traditional school day for all kids. An important part of TASC’s mission is to enhance the quality of after-school programs. One vital way to do this is by developing new models for training the after-school workforce.

Many after-school programs hire high school students to work with younger kids, in part for budgetary reasons. Hiring older students is also part of the after-school culture; young people often graduate to staff positions in programs they attended while growing up, similar to camp counselors. An interesting finding from recent after-school program evaluations is that younger kids, in grades K–8, love to be around and learn from these high-school-aged staff members. Attendance is higher at elementary and middle school after-programs that employ high-school-aged staff.

Role models
Research tells us that if we want to build younger kids’ interest in science careers, it’s important to connect them with science and technology role models. An effective way to do this is to select high school kids (whom younger kids admire) with these interests, and to put them to work facilitating science inquiry.

With the guidance and support of the New York City Department of Youth and Community Development, TASC set out to enhance the amount and quality of science learning in K–8 after-school programs by capitalizing on younger kids’ desire to learn from older kids. We decided to train high school students to become “apprentice” after-school educators in three areas: science, literacy, and sports. An important goal of the science initiative was to help high school students effectively engage all kinds of younger learners, including kids with disabilities, to create an atmosphere that says, “Science is for everyone.”

We viewed the teens not as pieces of raw clay that needed to be molded into instructors, but as assets. They came from the same demographic backgrounds as their students; they were extra hands to help lower the ratio of students to instructors; they had time to help gather materials; and they were enthusiastic and engaging. As part of the TASC After-School Education Apprenticeship program, we also trained the adult staff of after-school programs to effectively manage these high-school-aged employees, and to make the most of their energy, knowledge, and interests.

Training
What does it take to make teens effective after-school apprentices? First, a significant amount of training. Teens were required to attend six training sessions over the course of four months. For science apprentices, thirty-six hours of their training was devoted to mastering the Afterschool Science Plus curriculum.

At the Queens (New York) Botanical Gardens, high school apprentices helped kids collect plant specimens and record observations. Students are participating in the Flushing, New York, YMCA after-school program at PS 120, a project supported by TASC.
they were expected to employ (or to assist adults in employing). They also learned about child development, about showing up on time and prepared to work, and about skills that would help them progress toward college and careers, i.e. writing letters and resumes and navigating the interview process. Once the teens received the core components of the science training (usually within two training sessions) they were placed in apprenticeships at TASC after-school programs in their communities.

Stipends were also important to these New York City teens, many of whom needed to earn income. They received stipends based on the number of hours they attended training sessions, and the number of hours they worked in programs.

Apprentices were expected to work at after-school programs once a week for twelve weeks. Many, however, apprenticed more frequently than once a week, and we found that to be a plus. Younger kids gained the most from their contact with teen role models in those programs where apprentices visited more than once a week for at least three months.

TASC’s program officer for apprenticeships took charge of training logistics, placing teens in internships and supervising the TASC staff devoted to this program. She was also the liaison to the after-school program directors and staff. TASC’s science manager took charge of the content of the science activities, training the teens to facilitate science inquiry and ensuring that the training addressed equity and inclusion of all children.

When we think about the perfect setting for scientific exploration, we think about flexible blocks of time, the freedom to choose the questions for exploration, and the ability to deviate from the schedule of activities when that “teachable moment” occurs. In after-school we have all the ingredients: we create the daily schedule, and we can work from kids’ questions and curiosity, not from the mandated curriculum. After-school provides the freedom and flexibility for learning experiences not possible during the day and the opportunity for experiential learning that supports academic achievement. Our goal was not to link the after-school science curriculum directly to the day-school curriculum, but rather to use after-school time to build kids’ enthusiasm for science and develop their habits of inquiry.

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**An opportunity for science**

We selected a curriculum designed to help New York City students develop a broad view of “who does science.” Afterschool Science Plus is an inquiry-based science program for use in after-school centers serving students in grades K–8. The “Plus” in this program consists of strategies that level the playing field for all students, such as: providing diverse role models, career connections, literacy connections, and lesson plans that involve family members in helping kids find materials at home.
The value of young apprentices

The apprentices were not perfect instructors. They lacked experience in science. But by design, that did not matter a great deal. In training sessions, we modeled for the high school kids how they could encourage inquiry, help kids develop science questions, and then respond with a question of their own: “How can we find out together?” During their training sessions, the high school students did lots of the hands-on projects they would lead with, for example, kids mixing and experimenting with Ooblek. We encouraged the teens to play the part of younger kids, expressing questions as they occurred to them. (“How would this stuff change if you cooked it in a microwave?”) We then modeled for them how they might respond to younger kids: “Perhaps you’d like to try it, and share your findings with your group?”

We had teens brainstorm how they might adapt lessons in the curriculum for children who were blind, who had difficulties with fine motor skills, or kids who couldn’t sit still at 4 P.M. and asked a lot of questions.

Working and learning together

When we observed the apprentices at work with younger students, we found that indeed, they were all learning together. The younger kids saw the older kids exhibiting a fascination with science exploration, and they observed the older students modeling responsible behavior and teamwork.

Perhaps the greatest benefit to the younger kids was seeing people who looked just like them, who spoke their languages and were just a few years older, being science leaders. We think we broadened the vision, and perhaps the ambitions, of everyone involved, from kids to teens to after-school staff to day-school staff. And because of the disability trainings, we made the activities and environment more inclusive for the younger children who faced additional challenges. We observed that some younger kids with reputations for challenging behavior were among the most active and eager participants, asking many questions and becoming deeply absorbed in hands-on activities.

The high school students also benefited by learning more about science and their own capabilities. Apprentices took seriously the responsibility of monitoring one another. During feedback sessions with their trainers, apprentices reported that they had advised other apprentices to “watch their language” or “dress appropriately.” They increased their readiness for college and gained confidence through their leadership training and successful work experiences with children.

In a survey, two-thirds said their experiences in the program made them want to work with children in the future.

Unequivocally, we found that children in after-school programs responded positively to both the science activities and the young staff members who assisted or led them. And by supplying after-school programs with an excellent science curriculum and trained staff, we believe we helped schools follow through on their intentions to offer science in after-school more frequently, and more effectively.

For more information, please visit the TASC Web site at http://www.tascorp.org.

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Picturing the Harbor
AN AFTER-SCHOOL EXPERIENCE WITH PHOTOGRAPHY
by Houman Harouni

In the last of ten weekly sessions, the students in my photography class were required to prepare a presentation for their parents, teachers, and schoolmates. I personally would have preferred that my students spent the little time left together doing what they had been doing so far: exploring the nearby harbor, taking photos, studying their photos, and investigating the puzzles that the images created. However, the after-school group that organized our sessions had announced a presentation would be given by each class. We did not want to disappoint our invited audience, so we got to work.

Most students worked on selecting photos for the presentation, discussing what they liked or disliked about the pictures. Some worked on making a poster from the photographs, some discussed their new puzzles with me, while others explored the camera I had brought to class. Kayla, one of the sixth graders, volunteered to give a short talk describing our class to the visitors. I worked with Kayla to prepare her talk. She told me the general topics she thought she should bring up, and I, being a faster writer, took notes of what I heard. If something was not clear to me, I would ask Kayla to tell me more, explain an idea, or give an example. The resulting notes, which Kayla eventually used as the basis for her talk, give an interesting and brief, yet insightful, account of Kayla’s experience in our photography class.

Photography apprentices

Kayla wanted to start her talk by thanking the parents, including her own mother, who would attend the presentation. To distinguish us from other classes that would also present, Kayla decided to tell the audience that she was speaking on behalf of her classmates in the Photography Apprenticeship—a group of ten students from sixth and seventh grades. My students attended an urban middle school of almost 800 students, with over 95% of the student body belonging to minority groups. I acted as a volunteer teacher for Citizen Schools, an after-school program in cities across the U.S. Citizen Schools recruits volunteers of various professions to teach a topic of their own choosing to middle school classes once a week.

Exploration, experience, and inquiry

According to Kayla, the class time was divided into two distinct sections: our outdoor photography excursions and our indoor discussions. Kayla, narrator of our experiences, described the first section rather simply:

Every week we went to the Harbor Point to take pictures (and sometimes a video) of what we did and what we saw.

Going to Harbor Point, a five-minute walk away from the school, had been the students’ idea. Initially, I had planned for the students to explore their school, but I changed my mind in face of the overwhelming enthusiasm for the harbor. Though we missed the challenge of representing a school in photographs, I never
regretted my decision: the kids enjoyed the harbor. Blood rushed to their faces as they climbed the slopes, looked for sea creatures, or stood in the rain, taking in the view of the harbor and the cityscape.

Our tools were limited, to say the least; we had access to only one camera per three students, and no access to a darkroom. Only one student owned a camera (one-third had never taken a photograph). Our $80.00 budget just covered the discounted cost of purchasing and printing seven rolls of film. As a result, we relied on three digital cameras provided by the program and me. On several occasions, all students shared a single disposable camera. While someone was taking a picture, the others would walk around the harbor, thinking about and planning their photographs. It helped that we returned to the same location every week: the students were both familiar with the environment and interested in small changes that took place over the course of a week.

When the pictures were developed and put on the computer, we would examine them.

I asked Kayla if she could tell me more about specific occasions when she thought we were “examining” the photos.

To examine, we looked really deeply into the pictures, and we looked at them for a long time.

Kayla was referring to occasions when I would project a student’s photo on poster board (there was no screen for the purpose) and encourage the kids to talk about what they noticed. At first, it took some convincing to keep the students engaged with the same photo for an extended period of time. During our first experience with “examination,” Talia, a seventh grader, protested that she had never looked at a photograph for more than twenty seconds. Most of my students agreed with her. As their classmates noticed more and more things about even the simplest photo, the students seemed to gain a sense that each image was made up of more than just its main subject matter. According to Kayla:

We recognized details we wouldn’t have normally recognized.

As she said this, Kayla seemed to be reconsidering her previous statement. She wondered if the word she had been looking for was not evaluate, rather than examine. I asked if she wanted me to cross out examine, but she thought that the reality was closer to a combination of the two words. Could she tell me more about what it meant to evaluate a photograph? Kayla explained the process as our having done the following:

To evaluate, we thought about what we would do next time if we were to take the exact same picture again.

We looked at pictures that were of the same objects but from different angles.

We thought about the pictures and which angles we liked better.

In fact, I had never specifically asked the students to do any of the things Kayla mentioned. All these had risen out of discussing what puzzled the students about various pictures. Only on one occasion had I asked a student if she would like to take advantage of the strong sun outside and retake a picture from the previous week that she had found too “cloudy and gloomy.” Normally, I would ask the students if anything in their pictures had turned out in a way they did not expect, or if they could take photos that alternately made Harbor Point seem more or less appealing to families considering moving into the neighborhood. It seemed that the open-ended approach had allowed Kayla to form a personal process of inquiry regarding what puzzled her.
What we learned

Kayla was certain of having gained a particular skill:

I could not before I took the class, but now, before I take a picture, I can visualize what the picture would look like. I can visualize which picture I want, and I can decide to take it.

As Kayla talked about her experience, one of her classmates at our table volunteered his idea of what he had learned in the class:

The photography apprenticeship has made me think differently about pictures. I now think about the pictures I take, instead of just taking them. When I see a picture, I understand all the trouble that has gone into making that picture: thinking about it, making it, and selecting the ones that are best.

My students had independently arrived at the two main aspects of my unstated learning goals for this class. I wanted the course to give the students a chance to see photographs as products—as the result of a process of careful selection. Eventually, I believed, this view of pictures would not only inform their own approach to photography, but also make them aware of photographs they encounter in their lives as having a purpose and being made to create an impact. Advertisements, news photos, and historical photographs would then appear to them as a specific individual’s representation of reality, and not reality itself. I also wanted my students to feel empowered as producers of images, and not merely their consumers. One semester of work, of course, is not nearly enough time for these habits of mind to fully develop; but it is a good start.

What Kayla liked

What I liked about photography class was that we were able to express ourselves freely.

I was overjoyed to hear this, but I asked if she could tell me more about what specifically had let her express herself freely. She explained:

The class was a relaxed environment where we could learn while having fun. We all could say what we felt about pictures, and everyone had a turn to talk about what they thought.

“You know,” she added, “I can’t do that in any of my classes.”

For the last few years, Kayla’s school has been labeled by the state as “failing.” Now, all classes concentrate on basic skills as defined by Massachusetts State Standards and their requisite standardized tests. Teachers are strongly encouraged to divide classroom time according to strict guidelines. Music, visual arts, and even sports have virtually disappeared from the curriculum.

Kayla’s description of our class does not include her possible criticisms of me as the teacher; nor is it an indication of all other experiences in the class. It does, however, make a good case for the possibility and potential of after-school programs which create environments outside the rigid boundaries of testing and grading where inquiry and exploration can take place. Kayla’s comments also make a case for after-school teachers or volunteers, such as me, to make an effort to better understand the restricted daily experience of the students and allow for a freer, more exploratory environment in their classrooms. In many schools, after-school programs may be the last embattled trenches of inquiry-based learning.

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Parents, educators, and policymakers are paying increased attention to programs created for use in after-school hours (U.S. Department of Education, 2000). This article details an academic after-school program from inception to implementation and provides an overview of important components to consider when creating such a program.

For the past several years, Eastern Michigan University (EMU) has sponsored after-school math clubs at Estabrook Elementary School in Ypsilanti, Michigan. A unique feature of our After-School Math Club is the elementary school–university collaboration. Our program has a two-fold mission: to provide children with an opportunity to increase their mathematical understanding, and to provide pre-service elementary teachers with an opportunity to teach children with diverse backgrounds and mathematical abilities in a setting outside the normal school day.

Because of the strong academic linkages between EMU and the elementary schools, the After-School Math Club has all the characteristics that research points to as necessary for sustaining successful programs (Fashola, 2002). This program involves a well-designed curriculum that is tied to national and State Standards, teacher training, student assessment, and collegial reflection. The core of the project is providing children with meaningful mathematics while EMU pre-service teachers receive intensive field experiences that emphasize planning, creating relevant mathematical tasks, and reflecting on their experiences.

Starting the program

For university students, we embedded the Math Club in a mathematics methods class for elementary teachers (fifteen weeks in length). Forty pre-service teachers provide after-school mathematical experiences for approximately 180 children (grades one through five). The course includes four weeks of intensive classroom instruction (four hours per week), followed by an eleven-week practicum in which the pre-service teachers work with small groups of children each week for one and one half hours.

Before each teaching session, the pre-service teachers develop meaningful tasks for the children assigned to them. After each session, they attend class to debrief their teaching experiences and gain “mathematical knowledge for teaching” (CBMS, 2001). This knowledge allows them to assess their children’s work, recognizing both the sources of their errors and their understanding of the mathematics being taught. The pre-service teachers can appreciate and nurture children who are not considered mainstream mathematics students.

The final session of Math Club features a Family Math Night involving families of
the children participating in the program, pre-service teachers, staff, and administrators, demonstrating that learning mathematics involves the entire community.

For elementary children, the Math Club is an opportunity to see mathematics in a different format. No longer is mathematics a large group activity, as is typical during the school day. Rather, by working in small groups, children receive individual attention. At times, children experience math in ways that do not seem like “real math.” As one child asked her university teacher after they constructed models of platonic solids with straws and paper clips: “When are we going to do math?”

The entire process of Math Club is supportive and non-threatening. Children gain confidence in their mathematical abilities and pre-service teachers take risks as they teach for understanding.

Show us the money

One of the primary considerations for conducting an after-school program is the cost. The three major costs include transportation, math materials, and snacks. Grants can provide funding to defray a portion of these costs. The Web site, http://www.afterschool.gov, is a compilation of more than 100 federal funding sources for after-school programs and youth development. On this Web site, a variety of funding sources are described including: discretionary grants, earmarked funds, formula grants, and project grants. Many funding sources require that partnerships are formed with other community organizations or local government agencies to ensure greater sustainability. The Michigan Campus Compact, Eisenhower Higher Education Professional Development Grants, No Child Left Behind Title IIA, and local school districts provided funding for our program.

Another extremely important consideration for a successful after-school math program is the proximity of our university to the partner elementary school. The ideal situation is for schools to be within walking distances of the university so that concerns associated with providing transportation for pre-service teachers are eliminated. Scheduling methods classes within a 2-hour block of time in mid-afternoon gives pre-service teachers flexibility.

Administrator’s role

Another aspect of conducting an after-school math club is obtaining strong administrative support. After we establish our Math Club, we advertise through flyers that we distribute to the school at least three weeks before the start of the program. Our school principal provides support by making daily announcements about the Math Club, reminding children to take flyers advertising the Math Club home with them, and including Math Club events in weekly parent communication. The flyers include pertinent information such as: classroom teacher’s name, parent’s signature, address, phone number, grade level, and transportation arrangements.

Another consideration that principals address is bus transportation for children in the Math Club. If children do not live within walking distance of the school, there must be some mechanism for transporting them home after hours.

Assigning children to groups is an important function of the University professor and the schools’ principals. We assign groups in a manner that is realistic
Implementing the program

To ensure that there are sufficient numbers of well-qualified pre-service teachers to accommodate the large number of children in the program, mathematics methods classes partner with the Math Club. Pre-service teachers write lesson plans, which include state standards and benchmarks, performance outcomes, activities for children in their groups, and necessary materials. Not only do the pre-service teachers learn first-hand which activities are most successful, but they also begin to see the practical application of theories that they learn in their university classes. If learning is not meaningful for children, management issues become very apparent to the pre-service teachers.

Making mathematics meaningful

Choosing meaningful learning tasks for students is one of the most important instructional decisions pre-service teachers will make in their careers. The importance of worthwhile tasks is addressed in the Professional Standards for Teaching Mathematics: “The mathematics tasks in which students engage—projects, problems, constructions, applications, exercises, and so on—and the materials with which they work, frame and focus students’ opportunities for learning mathematics in school” (NCTM, 1991, p. 24).

To ensure that pre-service teachers prepare meaningful tasks in their lessons for the After-School Math Club, a significant amount of time is spent in pre-sessions helping them to design and select good mathematical investigations. A list developed by Lappan (1996, p. 40) is used as a resource for evaluating classroom activities and reexamining what students are being asked to do in their small groups. A rich problem-solving task:

- Has important, useful mathematics embedded in it;
- May have different solutions or allow for different decisions or positions to be taken and defended;
- Can be approached by students in multiple ways using different solution strategies;
- Encourages student engagement and discourse;
- Requires higher-level thinking and problem solving;
- Contributes to the conceptual development of students.

In addition to those activities discussed in class, many other resources are provided for the pre-service teachers to consider. Of utmost concern is that the tasks be activity-based, deeply conceptual, and engaging. The search for meaningful problems is not an easy task. Thus, a primary goal of the methods course is not only to provide resources for pre-service teachers to use, but also to require them to analyze the resources that are available. Pre-service teachers work in grade-level teams to search and discuss the appropriateness of problems. An example of an activity created and used by EMU students follows this article.
Reflections and translations

Written reflections following teaching sessions help pre-service teachers extract from the experience the knowledge that leads to improved practice and understanding. By discussing their own or others’ practice, pre-service teachers come to understand the process of teaching and gain a variety of ideas that are consistent with Michigan’s Standards-based curriculum.

Because each child constructs knowledge in unique ways, each pre-service teacher engages in the following activities that encourage reflection: they critique their teaching, examining effects of the task, discourse, and learning environment they created; participate in post-session discussions; and compile a portfolio of each child’s progress through observation and written artifacts.

It is essential then, that the reflections involve more than pre-service teachers’ feelings of how the session progressed. Instead, they need to translate theory into such experiences and plan for similar ones. In the process of such reflection, students uncover the mathematics that is essential to understand skills. One such example is from a pre-service teacher’s journal recounting how children add and subtract money. In her reflection, the pre-service teacher recounts what happened, connects to theory, and plans for a future class:

We read the book, Alexander, Who Used to Be Rich Last Sunday (Viorst, 1978). Actually one of my children read it to the group. She didn’t seem interested in participating this day, so I enlisted her as my helper. This approach works with her. The students made rubbings of coins. One of the students always takes longer to finish projects so I brought a set of play money.

I think that teaching children how to manipulate money (addition and subtraction) is an authentic skill. Nowadays, it seems that more and more clerks have problems counting back change. Two important skills are needed here: estimation and skip counting. Skip counting helps them to count money and estimation helps them to have a reasonable sense of the amount of money they have.

Managing supply and demand

An organized method of distributing supplies helps our Math Club run efficiently. Pre-service teachers are given an “order” form that allows them to choose materials they need for their teaching sessions. Upon receiving the order forms from pre-service teachers, University student workers prepare individual packets of materials. Immediately preceding Math Club sessions, these packets are given to each pre-service teacher with their lesson plan attached. Depending on the number of pre-service teachers in a methods class, appropriate amounts of time need to be reserved for this integral process.

Our final session of Math Club is a community-based affair. Family Math Night brings parents and siblings of Math Club participants, pre-service and in-service teachers, and administrative staff together. Each pre-service teacher is responsible for one activity that is set up in the gymnasium of the school. Families participate in activities that children have experienced throughout the semester. Parents are introduced to the pre-service teachers and receive a portfolio of their children’s work. A few pre-service teachers may have transportation problems or scheduling conflicts that prevent them from attending Family Math Night. These students are responsible for setting up. We find Jean Stenmark’s FAMILY MATH a helpful source.

Evaluation of program

During Family Math Night, we place evaluation forms throughout the gymnasium for parents. Ultimately, the purposes of our Math Club are to improve children’s mathematical understanding, skills, and appreciation as well as to improve pre-service teachers’ ability to teach math-

Joanne Caniglia, Ph.D., Currently teaches at Kent State University in mathematics education (formerly, she taught at Eastern Michigan University). Her research interests include professional development strategies in urban schools. She currently teaches mathematics methods courses.

Barbara Leapard, Ph.D., teaches mathematics methods at Eastern Michigan University where her interests lie in Standards-based best practices. She currently teaches mathematics and technology methods courses.

Elaine Richards, M.S., directs the Developmental Mathematics Department at Eastern Michigan University where she teaches future teachers. She brings her K–12 experience as she manages the Math Club supplies and supports the curriculum.
Because children volunteer for Math Club, it is impossible to conduct a quantitative experimental research design. However, questionnaires and interviews become invaluable tools for improving the program and to assess pre-service teachers’ confidence in their teaching.

The After-School Math Club is in its eighth year of growth. Principals and University personnel see this program as a realistic complement to the traditional math curriculum. Many school districts are geographically close to universities with teaching candidates. After-school math clubs such as these help to create sustainable programs in which parents, students, and pre-service teachers all benefit.

**Resources**


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**TRIANGLE 10 FOR ONE PLAYER**

**Description:** This activity is based on the Solitaire card game, Pyramid. The object of the game is to capture all of the cards in the deck. In this game, you need forty cards—four each with numbers 1 to 10. (An ordinary deck of playing cards is fine; face cards must be removed).

**Objective:** To reinforce facts that add up to 10.

**Materials:** One deck of playing cards per student (without face cards).

**Procedures:**

1. To set up the game, shuffle the cards and arrange them face up in the following manner: row one, 1 card; row two, 2 cards; row three, 3 cards; etc. Continue until there are seven rows with 7 cards in the last row. The cards should overlap.

2. Place the remaining cards face down in front of the player. This is the “draw pile.”

3. To play, the player looks for one or two cards in the bottom row of the triangle, which have a sum of 10. Only cards that are completely exposed with no other card overlapping may be considered for a combination. If two cards which total 10 are found from any exposed cards, the player removes them from the triangle. These are cards that are no longer allowed to be played. Students continue to look at uncovered cards and find single cards or pairs that add up to 10.

4. Whenever there are no combinations with exposed cards, the student then flips over the top card in the draw pile and may make a combination using it and an exposed triangle card. The exposed cards need not be only in the bottom row. If there is still not a combination, the student moves the top draw card aside and turns over another. This card may now be used with exposed cards in the triangle.

5. The object of the game is to have as few cards as possible remaining in the triangle.
Schools and Communities

Over the last few years, amid budget cuts and pressure to achieve Adequate Yearly Progress, it seems there is less time in schools for active, relaxed learning that allows for students truly to integrate and apply new knowledge. Concurrently, families are pressured by the shrinking economy to come up with safe, reliable alternatives to childcare, lessons, and clubs that are no longer affordable.

In a frustrating conundrum, parents may find that although they are working longer hours (and therefore need more hours of childcare), they are less able to afford placement for their children in private situations.

The needs of families for basic services have jumped. In 2007, the number of children in the U.S. who experienced a lack of “food security”—who went hungry—increased by 50 percent over that in 2006, bringing the number to roughly 645,000. But more communities are coming up with solutions as they pool resources, people, and funding to benefit all members of their community.

Community schools are collaborations between schools and one or more community service organizations. Although each is different and reflects the particular flavor of its community, there are many characteristics that community schools share.

Community schools offer a place for students during non-school hours, seven days a week, year-round. They usually design activities to engage students and extend the learning of their school day, but these centers also offer other services. Mothers, fathers, and caregivers can benefit from workshops on parenting, job-hunting skills, and often times medical and dental care or screening. Families may be able to take advantage of housing opportunities, career coaching, tutoring, and counseling.

A long history

The community school has its base in the settlement house, first developed in London in the late 1800s. Motivated by wanting to ease the suffering of those less fortunate, educated women with a strong religious or moral background championed the development of such centers. In the United States, these centers were designed specifically to address the needs of immigrants and the impoverished. Because of the prevalence of young children at Hull House in Chicago, founders Jane Addams and Ellen Starr began a kindergarten in the 1890s.

Over time, the social workers and immigrants who stayed (or “settled,” hence the name) at settlement houses diminished, and now, the houses are more like community centers. Their mission is to develop community “with, and not just for, communities.”

Going beyond providing services, these centers work with a community to “farm” their strengths in resources or local volunteers who can offer their talents. Examples of this would be an accountant giving a workshop on how to create and stick to a budget, a local writer leading a poetry class, or a counselor or therapist offering several pro bono hours each week in a free clinic.

Proven Benefits

After school groups meet for help with homework, tutoring, or enrichment programs like traveling to local museums or historical sites. Many studies corroborate the success of these programs, documenting lower incidences of vandalism and higher scores on school tests, for example. But the most compelling arguments are in the words of children who have attended the schools over time. They frequently report “avoiding drug use,” “learning to avoid fighting,” “doing better in school,” and “volunteering in the community.”
There are many excellent resources available for the development of community schools. Additionally, there are several partnerships that serve as exemplary models of community schools. Their Web sites offer informative articles, studies and hard data, support, and networking options.

**Coalition of Community Schools**  
4455 Connecticut Avenue, NW  
Suite 310  
Washington, DC 20008  
202-822-8405 x156  
http://www.communityschools.org

**Children’s Aid Society**  
National Technical Assistance Center for Community Schools  
4600 Broadway (at 196th Street)  
New York, NY 10040  
212-569-2866  
http://www.childrensaidsociety.org/communityschools

**Barbara and Edward Netter Center for Community Partnerships**  
133 South 36th Street, Suite 519  
Philadelphia, PA 19104-3246  
215-898-5351  
http://www.upenn.edu/ccp

**School of the 21st Century**  
The Edward Zigler Center for Child Development and Social Policy  
310 Prospect Street  
New Haven, CT 06511  
203-432-9944  
http://www.yale.edu/21C/index2.html

Looking for More? Check Out the Archives!

*Connect*’s searchable archives offer over 540 articles online, accessible without the hassle of passwords, logging in, or making any payments. Here are some of our past articles relating to learning after school:


After almost three years living in a small town in southern China, I’ve concluded that hands-on science has no borders. Every region has its special resources that make for memorable science experiences in the classroom and informal settings.


Although they realize they need to learn to work with boys on problem solving in mathematics, the third and fourth grade girls participating in this class value time doing mathematics without boys around.


After research, instruction and field experiences, the YES [Youth-Environment-Seniors] Club’s middle school students worked cooperatively to create bluebird nesting boxes and an informative brochure to accompany the birdhouses.


To introduce elementary age children to concepts of density, our unit begins the exploration of density through liquids. The same liquids are then used to explore densities of solids. This unit was developed for an after-school program for girls in grades 5–6.


How can we enrich the lives of young girls today so they are well prepared and enthusiastic about science courses and careers tomorrow?

**Resources**


**Notes**

Literature Links

*The Prometheus Project: Trapped* and *The Prometheus Project: Captured*, by Douglas E. Richards (DNA Press, 2007), are two books in a fun series of science fiction for young adults. The stories are compelling and intriguing. A brother and sister happen upon their parents’ top-secret scientific work which involves alien life forms and alien technology. Part suspense, part mystery, these books show children solving riddles, breaking codes, reasoning, and solving problems. The language is simple and the characters are likable and believable. Teachers report that their classes have been on the edges of their seats listening to these books as read-alouds. Eight- to fourteen-year-olds will be captivated.

*The Warlord’s Alarm*, by Virginia Walton Pilegard (Pelican, 2006), is another in a series of outstanding fictional picture books for first through third graders that address mathematical concepts and their useful applications in the characters’ lives. Chuan and Jing Jing once again set off on a journey and are challenged to do what seems like an impossible task. Through careful thinking and use of materials at hand, they solve their problem. The warlord has required them to wake him before sunrise for an important meeting. Jing Jing has noticed her water bag dripping all day, losing about half a bagful each day. She and Chuan use these observations to set up an impromptu water clock, which will wake them in time to wake the Warlord. Information on water clocks and suggestions for activities follow the story.

*Winter Trees*, by Carole Gerber (Charlesbridge, 2008), is a rhyming text that gives clues for identifying trees in winter. Colorful prints by Leslie Evans approximate distinguishing tree shapes. There are some inconsistencies in the images; for instance a mature deer is pictured nibbling on sugar maple buds in winter, but donning the spots of a juvenile which are usually only visible in spring and summer. This is a beautiful book that is worth reading and using as an introduction to identification, even though some of the material might be less than accurate. It can serve as a puzzle for your class, or inspiration for classes of five- to ten-year-olds to write their own book of local trees in winter.

*Julie the Rockhound*, by Gail Langer Karwoski (Sylvan Dell Publishing, 2007), is an informative picture book that shows a girl and her father finding crystals while digging. She asks questions and wonders about how the rocks are formed. Her father tells her about the rocks. It is a good example of learning that happens out of school. Although the writing is not the finest or most interesting, the concepts are portrayed in an accessible story, which makes this a good resource for first- to third-grade classes studying rocks and minerals. More information is included in the back of the book with a matching activity, Moh’s hardness scale, the three families of rocks, and more information on how to be a rock hound.

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It is clear that there is a growing trend to look to “out of school time” (OST) learning opportunities to supplement or extend students’ education. Done well, these experiences can offer outstanding opportunities for meaningful learning. All too often, school-based learning is built on not what is best for students to be doing, but on the required curriculum. When this happens, we sacrifice good pedagogy to fulfill an administrative goal of standardization and mistakenly honor the myth that this brings accountability. Until we have a real change in how we conceive of schooling, the truly fertile learning experiences will be found increasingly after school and in the summer.

To engage young people in these richer learning experiences, we have to be careful to avoid simply moving the norms of the school day into after-school and summer programs. In the NSF-funded Local Investigations of Natural Science (LIONS) program I’m directing in the St. Louis region, students often report to our evaluators how much more they appreciate the improved pace of the after-school and summer sessions. Without the frenetic jumping from topic to topic and focusing on quantifiable objectives, students can learn better and develop their interests more completely than they can in their regular school environment.

Teaching well in this environment requires a significant shift in professional identities. We are seeing clear evidence that the more successful after-school groups are ones in which the leaders enact a pedagogy that is markedly different from their peers’. Instead of being dependent upon externally-provided, sequenced curriculum, successful leaders have found ways to build from students’ interests and provide them with the project authorship and leadership experiences that education should be focusing on. These leaders are also teaching from their passions, showing a real interest in the topics and issues the after-school groups are investigating.

Not surprisingly, it is this latter group of teachers who have the richest professional exchanges. The level of dialogue when they get together is light years away from the more pedestrian “what do I do next” discussions that more traditionally-focused teaching engenders. These teachers tend to make the best use of educational technology to achieve their teaching goals.

It is no secret that most students find technology to be engaging. Terms like “digital natives” are used to describe their comfort and facility with learning and using comparatively sophisticated technology tools. Still, harnessing this fluency toward productive learning requires mentorship. Learning when, where, and how to use these tools to support meaningful learning requires that we have a strongly developed pedagogy.

3D video games

To illustrate some of the possibilities that emerge with pedagogically rich, technologically-enhanced OST learning, I’ll share two projects I’m working on with colleagues at the Scheller Teacher Education Program at the Massachusetts Institute of Technology. Aside from preparing MIT students to work in schools, the lab at MIT is developing some particularly innovative uses of educational technology.

In the last issue, I briefly mentioned Star Logo: The Next Generation, the latest iteration of the venerable Logo computer language that has been on education stage for more than twenty years. I’m currently leading twenty students on Saturday mornings in a game design workshop where they are creating 3D video games. Lest one dismiss this as more mindless screen time, it’s important to keep in mind the levels
of complexity the kids are working with as they design the overall game play, program the characters’ actions and interactions, and engage in a continual process of refinement and improvement. Throughout, there is a substantial amount of peer interaction as the young designers exchange ideas with each other and integrate what others have found to be successful into their own designs.

**Traditional skills through innovative practice**

In addition to these meta-level benefits in strategic planning, design, and collaboration that students gain from their projects, they are also developing traditional academic skills. Programming character movement on the screen requires an understanding of distance, direction, angle measure, and elevation. The authentic application of these concepts promotes deep understanding, well past what a textbook or worksheet exercise can provide. Equally important, this ability to apply their growing mathematical understanding shows students how math can be a powerful tool for meeting their needs. “When are we ever going to use this?” Right now—to solve a problem that you yourself have identified. Just-in-time, meaningful learning is always more powerful than warehousing “you’ll need this someday” strategies.

A second project we have been using in after-school and summer programs involves “augmented reality” games on handheld computers. These games create a hybrid experience where players are out in the community exploring local landmarks and natural features, with their experience enhanced by the information presented on screen. What is presented depends on the player’s location (as tracked by the GPS chip in the handheld) and the choices made so far. Different choices enable access to different information or resources. For example, in a simulated water quality investigation that a group is doing, they have the task of determining the cause of simulated pollution in a local creek. After “meeting” a local expert in the park who gives the players an orientation, they need to make a plan for which areas of the creek to investigate. As they navigate to these areas (guided by the GPS), they “meet” experts in those areas who can help students understand whether what is happening at that particular area might be the culprit and explain the observed pollution.

The gaming aspect comes in as students are limited by the programming of the game to a certain number of sites to explore and experts to interview. Thus, the need to employ their understanding of water quality to successfully navigate the game. A “win” is being able to explain the suspected causes of the water pollution, supported by the data and perspectives they have gathered in their play.

Students have been playing and creating these games in our after-school and summer programs with great interest and success. Like the work with the Star Logo game designs, students need to engage in both higher-level strategic thinking and very detailed planning and troubleshooting as they create and refine their game designs. In these games, skills in spatial thinking (for positioning) and writing (for character creation and information dissemination) are critical. Depending on the focus of the game, different academic content will also come into play. For the creek game, water quality issues, basic chemistry, and ecology are framed within an engaging context that promotes understanding and interest through immediate application.

Each of these examples illustrates the possibilities for out-of-school experiences to reclaim much of what is best about learning and engage students in projects that are meaningful and interesting. This helps meet the ultimate goal of good education as it gives our kids increasing power to understand and make a difference in the world.
Resource Reviews

After-School Success: Academic Enrichment Strategies with Urban Youth, by Anne Bouie, describes the Interface Approach for working with urban youth. Project Interface is an after-school mathematics and science enrichment program for students in grades seven, eight, and nine. The Northern California Council of Black Professional Engineers and the Allen Temple Baptist Church in Oakland California, worked together to promote more interest and confidence in young African Americans in becoming mathematicians and scientists. In three sections, the author relates the genesis of the project, planning and logistics, and examples from participants of the program in action. Although it draws extensively on experiences of the program in the 1980s, the advice and expertise in this guide is still relevant today.


Afterschool Matters: Creative Programs that Connect Youth Development and Student Achievement, edited by Sara Hill, examines programs throughout the country developed to engage youth in enriching, meaningful activities. Working from a concept of resiliency, authors describe their programs, such as mixed-age science mentoring, “doing” hair, fashion design, and mathematics. Ages vary from program to program. There is lots of discussion about the integration of communities and schools, integrating existing aid programs, and striving to provide experiences that will most benefit youth in school and out. Each chapter includes a section on applying successes from that program to other concepts. This would be a very useful guide for those setting up new programs and seeking resources.


Building Effective Afterschool Programs, by Olatokunbo S. Fashola, looks at all kinds of after-school programs, everything from tutoring, enrichment programs that extend beyond the typical day school, Girl and Boy Scouts, and community programs such as LA BEST and New York City’s Beacons programs. The book looks at answers to the basic question of “why after-school?” and “what works?” The final chapters discuss evaluation and how to determine whether a program is successful. The breadth of organizations and approaches mentioned make this a good resource for those starting programs and wanting to ensure the success and sustainability of programs.


Exemplary Science in Informal Education Settings, edited by Robert E. Yager and John Falk, offers thorough discussion of several programs, K–12, that incorporate outstanding science experiences for youth. The introduction explains what qualifies as “real” science, that being activities that include the following features: “1) curiosity about objects and events…; 2) offering possible explanations for them; 3) collecting evidence to establish validity…; 4) communicating the explanations…; 5) responding to criticisms and counter-explanations from others…”. Examples range from environmental
action with youth at the Franklin Institute, to Science Cafés, where presenters show science documentaries at neighborhood pubs, followed by an expert who fields questions, in order to involve adults who would not usually attend science events. This is an outstanding guide which dives down to the heart of what makes science meaningful.


**Web sites:**

*Resources on Afterschool* http://www.afterschoolresources.org is a site that provides essays, studies, magazine articles, and other written support for creating and sustaining integrated community after-school programs.

*AfterSchool.gov* http://www.afterschool.gov/ is a U.S. Government web portal that offers extensive resources for designing and funding, curriculum ideas, and advice on running a program. This is an extensive site with much valuable information.

*Consumer’s Guide to Afterschool Science Resources* http://www.sedl.org/afterschool/guide/science/ lists resources and reviews from users. There are other topics covered as well: math, literacy, and technology. The guide is searchable by title, subject, grade, audience, and cost. This site is a collaboration between the Southwest Educational Development Library and Lawrence Hall of Science.


*Exploratorium AfterSchool* http://www.exploratorium.edu/afterschool/index.html is the site of the Exploratorium in San Francisco, California, dedicated to bringing science and math enrichment activities to out-of-school time. Link to activities, videos, professional development materials, teaching tips, and concept maps.

*Community Schools in Action*, edited by Joy G. Dryfoos, Jane Quinn, and Carol Barkin, relates some of the history and development of the Coalition of Community Schools by the Children’s Aid Society. They have come up with a model based on a triangle of providing instruction, enrichment activities, and medical and mental health services. The book also provides descriptions of six core program components including challenges and roles of schools and community agencies. This book offers a comprehensive exploration of the many diverse community schools that exist, their histories, and what might lie ahead for them. This is an outstanding resource for administrators and community organizers.

Engaging Digital Natives in a Digital World

Teaching More than Web Design

by Thomas W. Reed-Swale

We are now teaching a generation of digital natives. Students are experts in the field of instant messages, cell phones, computers, video games, and more. As teachers, we have an opportunity to meet them in that arena and to connect in ways we never thought possible. For the past four years, I have pushed my students to the edge of a technology curve that is likely to double every eighteen months.

My program is called the Wolcott Web Wizards and it meets for an hour twice a week after school. It has become so popular with my students that I have incorporated it into the regular school day as well. Since integrating Web Wizards into my daily instruction, I have observed an increase in my students’ intrinsic motivation, a greater attention to detail in their class work, and exceptional improvements in their writing abilities. But the greatest benefit is in seeing that students love to come to school and work on their Web pages.

Getting kids on the Web

While this program requires me to invest a great deal of extra time and effort, the rewards are well worth any cost. By starting small and building the program step by step over the years, Web Wizards has become a well-oiled machine that helps students use technology responsibly. As I share my journey, I hope that my failures and successes can serve as both information and inspiration for those who wish to start their own after-school programs focusing on Web sites or other high-level technologies.

When I was studying for my Masters degree, my friend Matt Ross, who was the number two or three person in the UConn Neag School of Education’s IT department, and I worked on group projects together. He brought the technology ideas, and I added instructional methods to make our plans work. In one of these projects, he introduced me to Web page design. I loved the idea and toyed with the notion of having kids put their writing on the Web.

In 2004, I was hired as a fourth-grade teacher in West Hartford, Connecticut. When my principal asked me what my vision was for my classroom, I simply replied that I wanted my students to be able to show off all of their work digitally. “What do you need to make it happen?” he asked. It was his support of my ideas that allowed me to take risks and evolve Web Wizards from computer play to real instruction.

It started with six fourth-grade students who loved hanging out at school and were interested in computers. As they learned so did I. There was no plan to speak of. All I knew was that I had to start somewhere. Because it was an after-school program, there was no pressure for specific instruction. I found that I just let the after-
noons work organically. “How do I link to Google, Mr. Swale?” “What if we added pictures?” “Can we make our pages look like that?” Their questions launched on-the-spot mini-lessons. I was barely a step or two ahead of my students. Over time I used these experiences to create future lessons and shape my program.

Safety first

From the beginning, I realized that keeping students safe had to be my top priority. Parents needed to know that I was not aimlessly putting their children and their children’s work on the Internet for all to see. Building this confidence in technology is essential for a successful program. I stepped back from my vision and tried to imagine: “What would I want as a parent?” I decided that there could be no real names or personal information of any kind. Every child must use a self-created pen name that is of some significance to them. All of their files, folders, and pages use this pen name. I tell them, “If you wouldn’t tell it to a stranger on the street, don’t put it on your Web page.” Students make this distinction immediately. They understand that there are different rules for Web sites.

Some students have combined meaningful parts of their lives into their pen names. One student used his grandparents’ names, Shirley and Paul, to make his pen name ShirPa. This is one way in which students instantly take ownership of their Web work. “Should I put this in my ShirPa folder or should I put it in my normal one?”

Reflecting and refining

In the second year of Web Wizards, I discovered that I could use the after-school program to pilot ideas for the regular classroom. What I realized was that there was no substitute for trying out a lesson idea. Each time I had a new great idea, I tested it with students after school. If it was successful, I brought the lesson to the regular classroom the next week. If the idea failed, I revised it. One activity that works very well is having students write reviews and summaries of their favorite books. This is now a project that I have every student use as part of their reading page.

One of my assumed brilliant ideas that failed miserably was making slideshows. I had visions of students scanning in work and linking it to Web pages through slideshows. In practice, I found that it took far too long. To solve this problem, I created a slideshow template to which students could attach their images. In this way, they still get the experience of presenting the information on their pages, but it takes them a fourth of the time. I use this strategy early in the year when I want kids to get exposure to advanced Web design techniques and then slowly show them how to make their own slideshows as the year progresses. Students with exceptional Web skills can make their own, and others can still use the templates.

Let them lead

The greatest shift in my approach to Web Wizards happened in my third year of teaching. At first I had forced students to begin by creating the page framework.
Design was a reward and saved for last. I assumed that students would want to work towards the goal of designing. Instead, the exact opposite happened. Students either moved so fast that their work suffered, or they did just the minimum so we could skip to designing. I found myself hounding students to do more work, thus eliminating the spontaneity and fun of the project.

I finally gave in, and against my better judgment allowed students to design first and then add content. To my amazement, I had every student enthralled. Students began to take ownership of their Web pages, adding colors, changing fonts, and including images. I found that students could easily identify their work, and were constantly showing it off to one another. It became the heart of my program. Students are now independently driven to create excellent work.

Beyond the initial excitement of creating Web pages, I found that our discussions shifted to the real essence of Web page design. We began having conversations about how to use our screen space, how to contrast, ways to set up links, and what fonts to use. We had moved from using Web pages as a medium for other work to using other work as content for our Web pages.

Last year, I found out just how far I could stretch students’ technological abilities. Instead of curbing their learning, I pushed students again to the limits of my own abilities. As I began to redesign the entire school Web site, I learned how to use cascading style sheets (CSS). I began understanding the html code aspect of design. If I can do it, I thought, so can my students. By sticking to the simple strategy of “Ignore everything you don’t understand,” kids were able to learn html code little by little. When it came time for me to archive a whole year’s worth of work on the school site, I called a student, not a colleague, to help me with the Web work.

I have learned many lessons from working with my Web Wizards. The biggest lesson is that taking risks breeds reward and failure. I have had my share of monumental failures and groundbreaking successes. I have had whole lessons implode and have scrapped an hour of planning. This is always my expectation. I expect that I will encounter problems and it makes me more prepared.

Students began to take ownership of their Web pages, adding colors, changing fonts, and including images.
Funding

Funding can be the greatest hurdle no matter where or what you teach. I now teach with a SMART board, multiple laptops, a scanner, digital camera, video camera, and more. Still, this idea worked just fine with only a few desktops and kids working in pairs on each one.

I found that even though my principal was very supportive, I needed to get my own funding for most of my big technology expenses. I write five to six grants a year for Web Wizards and usually receive one or two of them. Most companies like to donate locally, and have a section called “community relations” at the bottom of their homepage. If you’re interested in seeking grants, send out a lot of proposals and look for ones that are similar to ones you have already written. I no longer write new grants, I simply revise existing ones and make them fit the grant for which I am applying.

As this year continues, I am pushing my students to become more responsible with their Web work. We now make Web bibliographies to cite any images that we borrow from the Web, mirroring the work we do with research projects. As in years past I’m sure some ideas will blossom, some will fail, but having time after school to just try them out with kids who love to learn through technology is the highlight of my work week.

Tom Reed-Swale is a fifth-year teacher at Wolcott Elementary School in West Hartford, Connecticut.

To see the Web Wizard’s work go to http://www.wolcottelementary.com. Click on the sign for fifth grade and then “Visit Room 152.”

Welcome to my Reading Page!

Here are some books I’ve read that I think are REALLY good!!!!!!!!

- **Tiger Eyes** by Judy Blume
- **Lost and Found** by Anne Schraff
- **Until We Meet Again** by Anne Schraff
- **Homeless Bird**
- **I Want to Live**
- **Because Of Anya**
- **Ida B.**
- **City of Ember**

This book is about a girl named Davey who’s father was shot and killed. Her, her mother and her brother have to live without him. They move to a new state for a month and Davey meets a new friend. Learn how Davey’s friends help her through this tough time. Read the book to find out more!!

This book about is about a girl named Darcy who’s family lives in an apartment. She has a mom, a sister and a grandma. Her dad left the family when Darcy was young. Her sister runs away when she finds out her dad has come back. Find out what happens next if you read this exciting book.

This book is one of the other books that go along with the Lost and Found book. This one is when Darcy’s boy friend moves to a new state. Also her grandma gets very ill and..... Read the book to...
Out of School and Out of This World!

Inside this issue, Bob Coulter describes the StarLogo: The Next Generation (http://education.mit.edu/drupal/starlogo-tng) program that he teaches on Saturday mornings as part of a game design workshop (page 18). Students create 3D video games. “...It’s important to keep in mind the levels of complexity the kids are working with as they design the overall game play, program the characters’ actions, and interactions, and engage in a continual process of refinement and improvement.”

StarLogo uses a graphical interface for programming to make it more accessible to all users. By providing the format of designing games, students are more motivated to pursue projects that have multiple steps. In the classroom, student-made video games can be used as an assessment tool. For instance, if there were a wetlands game, what would be the greatest perils? What characters would inhabit the landscape? How would they interact with one another? A designer needs to draw on his or her factual knowledge and experience to create an engaging and successful game.

This screen shot is from a student-designed treasure hunt game. The bunny rabbit character has to collect the diamonds as he plays the game, and avoid the wolves that have been programmed to wander the landscape in search of bunnies. As he collects diamonds, the score goes up. Encounters with a wolf can be fatal. (This student was working on programming it so that one encounter can be survived; a second is always fatal.)