

# Igniting the Fire

**PROFESSIONAL DEVELOPMENT  
FOR AFTER-SCHOOL STAFF**



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# Background & Research





# Igniting the Fire

In another era “after-school” meant staying as punishment for misbehavior when others went home. After-school evolved as a time for both extra help and enrichment opportunities. As the percentage of working mothers rose, after-school programs also became a refuge to keep children off the streets in a safe and supervised environment. Today the nature of after-school programs differs widely, ranging from YMCA and Boys’ and Girls’ Club programs, whose focus is homework help or nonacademic areas, to highly structured school-site programs that mirror closely what goes on during the school day. Some expand the idea of “after-school” to “out-of-school” time and include programs offered before school, evenings, weekends, summers and holidays that help youth grow, learn and develop.” (AYPF)

Since enactment of the No Child Left Behind Act, the field has gained a horde of entities, mostly for-profit organizations, seeking to provide services as “supplemental education service providers” for students who are identified as not making adequate yearly progress. There is further interest in the after-school field by many who see U.S. students slipping behind our global competitors and are looking for ways to boost both interest and learning in essential areas of study.

There is often tension between those who seek enrichment for the whole child and those who seek to boost academic achievement in a few specific subjects. A similar tension is apparent between advocates of public education and some of its harshest critics. As with other heated controversies, solutions require common sense and recognizing that young people are human beings with diverse and changing needs.

One movement that seems to be gaining followers is extended or expanded day. In this model the school day is expanded, but during the day breaks of various kinds (arts, sports, special interest periods, etc.) are scheduled that make the day less academically intense and exhausting. This document addresses professional development for after-school programs that are not considered part of such a program, although the strategies suggested are certainly appropriate for any school program—regular, extended or expanded day. The AFT has a history of designing research-based professional development for regular school day staff that dates to 1981, so developing professional learning modules for after-school staff was a natural fit.

The AFT believes the after-school venue has great potential to enrich students academically, socially and as future workers and citizens. As the Harvard Family Research Project (HFRP) found:

After-school opportunities can ... keep youth engaged in school. For many children and youth, the educational settings provided by after-school programs have been an incredibly important context for learning and development.

But after-school is different from the regular school program, and even school day instructors need to recognize the differences and plan accordingly. Students arrive at after-school with minds and bodies that have already been in school for six or seven hours. Any adult who has fidgeted through a two- or three-hour meeting or professional development session knows how eagerly students would seek opportunities to move, talk and have a change of pace.



# The After-School Field

The after-school field is different from regular day in a number of ways.

- The people who serve in after-school programs are as diverse as the programs themselves.
- There are probably more non-certified staff in such programs than certified.
- Many individuals volunteer or collect little pay.
- For volunteers, three hours of professional development is a lot to ask.
- In many programs, student attendance is voluntary and class composition varies from day to day.
- There are often mixed ages in classes.
- Too often there is no connection when content is addressed between the goals of regular school programs and after-school programs and methods taught to children may be in conflict.
- In some programs there is not even a specified curriculum or guide for after-school staff.
- The essential knowledge for effective after-school frontline staff to be successful is extensive and includes many components that relate to learning academic content indirectly (e.g., the needs of adolescents).

Many of the nonacademic components that staff need are already being addressed by after-school organizations. The area least addressed by others is academics.

It would require a complete college course to address the breadth and variety of professional development needs necessary for an effective focus on academics given the wide diversity of staff. The AFT focuses these professional development modules on our area of expertise—professional development focused on academics for teachers and paraprofessionals who work in after-school programs. We make the assumption that these staff have adequate knowledge of the academic content that will be addressed.<sup>1</sup> However, this work should also be valuable to non-school day staff who do not have preparation in education. It can help focus attention on some critical needs of children and provide some beginning structure and guidance for after-school curriculum. It can help build bridges between the formal school community and the wider community to work together in the interest of children’s learning—both academic and social.

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<sup>1</sup> For those who do not have sufficient content knowledge or seek to broaden the strategies at their disposal or deepen their knowledge, we recommend participation in professional development such as AFT’s Educational Research & Dissemination training in reading and mathematics, as well as other courses in this research-based program.



# Some Essentials in After-School Programs

Although these professional development modules are created to support the teaching and learning of academic content, there are some basic and critical needs beyond good teaching strategies and curriculum for any program to be successful.

Effective after-school programs are designed to meet local needs and combine elements that often reach beyond academic goals. This is not only laudable, it is essential to develop healthy, well-rounded individuals.

The C. S. Mott Foundation stresses the value of partnerships between school and community, attention to specific needs of the population being served, and an outlook that leads to connecting school skills to the use of those skills in children's lives:

“...both practitioners and researchers have found that effective programs combine academic, enrichment, cultural and recreational activities to guide learning and engage children and youth in wholesome activities. They also find that the most effective programs develop activities to meet the needs of the communities they serve.”  
(Mott, 2005)

A 2005 study by Birmingham, Pechman, Russell and Mielke found that highly effective after-school programs were characterized by:

- a broad array of enrichment opportunities;
- opportunities for skill-building and mastery;
- intentional relationship-building;
- a strong, experienced leader/manager supported by a trained and supervised staff; and
- the administrative, fiscal and professional-development support of the sponsoring organization.

Another review of extended-day and after-school programs by Fashola (1998) sought to identify specific programs that had a positive impact on student achievement in out-of-school settings:

“Among programs intended to increase academic achievement, those that provide greater structure, a stronger link to the school-day curriculum, well-qualified and well-trained staff, and opportunities for one-to-one tutoring seem particularly promising, but these conclusions depend more on inferences from other research than from well-designed studies of the after-school programs themselves.”

Of 34 programs studied in Fashola's work (2008), only 11 had been evaluated in afterschool settings. Six were found to have evidence of effectiveness in that setting (Memphis Extended Day Tutoring program, Exemplary Center for Reading Instruction (ECRI), Howard Street Tutoring Program, HOSTS and Big Brothers/Big Sisters). These all were one-on-one tutoring programs, an unlikely design for schools offering after-school programs to large numbers of students. One-on-one assistance is vital, however, and may be provided during homework assistance time, before school or during lunch hours. Tutoring should also have a place in a total after-school program but the sheer numbers required for one-on-one help for large numbers of students is a challenge, especially as student grade level increases.

While several reports talk about the benefits of additional time, there is little evidence about what is particularly effective in after-school day settings beyond individual tutoring. There is growing research on the effects of after-school and extended-time programs, but its limited nature requires us to make some inferences from research and experiences related to how people learn, using both general and subject-specific research.

# Successful Programs

Several groups in the field have attempted to define what is needed for after-school programs to be successful but there is little that defines “success.” The C.S. Mott Foundation Committee on After-School Research and Practice, comprised of researchers, evaluators and program experts, jointly developed the *Framework for Successful After-School Programs*, which identified the following aspects of successful programs:

1. Effective partnerships to promote learning and community engagement.
2. Strong program management including adequate compensation.
3. Qualified after-school staff and volunteers with regular opportunities for professional development and career advancement.
4. Enriching learning opportunities that complement school-day learning, utilize project-based learning, and explore new skills and knowledge.
5. Intentional linkages between school-day and after-school staff including coordinating and maximizing use of resources and facilities.
6. Appropriate attention to safety, health and nutrition issues.
7. Strong family involvement in participants’ learning and development.
8. Adequate and sustainable funding.
9. Evaluation for continuous improvement and assessing program effectiveness.

A second group, The National Partnership for Quality Afterschool Learning, identified 13 *Indicators of Quality After-School Programs*. We affirm them here because their presence or absence directly affects the learning that will take place. Most items on this list are quality indicators in any setting, regular or out-of-school. We have grouped them by the area of teaching and learning they affect.

## Student Engagement

1. Promoting student engagement
2. Employing motivational strategies to engage learning
3. Providing a positive program environment

## Curriculum/ Content Focus (planning)

1. Clear goals for content practice
2. Assigning research-based activities
3. Aligning content materials with standards
4. Developing links between content and school day activities

## Instruction/Facilitation

1. Using research-based curriculum and teaching strategies
2. Providing effective program management, support and resources (e.g., staffing, experience and trainings, evaluation)
3. Providing opportunities for student practice

## Reflection/Assessment

1. Assessing program effectiveness periodically
2. Reviewing student progress periodically
3. Resetting goals based on assessment results

Other researchers found that programs missing any one of the following four elements—sequence, active students, focus and explicitness—did not achieve positive results. (Durlak and Weisberg)

We must consider how to employ these indicators as instructors and students interact in the after-school setting. To do this we must first think about the students.

# Basic Human Needs, the Brain and Behavior

Two difficulties often mentioned by those who teach in after-school settings are (1) finding something to engage the students, especially those who are there because someone perceives it either as a baby-sitting service or thinks students just need more time doing what they do all day and (2) behavior issues. The two are actually linked because students who are interested and engaged seldom have behavior issues. Whether the program is configured as a tutoring service, an enrichment time or even a test preparation venue, its activities take place in a social context that can produce both positive and negative interactions. The challenge is how to create a social environment that is positive and contributes to high levels of engagement.

Researchers Connell and Wellborn conclude that “student engagement is optimized when the social context fulfills children’s basic psychological needs.” The basic human psychological needs include a sense of competence; being related to other people, feeling part of a group; and having some autonomy. These needs apply to students in school or out of school and actually span all ages. The lack of attention drives children to act out, join gangs or find inappropriate ways to prove they are competent at something.

In recent years we have learned that people’s perceptions of themselves in relation to these areas are affected by brain chemistry but there are things we can do in classrooms to boost the potential for the right chemistry to happen and to foster competence.

- Sprenger notes that strong emotions, especially fear or threat, take precedence over reasoning, logic and all other memory. It is incumbent to establish a safe environment for those in our programs.
- Knowledge, memory and positive feelings of self are strengthened by the presence of serotonin, a chemical produced by the brain. Serotonin levels can be increased by simple acts such as movement or dance. Smiles and pats on the back can release other helpful chemicals.
- Affirming gestures help students feel related and part of the group. So does teaming.
- A sense of autonomy can be fostered by intentionally seeking out student interests, allowing multiple ways to approach work, and giving students some choice in what they might do, even it is from a menu of preplanned activities.

# Learning Environment

For many students, participation in after-school programs is voluntary. This makes it important to establish a program to which students will be attracted and in which they want to continue participating. For those who are attending involuntarily, the need to motivate engagement and interest is even greater. After-school programs will not strengthen academic learning without the consistent presence and personal engagement of the students. Following are some critical considerations:

1. The atmosphere should be welcoming and convey the belief that the students can succeed.
2. A good learning environment should be established in which rules and procedures are clearly developed *and taught as one would teach content*. Although the environment may be less formal than the regular school day, limits and expectations must be clear.
3. Staff should know strategies and protocols for rare instances of extreme behavior.
4. The tasks should be intentionally planned to engage students' current interests or to create curiosity about others.
5. The tasks students engage in should be intentionally chosen or created to link to the content standards and expectations of the school district.
6. Attention should be paid to findings from youth development research. Addressing the needs of adolescents is crucial to engage middle and high school youngsters and, even though most are also relevant for younger students, will lead to some differences in the activities planned for the different age groups. Older students need to:
  - a. know that the adult cares about them;
  - b. feel capable of achieving the tasks set for them;
  - c. feel that they belong to a community;
  - d. have the opportunity to make choices;
  - e. focus on something of interest to them;
  - f. engage in challenging but doable tasks;
  - g. have a chance to show what they have accomplished; and
  - h. feel safe emotionally, physically and socially.
7. All students also need clear, specific and timely feedback about what they are doing.

# Academic Goals for After-School Programs

There is little guidance on what constitutes a successful focus on academics in an afterschool program. After-school is understood variously as: *tutoring, extended learning time, extended day, extended year, enrichment, remediation, homework time* and even *child care*. Most students are not with their regular-day teachers or paraprofessionals after school, and in most places students are not required to attend. An after-school academics-oriented program is not intended to teach new content, although sometimes that will happen as students engage in planned activities. It is a time for enrichment and support, practice and application.

While homework assistance can and should be part of the after-school agenda and tutoring on specific skills is valuable and necessary, the AFT believes after-school programs must go beyond that. We must spark students' enthusiasm, persistence and curiosity about what they are learning in regular school and sometimes connect that knowledge in a new way. Students who are struggling can review skills and concepts, get a chance to apply them in different settings and attain a sense of success that will provide increased confidence during the regular day.

Assessment in after-school settings also varies from the standard assessments of learning used by school systems to grade and compare students. There are a variety of assessment tools—from daily observation to portfolios, products and productions. The setting also allows observation of growth in areas not generally graded and tested.

The AFT believes that after-school academic programs, in addition to the more traditional emphasis on tutoring, should endeavor to:

- ignite a passion for learning that students can carry back to their regular day classes;
- provide application and practice for school day skills and knowledge in a way that strengthens learning, builds connections, demonstrates the usefulness of content and builds confidence based on accomplishment; and
- enhance learning with the kinds of experiences that the school day has less time to provide.

Many people still believe content must be learned through the traditional model of a teacher telling students how to do something, demonstrating it, and having students practice. Although there are some things that must be conveyed through lecture, we know this is often the least effective strategy, especially when developing flexible and higher-order thinking that allows learners to apply their knowledge in the real world. Yet, this is the way the *Third International Mathematics and Science Classroom 1999 Video Study* described the typical eighth-grade U.S. mathematics class, although we know there are many places where things are done differently and progress is being made continually. One of our aims is to promote a model of learning that can ignite the interest and curiosity of students, and also develop habits of work and mind that will benefit students as they pursue more education and work.

# Importance of In-School and Out-of-School Communication

Whatever the design of an after-school program, strong links between after-school and regular school programs and staff have also been found to yield the best gains for participants. The U.S. Department of Education echoes the importance of this connection. They found that without such a partnership, supplementary education programs were less able to align supplementary education with in-school learning. Many teachers and paraprofessionals in focus groups conducted for the AFT identified making links to both school day teachers and to parents as problematic areas. If staff served at the same school site during the regular day, the connection was easier. Otherwise it was difficult to exchange what would have been valuable information to make the after-school and regular day programs more coherent and effective:

For nearly all of the school staff with whom we spoke, the primary connection to the school-day is homework. A few have close contact with teachers who help them understand and act on the needs of students. But for many more, the level of contact and information sharing appear greatly lacking. Connections are stronger for those programs that take place in schools. (Belden, Russonello and Stewart)

SCHOOL DAY / BEYOND SCHOOL DAY COMMUNICATION	
<p>This month in grade 3 reading we are working on</p> <p><u>folk and fairy tales and their themes.</u></p>	<p>This month in grade 3 math we are working on</p> <p><u>two-digit addition &amp; subtraction with regrouping</u></p>
<p>Particular needs: Student</p> <p>Annie R. - decodes but trouble knowing what she has just read</p> <p>Jay L. - focused on details but doesn't understand overall lesson</p> <p>Tommy H. - vocabulary usage very limited</p>	<p>Particular needs: Student</p> <p>Pat B.</p> <p>Marsha A.</p> <p>Sammy L.</p> <p>Henry A.</p> <p>All subtract upside down instead of regrouping.</p>
<p>From School Day Staff Ms. Sanders</p> <p>To Beyond School Day Staff Mr. Walters</p>	

BEYOND SCHOOL DAY / SCHOOL DAY COMMUNICATION	
<p>The students in our after-school program are currently working on a project on</p> <p><u>Bringing a Folk or Fairy Tale to Life.</u></p>	<p>In our after-school program students will work on</p> <p><u>addition and subtraction with regrouping</u></p> <p>in the tutoring or homework part of our program.</p>
<p>Notes about particular students</p> <p>Jay L. is helping his group find when each of the Little Red Hen's friends refused to work so they could not gain the reward. We are emphasizing how behavior leads to consequence.</p>	<p>Notes about particular students</p> <p>I'm having Sammy, Marsha, Henry and Pat represent the minnend with manipulatives and recording as they subtract.</p>

One strategy for strengthening this tie is for the after-school provider to have a staff member whose job is to be a liaison between the two staffs—bridging the times when school and after-school staff are present. This person could be responsible for finding out what children are learning during various months and where the school day could use some emphasis. The liaison could also deliver reports on children's after-school projects and behavior to the classroom teachers. The after-school staff gets a clue to a project topic that might support or enhance what children are learning in school. The regular teacher knows certain children are working on a topic outside her class. The regular teacher can choose which subjects to send information on. The form can provide a link between the two environments.

An example of a simple form that could be used to exchange such information is provided in the Templates section and is included on the accompanying CD-ROM.

# Knowledge and Skills Needed by Staff

We will address one strategy primarily—the use of project learning in academically oriented after-school programs—that we believe can help ignite the flame of learning for students. We believe that this approach can help current non-academically focused programs to intentionally devote time to boost children’s academic learning, in addition to the other beneficial activities they sponsor. Although we will not address other important areas for staff in these targeted professional development modules, studies have shown that those who work in after-school programs also need to understand:

- building effective learning environments;
- the role of social engagement in learning;
- the importance of communicating with parents and students;
- strategies for experiential learning that highly engage students;
- resources available in the community;
- youth development principles; and
- the subject matter students are learning and will use.



## Professional Development in Other Areas

Other organizations in the after-school arena have devised training in some of the previously mentioned areas. Research-based training is also available in some areas through the AFT Educational Research and Dissemination program.

**Citizen Schools**—This project taps into the community and what they can contribute to schools to provide engaging experiences for students. Citizens who are passionate about their work share their enthusiasm as they help students complete projects in the guest teacher’s area of expertise in partnership with after-school staff. Their citizen volunteers are taught to use an apprenticeship model of learning. Research has classified the steps of cognitive apprenticeship as modeling, scaffolding and fading the supports, with coaching occurring throughout the process. Check out Citizen Schools resources on how after-school can be exciting for students and instrumental in increasing their learning. Their training on relationship building with students is also worth looking at. [www.citizenschools.org](http://www.citizenschools.org)

**Using the Internet for Learning**—The Southeastern Development Labs (SEDL) Virtual Academy for Afterschool uses the Internet to engage student learning. <http://sedl.org>

**Youth development principles and/or training**—For those working with middle and high school youth, principles and training can be accessed through the After School Alliance ([www.afterschoolalliance.org/issue\\_briefs/issue\\_platform\\_15.pdf](http://www.afterschoolalliance.org/issue_briefs/issue_platform_15.pdf)) and the Youth Development Institute ([www.ydinstitute.org/resources/publications/LearningClubs.pdf](http://www.ydinstitute.org/resources/publications/LearningClubs.pdf)).

**AFT Educational Research and Dissemination Program**—Courses are available in districts with the AFT Educational Research and Dissemination Program ([www.aft.org/issues/teaching/profdevel/examples.cfm](http://www.aft.org/issues/teaching/profdevel/examples.cfm)) covering the following topics:

- Organizing an effective learning environment
- Reading
- Mathematics
- Managing anti-social behavior
- Home-school connection
- Instructional strategies
- Cooperative small groups
- Social context of the classroom

# Project Learning





Addressing the need for students to be excited and feel successful about their own learning and to change the pace from the normal day, the AFT makes two major recommendations regarding learning strategies in after-school programs. First, especially when the program is in the same place as regular school, there needs to be a transition between the more formal school day and less formal after-school program that helps students renew their energy and outlook. This can happen briefly and might include exercise, a snack, a game, or personal sharing time. The minutes spent providing a good transition will pay off in better engagement and learning. Second, we recommend project learning because it is a high-engagement, flexible strategy that can bring excitement to learning. Although all activities in an after-school program will not be projects, we recommend that they be used extensively. We highlight projects in five key areas of academic learning: reading, mathematics, science, writing and interdisciplinary. While each of these disciplines may be the prime focus of a project, they are seldom isolated in life and other areas of students' learning—from geography to the arts—can and should be integrated into project design.

There are several project learning practices that have strong similarities to each other but are distinguished from each other in one or more ways.

**Project-Based Learning (PBL)** is described in PBL handbooks for teachers as centered around “complex tasks, based on challenging questions or problems, that involve students in design, problem solving, decision making or investigative activities; give students the opportunity to work relatively autonomously over extended periods of time, and culminate in realistic products or presentations.” (Jones, Rasmussen and Moffitt; The Buck Institute, 1999; Thomas) Rhem defines PBL as students working “to find meaningful solutions” to problems.

**Project approach** refers to “a way of teaching and learning that...emphasizes children’s active participation in the planning, development and assessment of their own work; children are encouraged to take initiative and responsibility for the work that is undertaken.” (Katz and Chard). Some say the goals of the project approach are more adult-directed and PBL goals are devised by students.

**Service learning** combines community service objectives with learning objectives with the intent that the activity change both the recipient and the provider of the service. This is accomplished by combining service tasks with structured opportunities that link the task to self-reflection, self-discovery and the acquisition and comprehension of values, skills and knowledge content. For example, cleaning up a local stream or neighborhood has both scientific and social studies learning connections. The National Commission on Service Learning in 2001 differentiated service learning from volunteerism saying it is “a teaching and learning approach that integrates community service with academic study to enrich learning, teach civic responsibility and strengthen communities.” Service to the elderly or needy creates civic awareness and can develop a sense of responsibility.

In-depth investigations, applications that result in products or performances and service projects are all activities that can engage students in worthwhile endeavors that motivate them, connect to life and lead to increased learning.

The Buck Institute (Project-Based Learning Handbook, 2003) speaks of project-based learning as an evolving practice and proposed these criteria as distinguishing outstanding projects for middle and high school students:

- Recognition of students’ inherent drive to learn and the ability to do important work.
- Engagement in central concepts and principles of a discipline.
- Involvement of students in exploring important issues or topics.
- Require use of tools and skills such as technology.
- Specify products that solve problems, explain dilemmas, or present information generated through investigation, research or reasoning.
- Multiple student products that allow frequent feedback.
- Use performance-based assessments.

- Encourage collaboration.

The Buck Institute says the “driving question” of the project should be tied to standards and should create a need to know the targeted material. Driving questions make the difference between simple engagement and engagement in learning.

Goodwin cites research showing a major shortcoming of many student projects as “doing for the sake of doing.” Goodwin described how students involved in a rocket-building project initially cited the goal as just “to build them and see how high they will go.” After the project was framed around questions of content where students were to determine which of several choices of design would make the rockets go higher or change its trajectory, students showed more learning of the principles of aerodynamics.

## Benefits

Project learning fulfills many of the critical needs for successful after-school programs. Students, like adults, are ready for and need a change after a full day of intense work and study. Project learning should:

- be different from many regular school day experiences because projects suffer when time must be tightly controlled;
- provide opportunities to tap students' interests;
- engage students in working collaboratively;
- provide a real world context in which to apply school day content;
- engage students in achieving a goal that can be shared with others;
- result in less formal activity than the school day;
- provide students with success and pride in what they can accomplish;
- help students see the need for content they are studying; and
- provide more choice of activity for students than the regular school day.

Projects are also venues in which knowledge is integrated within and across content areas, helping build bigger and stronger chunks of knowledge in the brain for retrieval.

Whether you use project-based learning, the project approach or service learning, if you intentionally target the above criteria, there is significant potential for increasing student motivation and learning. The AFT believes that if after-school activities engage and excite students and their after-school instructors connect what they are doing to school day learning, they will develop a more positive attitude toward learning that will carry into the regular day. Since project learning is more rare than other teaching strategies because of limitations placed on teachers by the structure of the day and often by demands of a school system, it is important to highlight the philosophy behind the strategy and the elements that enable it to bring success to students.

# Enhancing Student Engagement in Project Learning

The research on enhancing student engagement in the classroom or other academic settings is quite clear. Students who are engaged in their learning show greater enthusiasm and concentration on assigned tasks. This in turn creates a more positive attitude toward school as a whole which produces greater effort (Connell and Welborn; Skinner and Belmont). This has significant implications for the design of project learning experiences. We need to identify what excites students and will promote their interest and involvement.

As you plan projects for students, consider the following recommendations that support student involvement/engagement. It is not realistic to think you can satisfy all of the recommendations in any one project, but the more you can include, the more likely students will be to participate and learn.

## Select or create projects thoughtfully:

- **Purpose**—Topics should not only engage the interests of children or youth but have purpose and incorporate knowledge and skills that students need. Thus, it is a good idea to consider what the students need to strengthen and to consider how that knowledge and skill is actually used.
- **Focus**—When thinking about a driving question for a project, brainstorming about potential topics can help focus the question to something doable and worthwhile.
- **Authentic**—Real investigation should be possible. Data also show that when technology is available, it can add to the richness of students' investigations.
- **Relevant**—Think about areas of the curriculum that need to be shored up and imagine projects that relate to those areas.
- **On-going**—Provide numerous opportunities for students to communicate with their peers and the instructor.

## Select topics that ignite student interest in learning:

- **Choice**—When students have the opportunity to select their own topic it promotes interest and engagement (Wiggins and McTighe). This is not to be confused with setting students afloat to go anywhere they wish. A small menu should be carefully created to address a targeted area and should provide an opportunity to apply identified knowledge and skills.
- **Contemporary**—Try to select topics that are in the news and occurring right now. At the secondary level, for example, students are often motivated by topics that create debate or differences of opinion. Politics or environmental issues often create a great opportunity for students to explore and challenge their beliefs and opinions. If selected, be sure the approach to the project is consistent with district policy on the treatment of controversial issues and focuses on the students use of skills, evidence gathering, etc. and not on ideology.
- **Exciting or interesting to age group**—Try to identify topics that are of interest to your particular age group.

## Project activities should:

- **Be challenging**—Try to create activities that push students to apply or learn new skills. It is important to note that these skills may need to be taught in a mini-lesson. Such mini-lessons should be anticipated and planned.
- **Be interactive**—Provide opportunities for students to work in groups and share ideas. Often the traditional classroom does not promote as much social learning as a less structured after-school setting (Johnson; Sharan and Sharan).
- **Use a variety of skills: visual/auditory/kinesthetic**—Students learn in a variety of ways. Providing a range of opportunities and methods for students to express learning will help ensure that all students can contribute to group projects (Cohen; Willingham).

## Final Products/Presentations should:

- **Be purposeful** - Any effort to generate meaning for the products that students produce will further motivate them. Having more than just a grade promotes ownership and pride in the product and strengthens students' "can-do" attitudes and persistence.
- **Integrate skills**—As students work on a project it is important to integrate the various skills they will use. A



science project will often involve reading and writing and some use of mathematics. The more skills identified and used, the more likely the time spent on the project will be regarded as useful.

- **Provide opportunity for service learning**—Service learning is a great opportunity to promote purpose in a project.
- **Provide opportunity for students to teach other students**—Another great purpose for a project is to actually teach other students or adults. Learning fairs, symposiums or skits can often teach the audience.
- **Have a meaningful assessment**—Develop assessments that are authentic and linked to the identified skills and objectives. Be clear about what students need to know and do to meet these assessment objectives (Wiggins and McTighe).
- **Provide opportunities for collaboration**—Students can and do learn from each other. The research on social learning in the classroom is clear. Projects that promote student interaction have implications for social learning as well as cognitive lessons. Remember that productive ways of interacting must be taught and should be practiced.

### **Give students a sense of progress:**

When students work hard and see no progress, it is easy to get discouraged. Jacob Kounin’s research found:

As students perceive that an activity is becoming increasingly repetitious they become less involved in it and exhibit more off-task behaviors.... In effect, students begin looking for something more stimulating to do.

The most important element influencing the rate of satiation is a sense of progress. Students who feel they are not making definite progress either don’t become satiated or take considerably longer to become satiated.

Providing this sense of progress can be done in several ways.

- **Intermediate checks for progress**—It is crucial to identify “mileposts” or session goals so students can assess their progress and monitor their production. Creating a sense of progress is a crucial component in maintaining student engagement.
- **Student self-assessment**—Group and individual reflection is helpful in developing metacognitive skills in students. It is well established in the research community that creating an awareness of achievement and areas for further growth is essential to overall student learning (National Research Council).
- **Provide clear identification of learning goals and project quality**—Efforts to establish goals on a rubric or list will enhance student understanding and clarify expectations. This can be linked to the intermediate checks for progress. Having clear expectations for the final product helps students know what is expected so they can work towards meeting high level expectations.
- **Student accountability**—Assure that all students are held accountable for their work each day. If students are in groups, make sure that each student is clear about what they are expected to do (Rosenholtz and Wilson).

## Differentiating Instruction

There will be differences in how much responsibility young children can take and how much older students can take. Projects for younger students may be shorter in duration and less complicated. Students should be presented with a short list of options that still allow them to choose what they want to do but draws on the knowledge the instructor has about the students, the available resources and the community. Older students may be able to generate their own lists of projects from which to choose, although the instructor should always be ready with some suggestions. However, the instructor should exercise judgment in paring the list down—still leaving choice, but taking into account factors such as safety and resources. While younger students' activities may be more classroom-centered, older youth can take more responsibility and their work can be more complex. Older youth often choose to investigate controversial issues; be aware of school and community policy in such areas.

## Evaluating the Program

If you do not know what you want to accomplish you cannot assess whether you have succeeded. Thus the purpose of the after-school program should be clear, which will determine what kind of data will be useful. The AFT professional development modules included in this toolkit are designed specifically to boost academic development although they approach learning in a nontraditional way. This approach develops other important attributes in children and youth. Careful thought should be given to the following questions:

- What is the purpose of your program?
- What data will be gathered to demonstrate the impact of project learning on your goal(s)? When?
- How will you gather the data?
- What is the theory that connects particular projects to the achievement of academic goals? Who will analyze the data to assess whether progress was made? If progress was not made, did it lead to adaptations that worked better?
- One project is not sufficient to draw broad conclusions. How will you ensure a large enough sample to attempt any kind of judgment?

See a sample data collection table on the next page.

The goal of this toolkit is to see after-school staff increase their use of project learning and other project approaches. Our theory is that because this strategy embodies multiple aspects of learning and youth development, the model will lead to greater participation and improvements in students' attitudes, academic learning, perseverance with academic tasks and social skills. When approached for support, policy makers and those willing to fund programs require evidence of benefits to students. Staff themselves want to know that it is worth expending the extra planning and effort necessary to implement such a program. Therefore, it is important to gather data of effects on students. It is also necessary to gather data on the frequency with which Project Learning is used. Without such data, showing even a weak correlation between Project Learning and improvements for students will be impossible.

There are many variables that contribute to student engagement in academic learning. They include: interest, attitude and participation in activities. Some of these can be measured not only in the after-school program but in regular day participation, reflections of students, daily observation and from interaction with regular day teachers.

If you plan to show improvement after entry to the program, you should make some baseline notes about students at the beginning.

## Sample Data Collection Table

### Weather Project

Program Goals		<ul style="list-style-type: none"> <li>• Students will actively contribute to group learning activities</li> <li>• Students will demonstrate progress, academic knowledge and/or skills, i.e.:               <ul style="list-style-type: none"> <li>• data collection</li> <li>• graphing data</li> <li>• data analysis</li> <li>• descriptive writing</li> </ul> </li> <li>• Students will improve perseverance and/or initiative when solving problems</li> <li>• Students will exhibit joy and pride in accomplishment</li> </ul>	
Goal	Observation	When/How	Conclusion
Actively contribute to group project	All but two students consistently engaged in their part of group project.	Daily observations and notes as monitored group progress.	Project is a good strategy for engaging all.  Only two students unengaged.
Academic learning	All groups constructed bar and pictographs accurately.  Descriptive writing improved with feedback.  After the project, 80% of students accurately created a graph from another data set.	Mini-lesson and subsequent feedback on first graph led to construction of second graph independently.  Analysis during presentation.  Writing in final brochure.	Presenters gave accurate analyses of graphs.  Sentences were clear, complete, included appropriate descriptive words.  Pictures were imported and inserted in brochures.
Better understanding of graphed data	Students were able to graph avg. monthly data and explain it.	Following mini-lesson.  Final product and presentation.	No baseline to know whether an improvement.
Descriptive writing skills	Students wrote brief paragraphs for brochures.	Ongoing monitoring.	Used more descriptive words after initial feedback.  Were able to identify good descriptive words in peers' writing.
Improve perseverance and initiative	Initially several groups had difficulty getting started. Later some students offered own ideas to help their peers.	Ongoing monitoring.	Some emerging leadership and initiative.  Many still waiting for others.
Joy and pride in accomplishment	Students were excited to present their work to the whole group and principal. "Ours is best." Smiles.  Students shared brochures with regular day teacher/ class.	End of project.  Observation.  Report from students.	Everyone felt good about what they had produced together.

# Project Examples, Resources & Websites

PROJECT EXAMPLES,  
RESOURCES & WEBSITES



## **Project Examples, Resources and Websites**

This section of the toolkit provides example projects for reading, mathematics, science, writing and interdisciplinary at various grade levels. When selecting or creating projects, after-school staff should consider the school's or school district's interests and goals. If you conduct training for staff, use these examples to help participants see that there is more than one view of what constitutes a project. The examples for primary students and upper grades are also different in the level of responsibility required.

# Introduction

It is important to focus on nontrivial ideas if we want to advance important student learning. We have identified some of the most fundamental ideas within these content areas. These are ideas that surface over and over as students' expand their knowledge. They constitute some of the knowledge and skills around which mini-lessons should be built if students lack necessary knowledge during implementation of a project. Along with the list of important ideas, each section contains a few tips for strengthening knowledge.

Long lists of topics often obscure what is truly critical within a discipline, the ideas and skills that are the foundation for building other knowledge. When planning projects, consult the lists and target an area from which students can get a lot of mileage.

One of these examples may be appropriate for a first attempt or may be adaptable to your situation. Think about opportunities for students to use ideas that are really important within a discipline, are used often and can be built on and expanded. Collect copies of successful projects developed for your program so you can build a library of resources that others can use or adapt.

## Community Resources

When planning your projects, don't forget your community. Assistance for projects can come from a variety of sources:

- Restaurants will supply menus.
- You may be able to get donations of old newspapers and books that libraries are discarding because of age.
- Stores that publicize donations to schools may be willing to donate to after-school programs.
- Craftspeople and professionals may be willing to share what they know or pose a problem that students could investigate.
- Many companies ask employees to give service time to the community—get on their lists.

## Websites

We have provided a list of websites that you can visit to find additional plans for projects. There are many options but not all are of equal quality. It is easy to fall into the trap of selecting a project that is great fun but has little substance. Our recommendation is to connect to the regular school staff and first figure out what areas the school is highlighting that might be beneficial to work with. Then target your search or project creation.

Much that is posted online is worthy, but much is not. We urge you to:

- be purposeful about what you look for;
- be a careful reader of what any project entails;
- assess projects for how your students can or cannot apply knowledge and skills they are learning; and
- look at cost and availability of materials and resources.

### Classroom 2.0

Professional networking site designed for and by educators. Ning allows users to create groups, find colleagues and start and respond to discussions.

<http://classroom20.ning.com>

### Edutopia: The George Lucas Educational Foundation website

Offers multimedia resources that demonstrate the potential of project learning.

<http://edutopia.org>

### Global Education Collaborative

Professional networking site designed for and by educators. This Ning collaborative fosters conversation and collaboration around global awareness in teaching and learning.

<http://globaleducation.ning.com>



**Project Approach**

Teacher-developed projects to provide staff with resources to enable them to carry out projects wherever they may work.

**[www.projectapproach.org](http://www.projectapproach.org)**

**Project-Based Learning Online**

Incorporates the research-based model developed by the Buck Institute for Education.

**[www.pbl-online.org](http://www.pbl-online.org)**

**Global Learning and Observations to Benefit the Environment (GLOBE)**

Promotes hands-on science education worldwide. Some projects involve taking scientifically valid measurements in fields such as atmosphere, hydrology, soils and land cover.

**[www.globe.gov](http://www.globe.gov)**

**Global SchoolNet**

A clearinghouse for collaborative projects from around the globe.

**[www.globalschoolnet.org/gsh/pr/](http://www.globalschoolnet.org/gsh/pr/)**

**iEarn (International Education and Resource Network)**

The world's largest nonprofit global network that enables teachers and youth to use the Internet and other technologies to collaborate on projects that enhance learning and make a difference in the world.

**[www.iearn.org](http://www.iearn.org)**





## Reading Glossary

**Phonemic awareness**—Understanding that the words we say are made up of individual sounds (phonemes) and the ability to isolate, blend, segment and manipulate these phonemes.

**Phonics**—Accuracy in decoding and word recognition skills.

**Fluency**—Ability to read orally with speed, accuracy and proper expression.

**Vocabulary**—Words we must know to communicate more effectively; a continuum of word knowledge. Knowing the meaning, and sometimes multiple meanings of words, includes more than the ability to decode.

**Comprehension**—Understanding what is read.

**Story grammar**—Structure of narrative text including characters, setting, plot, problem/solution, resolution, theme and mood.

**Genre**—A type of literature, for example, folktale, science fiction or biography.

**Expository text structure**—Format of informational text including one or a combination of the following: cause and effect, problem and solution, compare and contrast, and/or description and sequence.

**Comprehension strategies**—Real time cognitive activity used to make sense of text including: monitoring one's understanding, generating questions as one reads, answering questions when reading, making inferences when information is not explicitly stated, summarizing what has been read, making mental images of what is being read, determining what is important, using graphic and semantic organizers, using knowledge of text structure and applying prior knowledge.

**Motivation**—Reading for pleasure or reading to gather information.

**Figures of Speech**—Expressions or techniques used by authors to convey meaning in non-literal ways. For example, a metaphor is a comparison, and simile is a comparison using the words "like" or "as."

**Background**—Without sufficient background knowledge students may be unable to understand text even when they can decode and understand figures of speech.

## Reading Websites

Most of the sites listed here provide information about recommended literature. A few are specifically dedicated to project learning.

### Children's Literature Awards

#### American Library Association Book Awards

Collectively these pages give information about some of the most important book awards in children's literature. The Randolph Caldecott Medal is awarded to the artist of the most distinguished American picture book, the Newbery Medal to the author of the most distinguished contribution to American literature for children, and the Coretta Scott King Award to authors and illustrators of African descent whose distinguished books promote an understanding and appreciation of the "American Dream." The pages give background information on the awards and a comprehensive list of award-winning titles.

Caldecott Medal: [www.ala.org/alsc/caldecott.html](http://www.ala.org/alsc/caldecott.html)

Coretta Scott King Award: [www.ala.org/ala/mgrps/rts/emiert/cskbookawards/index.cfm](http://www.ala.org/ala/mgrps/rts/emiert/cskbookawards/index.cfm)

Newbery Medal: [www.ala.org/alsc/newbery.html](http://www.ala.org/alsc/newbery.html)

#### Children's Book Committee at Bank Street College

The Children's Book Committee at Bank Street College was formed 75 years ago with the purpose of selecting the best children's books published each year. The site provides information on the committee, its book awards and publications, and its annual list of the 600 best children's books.

[www.bnkst.edu/bookcom/](http://www.bnkst.edu/bookcom/)

#### Orbis Pictus Award for Outstanding Nonfiction in Children's Literature

Sponsored by the National Council of Teachers of English.

[www.ncte.org/awards/orbispictus](http://www.ncte.org/awards/orbispictus)

#### The Rebecca Caudill Young Readers' Book Award

The Rebecca Caudill award was developed to encourage children and young adults to read for personal satisfaction. It is an Illinois award for outstanding literature for young people and is sponsored by the Illinois Reading Council, the Illinois School Library Media Association, and the Illinois Association of Teachers of English. Each year Illinois children from across the state read and vote for the winners from a list of 20 books.

[www.rebeccacaudill.org](http://www.rebeccacaudill.org)

#### Outstanding Science Trade Books for Students K-12

The books that appear in these lists were selected as outstanding children's science trade books. They were selected by a book review panel appointed by the National Science Teachers Association (NSTA) and assembled in cooperation with the Children's Book Council (CBC). The annotated listings include selector's choices, reading levels and relevant national science content standards.

[www.nsta.org/publications/ostb/](http://www.nsta.org/publications/ostb/)

#### Choices Reading Lists from the International Reading Association

Each year, thousands of children, young adults, teachers and librarians around the United States select their favorite recently published books for the "Choices" booklists. These lists are used in classrooms, libraries and homes to help young readers find books they will enjoy.

[www.reading.org/resources/Booklists.aspx](http://www.reading.org/resources/Booklists.aspx)

#### Notable Trade Books for Young People

The books that appear in these annotated book lists were evaluated and selected by a Book Review Committee appointed by National Council for the Social Studies (NCSS) and assembled in cooperation with the Children's Book Council (CBC).

Books selected for this bibliography are written primarily for children in grades K-8. Titles are arranged by broad subject categories and subthemes. Annotators have also indicated the thematic strand of *Expectations of Excellence: Curriculum Standards for Social Studies* to which the book relates. The Notable Trade Books for Young People list is published each year as an insert to the May/June issue of Social Education.

[www.socialstudies.org/resources/notable](http://www.socialstudies.org/resources/notable)

### **BookWeb: Literary Award Winners**

Award lists from many awards, including the Book Sense Book of the Year Award, the Caldecott and Newbery medals, the National Book Critics Circle Awards and the Pulitzer. Most awards listed have a children's or young people's section or are specifically for children.

[www.bookweb.org/btw/awards](http://www.bookweb.org/btw/awards)

### **Authors and Illustrators**

#### **Authors and Illustrators on the Web**

This section of David Brown's Children's Literature Web Guide is dedicated to children's authors and illustrators. Arranged alphabetically, Brown includes brief descriptions of the author sites and indicates those that are particularly comprehensive and useful.

[www.acs.ucalgary.ca/~dkbrown/authors.html](http://www.acs.ucalgary.ca/~dkbrown/authors.html)

#### **Children's Literature Web resources from ERIC Clearinghouse**

This comprehensive website provides links to literature, authors, book lists, book reviews and more.

<http://reading.indiana.edu/www/indexwr.html>

### **Book Reviews**

#### **Children's Bookwatch**

Lists of children's books reviewed since September 2001; arranged by genres.

[www.midwestbookreview.com/cbw/index.htm](http://www.midwestbookreview.com/cbw/index.htm)

#### **BookHive: Your Guide To Children's Literature**

Developed by the Charlotte-Mecklenburg Library in North Carolina, this site provides reviews categorized by genre and age level, with notes for parents.

[www.cmlibrary.org/bookhive/books/category.asp?category=win](http://www.cmlibrary.org/bookhive/books/category.asp?category=win)

#### **World of Reading**

Housed on the Ann Arbor (MI) District Library website, this site allows children to write and post short reviews about books they have read. Users can search by state and city to see if any reviews were written in their area. Teachers can submit reviews written by students.

[www.worldreading.org](http://www.worldreading.org)

#### **Cool-Reads**

Covers books for 10-15 year olds, reviewed and started in 2001 by two brothers when they were 11 and 13.

[www.cool-reads.co.uk](http://www.cool-reads.co.uk)

#### **Spaghetti Book Club**

Book reviews by kids for kids.

[www.spaghetlibookclub.org](http://www.spaghetlibookclub.org)

#### **KidLit.com**

Recommendations and reviews by gender, age and keywords. You can search for recommended books that may appeal to 12+ year-old-boys who read at the sixth grade level, for example. The search will give a title and synopsis of the book as well as Kid-Lit star ratings.

[www.kid-lit.com](http://www.kid-lit.com)

## Project Ideas<sup>2</sup>

Most projects will be related in some way to comprehension, understanding genres and developing dispositions to enjoy reading, read for daily living and/or read for information.

**Audiotape a book or play for the visually impaired.** Students first read the book, discuss its message, characters, and whether there are changes of mood that should be reflected as it is read. Pronunciations and meanings for unfamiliar words are clarified. Different students read dialogue for particular characters as such dialogue appears. The audiotape is presented to an appropriate institution or program in the community. (Comprehension, vocabulary and fluency are all addressed.)

**How do I know it? Let me show the ways!** Books/stories/information from articles are retold in other creative formats (plays, newspapers, comic books, puppet shows, song and dance, illustrated guides, etc.) and shared with an appropriate audience. Reading the targeted text and group discussion precedes the selection of the project(s) by different teams.

**Romeo, Juliet, who would you be today?** Reset a Shakespearean play into modern day and retell the story. Play reading and discussion for comprehension precedes the transformation.

**Books as Calls to Action.** Stories and songs arouse emotions. Emotions often spur a desire to do something. Discuss the fact that there are universal themes that authors use to create the conflicts or problems at the center of great literature. After eliciting several of these themes (greed, injustice, poverty, discrimination, war, love, selfishness, overcoming obstacles, fear, etc.) present students with a choice of books to read (e.g., *To Kill a Mockingbird*, *Romeo and Juliet*, *Grapes of Wrath*, *The Diary of Anne Frank*, etc.). Their discussions should tie the theme to modern problems. Students can plan a debate on how society should deal with the problem, an informative exhibit or event, or a service project to help alleviate the basic problem. An alternate approach is to have them select a theme and assign a book dealing with that theme.

**Is Shakespeare Still Relevant?** Students read at least one of Shakespeare's plays and identify the universal theme, which will still be relevant today. They then select a way to convince an audience of their opinions. Lends itself to debate, resetting in modern times, finding articles in newspapers (current and archived) and highlighting (and giving meaning to) quotes to think about today.

**Extend the Reading.** Students or groups of students can extend the reading of a common text from different perspectives and using different talents to reveal their understanding by engaging in any of these activities.

### Visual arts and crafts

*Create a(n):*

**Advertisement** to buy or read a book—Be prepared to explain what in the advertisement will attract people. Think about what in the book might attract people with different interests and backgrounds.

**Award** for the book—Awards are often certificates or plaques. What about the book deserves an award? What kind of award does it deserve?

**Book jacket**—The jacket should give a brief summary—but not give away the ending! It should also say something about the author.

**Bulletin board or posters**—List the funniest jokes or riddles from books, or amazing facts; the display is interactive and can grow over time as children add to it.

<sup>2</sup> Many of these ideas are excerpted from "Share with a Flare" by Anne Semple Bruce, Blue Ribbon Press.



**Chalk talk**—Using chalk on a chalkboard or markers on a white board, briefly retell the story in pictures while simultaneously relating it orally.

**Collage**—Show the important ideas, events or characters—Be sure you can tell why each part of the collage is there. What was its importance? All of the pieces together could present a message. What would it be for this book?

**Cartoon or graphic novel** of the story or part of it—Does the cartoon version illustrate the important events and feelings?

**Costume** for a character—Why is this an appropriate costume? Be able to tell us about the character in terms of who he/she is and about the setting of the story that would bring images of this costume.

**Diorama**—It should portray several important scenes that allow you to retell highlights of the story as seen in the diorama.

**Family tree** of a character—Some stories will not lend themselves to this very well. Choose only if a family tree is important to the story.

**Illustration** of a setting, favorite part or amazing or important facts—Be able to explain all you can about what you have illustrated. Was it the most important setting? The first? The last? What about the fact is amazing or important?

**Map** of the setting or a character's journey—As you point out different sites on the map, can you relate what happened there?

**Mask of a character**—Help others know the character. Who was he or she? What part did the character play in the story? Do you know someone like this character?

**Mobile of story elements (story grammar)**—Mobiles can be made from separate pieces of paper, on a cube, a balloon, or beach ball that can be hung with each element visible. Important parts of the story should be highlighted. These may include characters, setting, problem, solution, plot and theme. Very young children may use a simpler format of story beginning, middle and end.

**Mural**—Be sure you can tell what the mural shows and why you picked these things to be part of it.

**Painting**—Paint a scene; a part you liked, the turning point in the story, characters or illustrate an amazing or new fact you learned. Share why you chose what you did and what part it (they) played in the story as a whole.

**Poster** illustrating milestone events—Be able to explain their importance.

**Puppet of a character**—Create a puppet and be prepared to tell everyone about this character and its place in the book. Since it is a puppet, tell it from the perspective of the character through the mouth of the puppet.

**Scrapbook** based on information or events in the book—For this you will have to imagine the sequence of events and imagine artifacts or articles that might have been written as the events of the story unfolded.

**Three-dimensional characters** made of stuffed socks or other material—Tell about the characters and their place in the story or have them talk about themselves and their acquaintances.

**PowerPoint presentation** based on information from the book or retelling the story—This venue may be more appropriate for nonfiction books.

**Research**—Books and stories can be used to prompt research on the times, places and customs from the stories, to compare characters to historical figures or to find items in today's news that relate to the story. Such research should at the very least be presented to the rest of the class, perhaps inviting parents or community members or displayed as an exhibit in the hall.

**Performing arts and drama**

*Design and perform:*

**Accompaniment to a retelling or reading** of the story—Consider sound effects or music.

**Choral reading** of poetry.

**Graphics or use ready-made graphics**—Use them to highlight parts of the story or to retell it.

**Interview** with a character or with the author—This requires a partner, one to be the interviewer and one the interviewee. Try to think of what people listening to the interview would like to know.

**Memorize and recite** a passage from the book—Be able to tell what happened before and after this passage and what its significance is to the storyline. Several students could memorize favorite passages and present them at appropriate times as a narrator tells the whole story.

**Original song or rap** about the story—Be sure to pick up an important idea and know how it fits with the whole story if it does not tell the whole story.

**Oral critique** of the story or topics related to the story that have been researched—what made it interesting or not interesting; were the characters believable or were they meant to take you out of the world into fantasy and did they do that; what do you think of the theme of the story; would you want to read other books like this or by this author? This could be done as a panel show.

**Oral directions** of how to make or do something from the book—If possible, pick something that the audience will actually be able to make while you speak.

**Pantomime** the story, a scene, or a character for others who have read the book—Have the audience ask yes or no questions if they need clues.

**Parade of characters** from one book or a variety of books—Each character can tell about what he or she does in the story and how it all turns out from the character's perspective. They could tell something that happened to them and ask the audience to identify the book or story.

**Play**—Create a short play that summarizes the story and act it out using props and costumes (could be a spare tie, hat or ribbon).

**Radio commercial**—This is similar to a written advertisement but must be done with only sound. How can you make readers want to buy or borrow this book in up to 60 seconds time?

**Reader's theatre**—Students develop scripts, perform in groups and practice using their voice to depict characters from texts.

**Story retelling** orally to a group—Can you use your own words as a storyteller to get them interested? Can you create suspense, excitement or calm? Can you make them think the story is happening right there?

**Talk show** featuring the book or the author or a character from the book—Someone will be the host and others will play the author and readers and respond to questions.

**Television commercial**—Sell the book or a play about the book. Visuals are needed and could be produced as Power-Point or a story board.

**Travel lecture** about a particular setting or location in the book, using visual aids.

**Videotaped retelling** or re-enactment of a scene—Live performance is preferable.

## Written language

*Write a(n):*

**Alphabet book** or large poster with boxes for each letter of the alphabet with something corresponding to the story for each letter.

**Autobiography** of a character.

**Book review or critique** of the book—similar to oral project but written so it can be part of an exhibition.

**Biography** of the author or illustrator.

**Copy passages or phrases** from the book that are particularly memorable or well written—Keep such passages in a special journal or share on a poster with why you think they are special.

**Crossword puzzle or acrostic**—Create by using vocabulary or important characters, events or facts from the book.

**Diary or journal** of a character—Pretend that you are the character in the book. As each part of the story progresses, write an entry from the viewpoint of the character.

**Game questions**—Create questions based on the story that could be used in a game like Jeopardy or Twenty Questions.

**Investigation**—Does something in the reading make you curious about your own community or the people you know? Conduct a poll or gather data to find out. Display the data and interpret it for an audience.

**Letter to one of the characters**—This letter should focus on something that happens in the story to that character, expressing sympathy, outrage, desire to help, request, or questioning something that has been said or done. Your letter should show that you understand the story.

**Letter to the author**—What would you say to the author about the story? Did you enjoy it? Were you confused by something? Did it make you think or feel strongly? Did it make you think about something in your life?

**Letters between characters**—Imagine one character writing to another in the story. Think about their relationship. What might they each say to the other? Be prepared to explain why they would write what they do.

**Math story problem drawn from the story**—In many stories there are references to numbers or shapes or chance. If there are some in your book, can word problems be written about them? (Be sure to provide the solutions.)

**Newspaper or newspaper article**—Select an event and act as a local reporter. Write an article for the newspaper that captures what was happening. For historic reading, a whole newspaper page or two may be in order reporting on various aspects of the day.

**New title for the book**—Do you think the book could have a different title? Propose a new title and tell why you think it would be more appropriate than the one it has.

**Opinion and proof**—Write an opinion about a character or about a piece of information in a non-fiction book and then cite evidence from the book to support your opinion.

**Organize a community project**—If your reading has brought to mind a need in the community that young people can help with, organize a group for community service and carry it out (e.g., food or clothing collection, visiting the elderly, stories or songs on DVD, cleaning up the neighborhood, etc.).

**Persuasive article** or speech about the book or a subject explored in the book—Try to convince others to agree with your position on the topic explored or to take action about something the book has addressed.

**Poem** about a character or event in the book—Look at various forms of poetry such as acrostics, haiku, odes, etc.

**Propose legislation**—If the reading revealed a need in the community, propose a piece of legislation to correct what is wrong. Support your proposal with logical arguments.

**Reference book**—Create it from information learned in the book and related books.

**Riddles** about characters or events—Share them with an audience.

**Sequel or prequel** to the story—What happened before the book began? After it ended?

**Story rewrite**—Can you put a new ending on the story? At what point in the current book will the new ending begin to unfold? Why do you like this ending?

### Other Activities

*Create or use a(n):*

**Book talk**—Discuss several books that will entice other students to read them.

**Book discussion, book club or literature circle** to talk about the book with others—Books on some topics may lead to debates or campaigns.

**Book fair**—Have students showcase titles, authors and genres they've read.

**Build or create** something from the story—Pick something that is interesting to students. For example, a book about dogs might lend itself to building a doghouse; a book about frontier days might produce a rag or straw doll; a book about a million might lead to collecting or creating a million of something.

**Edible book fair**—Students can prepare or bring in a dish that relates to the book. For example, food arrangement or cake baked in the shape of the main character (works well if it's an animal), or a character's favorite dish, or food appropriate to a setting, or a type of food that's discussed in the book such as corn in a book about Midwest farming or Tang orange drink in a book about space exploration, or even food that's a pun on the title such as a cheese dip called "Velveeta Rabbit" based on the book "The Velveteen Rabbit".

**Graphic organizer** to categorize and relate ideas—When using any of these be prepared to explain to the audience what is written to help them understand the story, important aspects and relationships, or the author's devices.

- Story map
- Character map
- Semantic feature analysis
- Plot graph
- Timeline or calendar

**Artifacts**—Have them relate to the subject such as confederate currency in a book about the Civil War or shells in a book about the seashore.

**Organize a community project**—If your reading has brought to mind a need in the community that young people can help with, organize a group for community service and carry it out (e.g., food or clothing collection, visiting the elderly, stories or songs on DVD, cleaning up the neighborhood, etc.).

**Research** the topic of the book, the time period or the author—Present the information to others in an interesting way.

**Read** similar books—Select books by the same author, in the same series, on the same topic, or on the same topic but in a different genre such as nonfiction or poetry and compare to the original book.

## Sample Projects

We have included two project learning examples to illustrate how you might plan out your own reading project.

- Each project includes an **overview** or purpose of the project. We've included comments on the overview to highlight some of the important concepts, steps or skills that we've discussed in this toolkit and that should be included in your project plan.
- Following the overview are detailed **project sessions** or timeline for completing the project. The timeline is organized by individual after-school sessions. You may need to make adjustments if your time frame differs.

At the elementary level, it is expected that up to one hour of a session may be devoted to homework from the school day so the activities per session are planned for one hour.

For first and second graders, it will be important to break up the hour devoted to the project at appropriate times with activities that help children move and process. For example, students can take seven giant steps, stop, find a partner and tell the partner something about one of the characters in the story.

- Finally, relevant **resources, worksheets**, etc. are provided. These materials will vary by project and may include rubrics, questions for students to answer, websites, recommended reading lists, etc.

## Sample Project #1: Bringing Books to Life

Worthwhile goals;  
core skills

### Overview

Project title	Bringing Books to Life
Academic content and life skills touched	Reading, language arts, art Goals: reading, comprehending, interpreting, responding to text, writing Collaboration, communication
Grade levels	1-3
Hook/product	Public activity of choice to share a book/story (Art [diorama, picture book], drama, puppet show, TV talk show, news reporting, exhibition, journal)
Driving question or big idea	How can I bring a book to life? How can I help other people to enjoy this book?
Overview of project	Class selects a short book (or story) from a designated list, small groups read it several times using different techniques that allow the teacher to monitor and provide mini-lessons, if needed. Each group responds to teacher-prepared questions about the book and then selects a way to make the book come alive for the rest of the class (and invited guests) as a culminating activity. (Each group chooses a different activity.)
Resources	Is there someone in the community who can enrich information in the book? Has the book been made into a film?
State or local standards/curriculum	Consult own standards and curriculum
Length of project	8-10 hours per book read
Data collection	1. Does everyone in the group participate?
1. for assessing project	1. Do children enjoy reading and want to read another book/story?
2. for assessing learning	2. Do the presentations accurately represent the sequence and point of the story? 2. Do you see growth in vocabulary or fluency as rereads occur?
Supplies	Multiple copies of books, vocabulary cards, other cards related to comprehension, timeline, board games with book theme Films or artifacts related to the book Crayons, markers, writing tools, etc. Construction or chart paper Sentence strips
Games and learning activities for breaks, warm-ups and closers	Games on vocabulary, settings, plots, genres, etc. These can be concentration, matching or board games, "exit" activities such as telling one thing that was a surprise or a new vocabulary word.
Student reflections	Write a short reflection on the Bringing Books to Life project.

Provide  
choices

Hook the students

Connect to  
school day

Practice  
core skills

Self-  
reflection

## Bringing Books to Life: Project Sessions

Session Number	Tasks	Materials Needed	Time Needed
1	<ul style="list-style-type: none"> <li>• Project introduced.</li> <li>• Students select or are assigned a book to read.</li> <li>• Mini-lesson to introduce book and any background needed to understand it.</li> <li>• Teacher reads book aloud and leads discussion.</li> </ul>	Book lists and multiple copies of book  Book packet with teacher-prepared comprehension questions	1 hour
2	<ul style="list-style-type: none"> <li>• Teacher reviews a few words that might give students trouble.</li> <li>• Choral reading of the book—whole class.</li> <li>• Students reread book round robin in small groups and begin to work on questions.</li> <li>• Team revisits text to verify answers.</li> </ul>	Books and book packet  Vocabulary cards	1 hour
3	<ul style="list-style-type: none"> <li>• Instructor presents game to get at comprehension of book.</li> <li>• Paired reading of book or parts of book to enhance fluency (instructor monitoring).</li> <li>• Complete questions in small groups and review whole class.</li> </ul>		1 hour
4	<ul style="list-style-type: none"> <li>• Final oral reading as a large group.</li> <li>• Introduce and discuss various ways to share the book with others.</li> <li>• Discuss how groups work together to accomplish a task. (If appropriate, name group leaders and assign roles.) If roles assigned they should be rotated within the group.</li> <li>• Groups confer and select their projects.</li> <li>• Initial discussion of how they will work.</li> </ul>	Books and book packets  List of possible projects	1 hour
5–6	<ul style="list-style-type: none"> <li>• Review rules of working as groups.</li> <li>• Groups work on their project presentations.</li> <li>• Monitor and give ongoing feedback and encouragement.</li> </ul>	Books  Needs will vary with projects chosen (e.g., paper, paint, markers, computer, material for costumes, etc.)	2 hours

Session Number	Tasks	Materials Needed	Time Needed
7-8	<ul style="list-style-type: none"> <li>• Have students review rules for group work.</li> <li>• Practice presentations.</li> <li>• At end of last practice session, go over rules for respectful audiences.</li> </ul>		<p>1 hour</p> <p>Monitor whether more practice is needed.</p>
9	<ul style="list-style-type: none"> <li>• <b>Bringing Books to Life Day.</b></li> <li>• Other classes or parents are guests as groups present their projects.</li> </ul>		
10	<ul style="list-style-type: none"> <li>• Reflections written.</li> <li>• Reflection and celebration of <b>Bringing Books to Life</b> accomplishment.</li> <li>• Students may choose another book and regroup if this theme will continue.</li> </ul>	<p>Provide appropriate celebration (treats, trip, dance, etc.)</p>	



## Bringing Books to Life: Booklist

Books such as those in this list are appropriate for students in grades 1-3 and should be readily available.

### Selected books:

- A House Is a House for Me
- Annie and the Wild Animals
- Arthur Books
- Bernstein Bears Books
- Frog and Toad Books
- Gingerbread Baby
- Grumpling
- Katy & the Big Snow
- Legend of Poinsettia
- Little Bear Books
- Little Polar Bear Books
- Miss Nelson Is Missing
- Miss Spider
- Mixed-up Chameleon
- Moondance
- Mr. Putter and Tabby
- Spiders are Spinners
- Tacky the Penguin
- The Very Busy Spider

### Authors:

Hoberman, M.  
Brett, J.  
Brown, Marc  
Bernstein, J.  
Lobel  
Brett, J  
Cosgrove, S.  
Burton, V.  
de Paola, T.  
Minarik, E.  
de Beer, H.  
Allard  
Kirk  
Carle, E.  
Asch  
Rylant, C.  
Rosen  
Lester, H.  
Carle

## Expository books, including nonfiction and alphabet books

### Selected books for this level:

- The Accidental Zucchini,  
An Unexpected Alphabet
- Alligators and Crocodiles
- Butterflies Fly
- Capital! Washington DC from A to Z
- The Icky Bug Counting Book
- Slinky Scaly Snakes

### Authors:

Grover  
  
Trueit (A True Book)  
Winer  
Melmed & Lessac  
Pallotta  
Dussling

- The Spice Alphabet Book
- Wildflower ABC
- 1,2, 3, Thanksgiving!

Pallotta  
Pomeroy  
Nikola-Lisa

## Bringing Books to Life: Example Activities

### For narrative texts

- Draw a picture of what the story was mostly about and write a sentence about it.
- What was the main problem in the story? Write and draw a picture of the problem.
- What happened first in the story? Write and draw about it.
- What happened next in the story? Write and draw about it.
- What happened last in the story? Write and draw about it.
- Make a new ending for the story and write about it.
- Make a diorama out of a shoebox. Draw and color the main setting for the background.
- Draw, color and cut out the main characters in the story. Glue them in a diorama.

### For informational texts

- Write about and illustrate three new facts that you learned.
- If the book is about animals, draw and label four pictures that show the animal or type of animal, its habitat, what it eats and what its babies look like.
- If the book tells you how to do something, list the steps in order and try to follow. If you cannot, explain why you could not.
- What information in the book amazed or surprised you? Fold a paper in half and on the front write, "Did you know?" and inside write and illustrate what you thought was interesting. Share this with a friend.
- What new vocabulary did you learn? Find at least three new words. Write them, give a definition in your own words and draw a picture of what the word means.

### For alphabet books

- Pick 3 letters that you enjoyed reading. Copy what the author wrote and design your own illustration.
- If the book has only one word or a few words for each letter, see how much of the book you can memorize.
- Did you learn something from the book? Write about and illustrate three facts.
- Which letters had the most unusual words to go with them? Write these words and draw your own pictures.
- Think of other words that would match the letters. Make a new page for each letter. Be sure to stay on the topic.

### For specific titles

#### Miss Nelson Is Missing

- Draw a picture showing how the students in Room 207 looked when Miss Nelson was in the room. Write why they acted like that.
- Draw a picture showing how the students in Room 207 looked when Miss Viola Swamp was in the room. Write why they looked like that. (Don't forget to draw a picture of Miss Viola Swamp.)
- What did some of the students think happened to Miss Nelson? Write about it.
- What do you think happened to Miss Nelson? Write about it.

- Did the children have a secret? Write about it.
- What do you think Miss Nelson's secret was? Write about it.
- Make a "Wanted" poster for Miss Viola Swamp!
- Make a new disguise for Miss Swamp. Draw a picture of it. Describe it.

### **Frog and Toad: The Corner**

- Draw a picture of what "The Corner" was about and write a sentence about it.
- What happened first in the story? Write and draw about it.
- Tell what happened next in the story. Write and draw about it.
- At last, what happened in the story? Write and draw about it.
- What do you think would have happened if Frog and Toad had not found Spring around the corner? Write and draw about it.
- Send a postcard or letter to someone, telling what you like best about "The Corner."
- Draw, color and cut out the main characters in the story. Glue them in a triarama or hang from a mobile made from a hanger. (Triaramas are a 3-dimensional way students can display what they have learned about the story.)
- Make a shape book of a frog. Write about Frog's character.
- Use a ready-made envelope or wallet provided by the teacher to collect "long a" words on cards provided.

### **Slinky, Scaly Snakes!**

- Write about and illustrate *two* places where snakes can live, *three* animals they fear and *four* things that snakes eat.
- Use the index to reread about molting. Write one sentence to tell why snakes molt.
- Reread the captions next to the illustrations to find out how many different snakes are pictured in the book. List them.
- Think about the different ways snakes move. Use some rope or something that bends easily to show how they move.
- Draw a big fat letter S, like a bubble letter. Cut it out. Use it to trace and cut out three more letter S pages. Staple these into a flipbook. Illustrate the first page and use it as a title page. Write one fact on each of the other pages. Make your sentence follow the curve of the S as you write it on the page. Share your snake fact book with others.
- Seize the moment and arrange for a visit to the zoo or for someone from the community to bring in snakes to observe first-hand. A whole other investigation could emerge, sparked by students' interest.

### **1, 2, 3, Thanksgiving!**

- Reread the book several times. Write the numbers 1 through 10 in a row. Next to each number draw a picture of the food or thing that went with the picture. Try to do it from memory!
- Try these math problems: How many tomatoes and zucchini did the family eat? Sister had 3 cups of cranberries and Baby Brother had five raisins. Who had more fruit? Make up a math problem of your own.
- What would you put in the seven serving bowls? Draw a picture.
- Choose Thanksgiving or another holiday. Write and illustrate your own counting book to share with your friends.

- Children could contribute their favorite Thanksgiving recipies (theirs, not their moms') and create a class book or conduct a survey and compile things for which people are thankful.

### **The Accidental Zucchini, An Unexpected Alphabet**

- What did you think was the funniest picture in this book? Write about it.
- Find three new words. Write them, use them in a new sentence and draw a picture to show what they mean.
- Choose three letters and make up your own unexpected matches. Illustrate your pages, but before you do, study the illustrations in the book. Notice the details. Try to draw your illustrations in the same style.
- The letters Q and X are often the hardest letters to match in an alphabet book. Write why you think so. Then come up with some surprising matches for those letters.

## Project Example #2: Classic Literature

### Overview

Project title	Classic Literature Presentations
Content area(s)	Literature (reading)
Grade levels	Middle school and high school
Academic goals	Read and deepen understanding of classic novels; make connections and comparisons between the novel's plot/theme and today; journal; create a presentation using the novel
State and local standards	Consult own standards and curriculum
Prerequisite skills needed	Be able to read and discuss chosen classic novel; use resources such as a dictionary and a thesaurus; keep a journal; create and share end product by communicating effectively
Guiding question or big idea	How does a classic novel connect to our world today?
Organization/grouping of students	Partners or small groups
Length of project	2-4 weeks
Overview of project	Pairs or small groups of students choose a classic novel to read and share what it means in today's world. Students read a new chapter each day and discuss reading with a partner or in their small group. Students use a journal provided to record questions and thoughts after each session with the book. Students may want to use the Project Ideas list (page 34) for ideas to create a presentation that shows that the students understand the novel and how it relates to them and society today.
Important data to collect periodically during and after this project is completed	Each student is given a rubric of expectations. When they are ready to present, the teacher will use the rubric to assess the presentation. The student will also use the rubric as a self-assessment.
Resources (technology, people and places from community, printed materials, artifacts)	Music teacher, gym teacher, parents, homeroom teacher, librarian, library, dictionary, thesaurus, Internet. Classroom teachers may provide a list of classic books that they want students to choose from.  Internet sites:  <b><a href="http://dictionary.reference.com">http://dictionary.reference.com</a></b> Online dictionary gives definitions, auditory pronunciation, idioms, links to translations into other languages, visual images, and a thesaurus that gives synonyms, antonyms and visual word web  <b><a href="http://etymonline.com">http://etymonline.com</a></b> Online etymology dictionary explains word origins, what words meant and how they sounded 600 – 2,000 years ago  <b><a href="http://www.jeopardylabs.com">www.jeopardylabs.com</a></b> Online Jeopardy template to create your own game

Surface timeless issues and conflicts

Choice

Collaboration

Self-assessment

Performance-based assessment

Research; use technology

Project title	Classic Literature Presentations
Mini-lessons as appropriate	Word learning strategies (vocabulary) including use of dictionary and thesaurus; Story grammar (structure of a narrative); Theme
Hook/product	Students present their “novel” idea to the whole group. (Original poem or song, comparison of a popular song book or movie to the novel’s theme or plot, picture, artifact, diorama, drama, talk show, game, etc.)
Games and learning activities	End-of-the-week activity (exit or closure activity), if needed because students seem to be off track, have student groups share one thing they learned or do not understand about a novel. Games may be created cooperatively by teacher and students. Some ideas are Jeopardy (see online template), Bingo and Snowball Toss (in which everyone writes one thing they learned, wads the paper into a ball and all toss their snowballs to the center of the room. Students pick a snowball, read the idea and state the novel title and something else they remembered). A People Search is another review activity in which students move around the room finding people who can answer certain questions about the novel that have been developed and placed on a grid sheet.
Assessment/evaluation (answer big question and address curricular standards and objectives)	Teacher monitors daily journal entries and uses presentation project rubric to evaluate student’s understanding of the novel’s theme and plot and the student’s perspective on how the novel relates to today’s society. The teacher and student will use the rubric to reflect on the student’s communication skills.
Supplies	Multiple copies of classic books to read.  Art supplies: markers, writing tools, construction paper, chart paper, boxes to use for dioramas, tri-fold display panels; magazines for pictures, other materials as requested by students  Books, films, music, artifacts available that relate to the novels
Student reflections	Students rate themselves on their presentation as well as on their journal.

**Multiple ways to demonstrate learning; choice**

**Connect to current time**

**Meta-cognition; developing awareness of standards for work**

## Classic Literature: Project Sessions

Session Number	Tasks	Materials Needed	Time Needed
1. Introduction and choice of novels; expectations for journals	<ul style="list-style-type: none"> <li>Teacher states expectations of each day</li> <li>Novels introduced by teacher and chosen by partners</li> <li>Journals distributed; teacher sets expectations for daily journal writing and models an entry</li> <li>Novels read and discussed by partners; use dictionaries and thesaurus as needed</li> <li>Students record questions or thoughts about what they read in a daily journal entry. They consider how the novel's plot and theme connect to current society</li> </ul>	Classic novels Journals Dictionaries Thesaurus	1 hour
2. Continuation of reading and using journals; explanation of project and rubric	<ul style="list-style-type: none"> <li>Teacher reviews expectations of each day</li> <li>Teacher distributes rubric and explains the project choices for the final product</li> <li>Students continue to read novels and journal</li> <li>Partners discuss the new portion of novel that they have read</li> </ul>	Classic novels Journals Rubric for presentation guidelines Dictionaries Thesaurus Internet	1 hour
3–10. Continuation of reading and journals; work on project presentation	<ul style="list-style-type: none"> <li>Some students are continuing reading and using journals</li> <li>Students who have completed their novel work on their project using provided supplies or requisitioning other supplies</li> <li>Students locate information or resource people who may be able to assist them</li> </ul>	Art supplies (paper, paint, markers, glue, etc.) List of resource people Internet Dictionaries Thesaurus	1 hour Monitor to see if students need more time
11–14. Project presentation (No more than 2 per day)	<ul style="list-style-type: none"> <li>Students review rules for respectful audiences</li> <li>Students present the project presentation on their novel</li> <li>Students complete self-assessment using presentation rubric</li> </ul>		30 min.



**Classic Literature: Presentation Rubric\***

Name \_\_\_\_\_

Date \_\_\_\_\_

Novel \_\_\_\_\_

Date of publication \_\_\_\_\_

Author \_\_\_\_\_

Rubric Score T\_\_\_ S\_\_\_

1. The theme of this novel is:

2. This is how my project shows the way the theme connects to our world today:

**Rubric:**

4=powerful work

The novel was represented thoroughly, creatively and using a variety of effective communication skills such as (but not limited to) visuals and audience interaction. The project was completed in a timely manner. Cooperation between partners or group members was collaborative and enhanced the quality of the presentation.

3=capable

The novel was represented and communicated accurately. The project was completed in a timely manner. Group members cooperated fairly well.

2=developing

The presentation was a little unclear and may have benefited from more effective presentation techniques. It was completed in a timely manner. Group members collaborated to varying degrees.

1=undeveloped

The novel was not understood well enough to be presented clearly. Group members did not always cooperate and the project was not completed on time.

Key: T(Teacher) and S(student)

Use reverse side to explain score given.

\*This rubric is available on the CD-ROM included with this toolkit.

## Classic Literature: Mini-Lessons

### I. Vocabulary Mini-Lesson

Adapted from "Connect Two" in *New Directions in Vocabulary*, compiled by Barbara Abromitis, Blue Ribbon Press, 1992.

#### Connect Two

**Materials:** 6 – 10 vocabulary words written on paper or on index cards

**Objective:** To review new vocabulary; make connections between words; use new vocabulary in meaningful sentences

**Steps:**

1. Have students reread new vocabulary words and discuss their meanings.
2. If words have been written in a column on a sheet of paper have one student draw a line from one word to another. Student then uses the words in sentences to explain how they connect to each other.
3. If words have been written on index cards, place cards in a column. Student chooses two words and places them together. Student then uses the words in sentences to explain how they connect to each other.
4. Next student chooses two words and follows the same procedure.
5. Words may be connected to more than one word, but only one word at a time.

**Options:**

1. Students may choose one or more pairs of words and illustrate and write detailed explanations of the connections.
2. When students have become comfortable with the procedure they may work independently in pairs.
3. Students may use 12 – 20 vocabulary words, some of which are review words from previous lessons, and connect them like Dominos.
4. Students may be encouraged to reread the text to see if the author connects any of the words in the same way the student does.

**Example:**

Circus	Tent
Wheel	Bicycle
Elephant	Facilitator
Applause	

A student might respond, "A circus and a bicycle are connected because clowns ride bicycles in the circus."

## II. Vocabulary Mini-Lesson

Adapted by Corrine Grens from “Word Challenge” in *New Directions in Vocabulary*, compiled by Barbara Abromitis, Blue Ribbon Press, 1992.

### Word Challenge

Materials: 10 vocabulary words, Word Challenge worksheet

Objective: Review vocabulary words; make connections between words; categorize words

Steps:

1. Have students reread vocabulary words and discuss their meanings.
2. Students record the words in the left column of the worksheet.
3. Students work in pairs or individually to think of synonyms, antonyms, examples, and related words for each word.
4. Students share their work with each other.

#### Word Challenge Worksheet\* (Example)

Word	Synonym	Antonym	Example	Related Word
Allow	Let	Forbid	You can go to the party	Yes
Teacher				

Options:

1. Write riddles using the vocabulary words and their related words. Share with each other.
2. Copy a correct completed worksheet. Have students cut out each word entry and shuffle them and put into a pile. Students take turns picking a word and putting it in the appropriate column on a blank Word Challenge worksheet.

*\*This worksheet is available on the CD-ROM included with this toolkit.*

### **III. Strengthening reading skill and fluency**

1. Make board or matching games appropriate to the age of students. (See Games and Icebreakers section.) These games can target:
  - Rhyming words (decoding)
  - Sequence
  - Connecting characters and actions
2. Engage in partner reading, pairing more fluent with less fluent readers.

### **IV. Strengthening comprehension**

1. Play Jeopardy or Wheel of Fortune using categories related to the book read or topic investigated.
2. Have students create four-square vocabulary charts that give definitions, characteristics, examples and non-examples.
3. Have students create plays to reenact books or stories. Have they included the important events and grasped the nature of the characters?





# Writing Glossary

## Four Types of Writing

1. **Expository**—Taking a stand on an idea/issue and providing evidence to support that stand so that the reader can clearly understand the writer’s position.
2. **Descriptive**—Using details to evoke the five senses (smell, taste, sight, hearing and touch) and create an overall impression of the writer’s idea for the reader.
3. **Narrative**—Presenting an idea as an incident in a time-framed format, moving chronologically from one point to the next.
4. **Persuasive**—Taking a strong stand on an idea/issue and providing evidence to support that stand with the intent of helping to influence the reader’s thinking on the issue. Often the writer provides the opposing side’s arguments and presents evidence against those arguments. Sometimes the writer’s purpose is to argue that the reader should take a specific action.

## 6+1 Traits of Writing, from the National Writing Project

The 6+1 Trait Writing analytical model for assessing and teaching writing is made up of 6+1 key qualities that define strong writing. These are:

- **Ideas**, the main message;
- **Organization**, the internal structure of the piece;
- **Voice**, the personal tone and flavor of the author’s message;
- **Word Choice**, the vocabulary a writer chooses to convey meaning;
- **Sentence Fluency**, the rhythm and flow of the language;
- **Conventions**, the mechanical correctness; and
- **Presentation**, how the writing actually looks on the page.

### 1. Ideas

The Ideas are the main message, the content of the piece, the main theme, together with all the supporting details that enrich and develop that theme. The ideas are strong when the message is clear, not garbled. The writer chooses details that are interesting, important and informative—often the kinds of details the reader would not normally anticipate or predict. Successful writers do not “tell” readers things they already know; e.g., “It was a sunny day, and the sky was blue, the clouds were fluffy white ...” Successful writers “show” readers that which is normally overlooked; writers seek out the extraordinary, the unusual, the unique, the bits and pieces of life that might otherwise be overlooked.

### 2. Organization

Organization is the internal structure of a piece of writing, the thread of central meaning, the pattern and sequence, as long as it fits the central idea. Organizational structure can be based on comparison-contrast, deductive logic, point-by-point analysis, development of a central theme, chronological history of an event, or any of a dozen other identifiable patterns. When the organization is strong, the piece begins meaningfully and creates in the writer a sense of anticipation that is, ultimately, systematically fulfilled. Events proceed logically; information is given to the reader in the right doses at the right times so that the reader never loses interest. Connections are strong, which is another way of saying that bridges from one idea to the next hold up. The piece closes with a sense of resolution, tying up loose ends, bringing things to a satisfying closure, answering important questions while still leaving the reader something to think about.

### 3. Voice

Voice is the writer coming through the words, the sense that a real person is speaking to us and cares about the message. It is the heart and soul of the writing, the magic, the wit, the feeling, the life and breath. When the writer is engaged personally with the topic, he/she imparts a personal tone and flavor to the piece that is unmistakably his/hers alone. And it is that individual something—different from the mark of all other writers—that we call Voice.

#### **4. Word Choice**

Word Choice is the use of rich, colorful, precise language that communicates not just in a functional way, but in a way that moves and enlightens the reader. In descriptive writing, strong word choice resulting in imagery, especially sensory, show-me writing, clarifies and expands ideas. In persuasive writing, purposeful word choice moves the reader to a new vision of ideas. In all modes of writing figurative language, such as metaphors, similes and analogies, articulate, enhance and enrich the content. Strong word choice is characterized not so much by an exceptional vocabulary chosen to impress the reader, but more by the skill to use everyday words well.

#### **5. Sentence Fluency**

Sentence Fluency is the rhythm and flow of the language, the sound of word patterns, the way in which the writing plays to the ear, not just to the eye. How does it sound when read aloud? That's the test. Fluent writing has cadence, power, rhythm and movement. It is free of awkward word patterns that slow the reader's progress. Sentences vary in length, beginnings, structure and style, and are so well crafted that the writer moves through the piece with ease.

#### **6. Conventions**

The Conventions Trait is the mechanical correctness of the piece and includes five elements: spelling, punctuation, capitalization, grammar/usage and paragraphing. Writing that is strong in Conventions has been proofread and edited with care. Since this trait has so many pieces to it, it's almost an analytical trait within an analytic system. As you assess a piece for convention, ask yourself: "How much work would a copy editor need to do to prepare the piece for publication?" This will keep all of the elements in conventions equally in play. Conventions is the only trait where we make specific grade level accommodations, and expectations should be based on grade-level to include only those skills that have been taught. (Handwriting and neatness are not part of this trait, they belong with Presentation.)

#### **7. Presentation**

Presentation combines both visual and textual elements. It is the way we exhibit or present our message on paper. Even if our ideas, words and sentences are vivid, precise and well constructed, the writing will not be inviting to read unless the guidelines of presentation are present. Some of the guidelines include: balance of white space with visuals and text, graphics, neatness, handwriting, font selection, borders, overall appearance. Think about examples of text and visual presentation in your environment. Which signs and billboards attract your attention? Why do you reach for one CD over another? All great writers are aware of the necessity of presentation, particularly technical writers who must include graphs, maps and visual instructions along with their text. Presentation is key to a polished piece ready for publication.



## Tips To Support Student Writing

Writing is more successful when students:

- are allowed to select a topic of high interest to them;
- identify something to say about that topic that commits them to a direction, a stand, an opinion worth sharing that can help someone else understand why the topic is important and interesting;
- discuss and find resources for learning more about the topic and that help support their opinions;
- plan a timeline;
- write a rough draft;
- edit and rewrite; and
- produce a final draft and share it.

The National Writing Project ([www.nwp.org](http://www.nwp.org)) recommends the following tips for engaging students in the writing process.

1. Use the shared events of students' lives to inspire writing.
2. Use writing to improve relations among students.
3. Ease into writing workshops by presenting yourself as a model.
4. Use casual talk about students' lives to generate writing.
5. Give students a chance to write to an audience for real purpose.
6. Practice and play with revision techniques.
7. Encourage descriptive writing by focusing on the sounds of words.
8. Require written response to peers' writing.
9. Challenge students to find active verbs.
10. Ground writing in social issues important to students.
11. Use real world examples to reinforce writing conventions.
12. Introduce multi-genre writing in the context of community service.

## Writing Websites

A simple online search on writing will uncover a mountain of resources of all kinds for the educator, everything from basic definitions to rubrics to detailed lesson plans. Some samples of resources are provided below.

### **Google Educator**

Website for educators, to assist in teaching students to search, including basic, intermediate and advanced lessons.

[www.google.com/educators/p\\_websearch.html](http://www.google.com/educators/p_websearch.html)

### **Grammar, Usage, and Style**

A good listing of websites on grammar, usage, and style—for staff to use.

[www.refdesk.com/factgram.html](http://www.refdesk.com/factgram.html)

### **Lee's Summit**

A potpourri of excellent resources that cover the various aspects of writing, including punctuation, 6 traits, student and teacher resources and much more.

<http://its.leesummit.k12.mo.us/writing.htm>

### **Nellie's English Projects**

Website designed to walk students through a process of identifying and developing a topic for a paper; very handy for grades 7-12, especially if they are challenged in narrowing down their topic and if they have access to the Internet to do research on their topic.

[www.nelliemuller.com/collaborative\\_Projects.htm](http://www.nelliemuller.com/collaborative_Projects.htm)

### **Read Write Think**

Student materials index, providing games and lessons to help with building writing skills.

[www.readwritethink.org/student\\_mat/index.asp](http://www.readwritethink.org/student_mat/index.asp)

### **Web English Teacher**

A strong, multi-faceted writing resource website that provides links to graphic organizer downloads, sample writing projects already found to be of interest to students, and other resources for teaching/learning such as checklists for students to help them with editing and peer editing.

[www.webenglishteacher.com](http://www.webenglishteacher.com)

### **Web Search 101: The Basics**

Resource for staff to help students conduct web searches.

[websearch.about.com/](http://websearch.about.com/)

### **Writing Fix**

Complimentary lessons, ideas and resources for classrooms in support of the 6 traits for students.

[www.writingfix.com/Traits.htm](http://www.writingfix.com/Traits.htm)

### **Writing Resources**

A good writing resources site for definitions of the types of writing plus writing samples, checklists, word charts and other tools. It includes the cause/effect essay, comparison/contrast, definition and process analysis essays as well as the more familiar four types.

<http://ksdl.ksbe.edu/writingresource/typeswriting.html>

## Project Ideas

Use these ideas to engage students in writing, to customize lessons or initiate projects for your students. Be sure to bump project expectations up or down so they are rigorous but appropriate for age and achievement levels.

**Shared events.** Is something going on in the school or community that affects the students? Whether it is a measure of discontent over conditions or something worthy of celebration, students can explore the roots of the condition, devise an action to make it better or analyze how a high moment came about and how to make others happen.

**Improve group relations.** Is there friction among students or groups of students? Have students think and write about causes and possible actions to improve relations. Share these thoughts, hold discussions or debates and present possible solutions.

**You, the editor.** Scavenger hunt for writing in newspapers and magazines, even blogs, that is unclear, ambiguous or open to misinterpretation. How would you edit it? (Jay Leno Headlines books are a great source of poor and ambiguous real world writing.)

**Picture it as a play!** Turn a book, event or concern into a play. Enact the play for an appropriate audience.

**Tourist Guide to Your City.** Create a tourist guide for your city. This requires research, discussion, writing, design, manual or computer production. What is worthy of being part of a guide? What will make it easy for visitors to use?

**Report a storyline (book) as if it were a current event.** Create a newspaper or a series of stories that run on the front page.

**Character's diary retells a story.** Pretend individuals or group members are characters in a story. Each records the story from his/her point of view. A good basis for discussion.

**The book in poetry.** Create poems that capture a book. Use haiku, limerick or longer forms.

**Letters to legislators.** Create a letter-writing campaign around issues of importance to the students or community.

**Children's book creation.** Help younger children learn by creating a book for them.

**Produce a newspaper for the school or after-school program.** What might be included? Special projects? Profiles of students or staff? Problems? Concerns that have been taken care of? Events to look forward to? Include photos, art work, student essays or poetry.

### Sample Projects

We have included two project learning examples to illustrate how you might plan out your own writing project.

- Each project includes an **overview** or purpose of the project. We've included comments on the overview to highlight some of the important concepts, steps or skills that we've discussed in this toolkit and that should be included in your project plan.
- Following the overview are detailed **project sessions** or timeline for completing the project. The timeline is organized by individual after-school sessions. You may need to make adjustments if your time frame differs.

At the elementary level, it is expected that up to one hour of a session may be devoted to homework from the school day so the activities per session are planned for one hour.

For first and second graders, it will be important to break up the hour devoted to the project at appropriate times with activities that help children move and process. For example, students can take seven giant steps, stop, find a partner and tell the partner something about one of the characters in the story.

- Finally, **relevant resources, worksheets**, etc. are provided. These materials will vary by project and may include rubrics, questions for students to answer, websites, recommended reading lists, etc.

## Sample Project #1: What's in My Name?

### Overview

<b>Project title</b>	What's in My Name?
<b>Content area(s)</b>	Language arts, social studies, history
<b>Grade levels</b>	6-12
<b>Academic goals</b>	<p>Build student skills in:</p> <ul style="list-style-type: none"> <li>• gathering and using information from research;</li> <li>• working with researched content;</li> <li>• writing style and structure at age-appropriate levels; and</li> <li>• evaluating and synthesizing information in order to draw conclusions.</li> </ul>
<b>State and local standards</b>	Varies by state and student age, and most are available online at states' education department websites.
<b>Skills used in this project</b>	<ul style="list-style-type: none"> <li>• sentence writing, formation</li> <li>• paragraphing</li> <li>• web searches—use of Google</li> <li>• library search skills</li> </ul>
<b>Driving question or big idea</b>	What is the history of your first and last names? (Note: Depending on time limitations, you may want to focus on one or the other, student's choice, rather than both.)
<b>Length of project</b>	4-5 sessions, depending on the time needed by students to do searches and writing, which may be driven by student interest in the topic.
<b>Organization; grouping of students</b>	Individual searches and writing; Small groups of three or four to brainstorm ideas
<b>Overview of project</b>	<p>Students are introduced to concepts of meaning and history of names and provided time and resources to research their own names. Once they have gathered their research and organized it into a short paper of two or more pages, they are given time to share their findings with their peers.</p>
<b>Important data to collect periodically during and after this project is completed</b>	<ul style="list-style-type: none"> <li>• Individual student challenges as they work on the project and help provided by staff—staff can use student checklists as a means of monitoring progress</li> <li>• The final paper produced by each student: level of completion, standards met</li> <li>• Student reflection piece, with its identification of needs, interests, concerns and successes</li> <li>• Student participation in learning activities and games</li> </ul>

Research and  
writing skills

Student  
interest; hook

Apply disciplinary  
skills; share findings

<p><b>Resources (technology, people and places from community, printed materials, artifacts)</b></p>	<ul style="list-style-type: none"> <li>• Access to the Internet</li> <li>• Article, “And If It’s a Boy, Will It Be Lleh?” or similar reading that focuses on the meaning of names. <a href="http://www.nytimes.com/learning/teachers/featured_articles/20060519friday.html">www.nytimes.com/learning/teachers/featured_articles/20060519friday.html</a></li> <li>• Handout article with instructions and task checklist for students, one to a student. A copy of the article and a general checklist are included on the CD-ROM.</li> </ul>
<p><b>Mini-lessons as appropriate</b></p>	<ul style="list-style-type: none"> <li>• Use of Google or other sites as a search engine—basics in types of words or terms to enter, what the findings mean (blue lines lead to responses).</li> <li>• Modeling and examples of searches on the web and in books and articles.</li> <li>• The 4 types of writing—expository, descriptive, narrative, persuasive—to help students build variety in their writing.</li> <li>• Methods for documenting bibliographical information so students know how to keep essential information about their sources. (A guided worksheet could be provided, especially to help younger students.)</li> <li>• How to document within a document using author’s names in parentheses, for example, and how to develop a bibliography. NOTE: Keep this task as simple and easy as possible.</li> </ul>
<p><b>Games and learning activities</b></p>	<ul style="list-style-type: none"> <li>• Small-group activity with each group matching names with their meanings, the handout being prepared in advance by staff.</li> <li>• Small-group activity with search assignment that gives each group practice in using Google and/or hard copy materials to find answers to quick questions. Questions should be focused on names of famous people, places, etc., of interest to students.</li> <li>• Time for each student to present his/her name findings to peers. This can be a celebratory time, complete with some kinds of rewards. It can be one on one, in small groups or in whole group.</li> </ul>
<p><b>Assessment/evaluation (answer big question and address curricular standards and objectives)</b></p>	<ul style="list-style-type: none"> <li>• Student papers</li> <li>• Debriefing with students, one-on-one with staff about what the student has learned, both in content and process.</li> </ul>
<p><b>Student reflections</b></p>	<ul style="list-style-type: none"> <li>• Sharing with fellow students and/or staff: “What did I learn?”</li> <li>• Short (no more than one page) written response about what the student learned, both about his/her name and about the writing and research process. (One way of approaching this is to ask the student to role play as a mentor for other students the process of completing the assignment.)</li> <li>• Reflection on how student would like to improve in doing similar assignments in the future. (Emphasize the importance of effort over ability.)</li> </ul>

Sharing: a sense of accomplishment

Self-reflection

## What's in My Name? Project Sessions

Session Number	Tasks	Materials Needed	Time Needed
1	<p>To generate student interest, open the project by presenting examples of the meaning of individual's names. Read and discuss an article regarding name meanings. Discuss how people name their children and why they make the choices they do. Ask students to share what they know of how their names, or those of their family members or friends were selected.</p> <p><b>Discuss:</b></p> <ol style="list-style-type: none"> <li>1. Why are names important?</li> <li>2. What relationship might there be between a name and a personality?</li> </ol> <p>Ask students to write their names on a sheet of paper, first and last. Ask them to write anything they know about their names. Then ask them to write what they like about their names. Provide time to share findings as students offer to share.</p> <p>Explain the purpose of the project they'll be working on: To learn the history and meaning of their names. Provide a single-page handout of instructions and timeline and checklist of tasks for each student, and provide time for students' questions.</p> <p>Check for students' prior knowledge about web searches. Also, during discussion, list on the board ways students can investigate their names. This would be a good time for a mini-lesson on web searches, allowing students to brainstorm their own ideas.</p> <p>Segue into time for students to look at books on names or begin their searches.</p> <p>With 5-10 minutes left in the session, check with students to discover any questions they may have and to explain what the next session will cover.</p>	<p>Copy of article or paragraph focusing on name meanings, such as, "And if It's a Boy, Will It Be Lleh?" from the NY Times—one copy per student. (<a href="http://www.nytimes.com/learning/teachers/featured_articles/20060519friday.html">www.nytimes.com/learning/teachers/featured_articles/20060519friday.html</a>)</p> <p>Books or articles with information about names (from library, bookstores, etc.—Baby-naming books are usually inexpensive and easily found.)</p> <p>Access to the Internet</p> <p>Paper</p> <p>Pens/pencils</p> <p>Classroom board &amp; chalk</p> <p>Handout of instructions, task checklist and timeline, one to a student.</p>	30-45 minutes (depends on time given to students for searches)

Session Number	Tasks	Materials Needed	Time Needed
2	<p>Review briefly what was covered in the first session, preferably by asking the students what they recall. Check for questions; then review the assignment, making sure students know what’s expected in the session. Here is a good place to provide a game or mini-lesson as needed to ensure students know what they need to do and how to do it, as well as to enhance motivation for completing the assignment.</p> <p>Provide students with time and resources to work on their project. Provide individual help as needed. The goal of this session is for students to collect as much information as possible in order to be ready to write their first draft in the next session.</p> <p>With 10 minutes left in the session, bring students together as a whole group, checking for questions, sharing what has been learned so far and what students still need in order to succeed at their tasks. Be sure students know what to expect for session 3.</p>	<p>Internet access</p> <p>Books and articles on the topic</p> <p>Handout describing the assignment, along with checklist/timeline for steps of student work.</p> <p>Guided worksheet for student use in collecting information:</p> <ul style="list-style-type: none"> <li>• Notes on name meanings, plus bibliographical information for each source used</li> </ul> <p>For older students: how to set up a bibliography.</p>	30-45 minutes
3	<p>Check for questions and review the expectations for this session.</p> <p>At this stage, students can use the guided worksheet to develop the first draft of their written report.</p> <p>With 5-10 minutes left in the session, debrief the level of progress, questions and student needs for the next step in the process. Review expectations for the next session.</p>	<p>Guided worksheet for student use in writing the first draft.</p>	45 minutes
4	<p>Check for questions, review expectations for the session.</p> <p>Students work on the final draft of their paper, and if time allows, prepare to share their findings in their next session.</p>	<p>Poster paper and markers for students to use to prepare for sharing their findings about their names (2-3 minutes per student).</p>	45 minutes
5	<p>Brief celebratory opening, as students should have projects completed.</p> <p>Provide time for students to make final preparations and to share their findings.</p> <p>Students share findings and turn in their papers.</p> <p>Provide 5-7 minutes for students to reflect on learning. A closing for the session can include student popcorn activity where they state aloud what they have learned.</p>	<p>Poster paper and markers for student sharing—if possible, set chairs in circle, making experience more personal and non-threatening. If students prefer, staff can take notes as each student reports.</p>	45 minutes



## Sample Project #2: Admirable People

### Overview

<b>Project title</b>	“Admirable People” or “Special People”—descriptive word depends on the students’ grade level
<b>Academic content and life skills touched</b>	Reading, researching (Internet, books, magazines), writing skills (6 traits, expository)
<b>Grade levels</b>	3-12 (Adaptable to grade levels)
<b>Hook/product</b>	Group activity: Students brainstorm names of people (fictional or real) whom they admire and discuss reasons why.
<b>Driving question or big idea</b>	“Who is one person you admire very much?” or “Who is one person that you think is very, very special?”
<b>Overview of project</b>	Students engage in a dialogue about people they admire and share some of the reasons for their admiration. Each student selects one person as the focus of a paper, or a small group of 3-4 students may agree on one person to develop a joint report on. The instructor takes the students through the writing process, providing mini-lessons as needed to help students collect information, develop a graphic organizer to prepare for writing, write a draft, edit and rewrite, and finalize the product for sharing.
<b>Resources</b>	Internet, interviews of the person, books, magazines
<b>State and local standards/ curriculum</b>	Varies by district and state. Most states have standards available on their department of education websites.
<b>Project length</b>	Depending upon age/skill levels, five to 10 after-school sessions
<b>Data collection</b> <b>1. for assessing project</b> <b>2. for assessing learning</b>	Prepare a checklist grid for the steps of the project, allowing spaces for tracking areas of difficulty and student progress on the steps.  1. The student papers will serve as the assessment products.  2. Student reflection activity (written or verbal).
<b>Supplies</b>	Resources for research (access to Internet, books, magazines); copier access; possibly a camera or other means to provide a picture of each of the subjects of the project; newsprint and markers; tape for posting posters
<b>Games and learning activities for warm-ups and closers</b>	<ul style="list-style-type: none"> <li>Brainstorming admirable people or other aspects of the tasks involved</li> <li>Sample paragraphs are available from the Oregon Department of Education, which can be used for student lessons. Students benefit when they discuss any of the six traits of writing and then take time to assess and discuss sample paragraphs.</li> </ul>
<b>Student reflections</b>	Among possible options: Sharing among peers or with staff member; writing a journal entry in response to “What did I learn from this project?” creating an exhibition for others in the school or invited guests.

## Admirable People: Project Sessions

Session Number	Tasks	Materials Needed	Time Needed
1	<p>Open with a brainstorming of people and qualities that students admire, taking notes on chart paper with large markers for easy viewing. (Post chart for later reference.)</p> <p>Give each student a 3x5 card and ask students to write one to three people (living, historical, fictional, etc.) whom they personally admire, and list some of the things they admire about the person(s). Provide time for students to share anything they want about content or process.</p> <p>Model the use of the Internet or written materials for searching for information about admirable people. Check for student questions. Provide students with checklist and outline handouts, walking through them as you model.</p> <p>Provide time for students to begin searches, either individually or helping each other in supportive small groups.</p> <p>Leave 5 minutes at the end of the session to preview what will occur in the next session, invite students to bring their own sources if they like and clear up any questions.</p>	<p>3x5 cards, one to a student</p> <p>Chart paper and markers</p> <p>Internet access, printers</p> <p>Articles, handouts, books, etc., related to topics</p> <p>Handouts with checklist for task steps for students</p> <p>Handouts with outline for student use</p> <p>Supplies for students if you select to make this a creative assignment as well as written</p>	45 minutes
2	<p>Review assignment and check for questions.</p> <p>Students work on collecting information about their admired person and completing the outline.</p> <p>Mini-lessons as needed.</p> <p>Leave 5-10 minutes at the close of the session for students to debrief some of their findings, share successes in their searches, address questions that they generated during the work session.</p> <p>Review the agenda for the third session.</p>	<p>Handouts</p> <p>Internet access and other materials as needed</p>	45 minutes
3	<p>Review assignment and check for questions. Move to mini-lesson as needed.</p> <p>Students write a first draft from their outline.</p> <p>With 5 minutes remaining in the session, debrief the process, check for questions, and review the agenda for the 4th session.</p>	<p>Handouts, mini-lesson supplies as needed</p> <p>Paper and writing utensils as needed</p>	45 minutes

Session Number	Tasks	Materials Needed	Time Needed
4	<p>Review agenda for the session and check for questions.</p> <p>Students use time to review their first draft and make corrections. This could be a good time for students to do guided peer reviews, using one or more of the 6 traits of writing.</p> <p>Based on student need for mini-sessions, a 5th session may be needed for students to refine their papers.</p> <p>If students finish with at least 15 minutes remaining in the session, use the time for debriefing what they learned and for celebration as students turn in their papers.</p>	<p>Handouts, paper and writing utensils as needed</p> <p>Mini-lesson supplies</p>	45 minutes

**Admirable People: Sample Outline to Guide Students\***

Thesis: I admire \_\_\_\_\_.

- I. One reason I admire \_\_\_\_ is because \_\_\_\_\_.
  - a. An example is \_\_\_\_\_. (Source: \_\_)
- II. Another reason I admire \_\_\_\_ is because \_\_\_\_\_.
  - a. An example is \_\_\_\_\_. (Source: \_\_)
- III. Finally, I admire \_\_\_\_ because \_\_\_\_\_.
  - a. An example is \_\_\_\_\_. (Source: \_\_)

In conclusion, \_\_\_\_\_ is a person to admire.

**Note for Staff:**

Increase or decrease the components of the outline as age- and skill-level appropriate. Seniors, for example, may be able to add three examples for each of their reasons, and make a paragraph out of each reason they provide. Depending on ability level, students can include source material in varying levels of completion and complexity.

The outline is simply a tool to help them organize their expository paragraph or paragraphs. Once they have completed the outline, they can easily convert it into paragraph(s), especially if they have an opportunity to look at sample outlines with their completed paragraphs.

*\*This worksheet is available on the CD-ROM included in this toolkit.*





## Mathematics Glossary

**Numbers:** Students should understand the meaning of numbers, the quantities they stand for and be able to order real numbers on a number line. They develop number sense through counting, using benchmarks, doing mental math and being able to make reasonable estimates.

**Equivalence:** There are many ways to express one quantity and students should be able to compare expressions and determine whether equivalence exists. If not, they should know which represents more. Very closely related is the concept of the equal sign. Quantities on two sides of an equal sign must be equivalent.

**Operation meanings and relationships:** Different expressions or numbers can express the same situation; one expression can represent different situations. Meanings of operations remain the same regardless of the numbers involved. Sometimes different operations can be used to solve the same problem. For example, *Jimmy has 12 crayons now. He gave away some but had 15 earlier. How many crayons did he give away?* Children can think  $15 - 12$  or add  $12 + ? = 15$ .

**Some relationships are always true:** Understanding them can help people navigate new situations. Generalizing those relationships creates algebraic expressions.

**Rational numbers are points on the number line:** These numbers acquire meaning in the context of what they refer to:  $\frac{1}{4}$  inch or  $\frac{1}{4}$  of the crowd? 0.8 of a meter or 0.8 of a dollar? The effects of multiplication and division are different when fractions and decimals between zero and 1 are used.

**Estimation:** This is a legitimate skill that relies on a good understanding of numbers, number systems and operations. Estimation helps students decide whether their solutions are reasonable.

**Patterns:** Patterns can be described, generalized and used to make predictions. Pattern recognition is often a clue for solving problems.

**Variables are an underlying foundation of algebra:** Situations can be described mathematically without using numbers with a variable representing a range of possible numbers. For example, no matter how many squares you place end to end, if the side of a square is "1," the perimeter will always be two times the number of squares (top and bottom) plus 2 (ends), so we can say  $p = n + 2$  and find the perimeter for any number of squares easily.

**Ratio and Proportion:** Ratio is the relationship between two quantities (1 kit for every 4 students). If the relationship remains constant as the number of students (or kits) increases the relationship is proportional. Two equivalent ratios create a proportion.

**Functions and relations:** If a quantity changes in a regular way (e.g., always +5), the change is a linear function. If the changing quantity is graphed, it creates a straight line. If all the changes are not the same, the graphed line is not straight.

**Shapes and solids:** These are used to describe physical aspects of the environment. Changing position or orientation does not change a shape. But shapes, like numbers, can be decomposed, recomposed or completed to enable problems to be solved.

**Measurement:** This allows precise description and construction of both physical objects and abstract ideas such as time. It plays a large role in everyday life.

**Data collection, representation and distribution:** Information can be collected and displayed to make it more easily understood. Various measures can be used to analyze data, each being more appropriate for some purposes than others.

**Chance:** This strand of mathematics treats understanding how probable it is that events will occur or recur.

**Solving word problems:** To solve word problems, students must understand what is happening in a situation and not simply look for one or two words that are supposed to tell them what to do.

## Mini-Lesson Tips

During mini-lessons, help students:

- Articulate what they are thinking.
- Tap into their prior knowledge.
- Understand concepts behind processes.
- Be able to articulate and discuss why a procedure or strategy is appropriate.
- See multiple ways to solve problems.
- Use objects, drawings and charts to clarify what is happening but explicitly help students see how these representations relate to mathematical notation.
- Embed concepts and skills in situational problems to help students make sense of the ideas.
- Explicitly connect ideas.

Actively probe their understanding.

Encourage and elicit more than one solution.

Ask questions to guide thinking and build memory instead of telling. Particularly helpful as students work with mathematics are questions that prompt them to:

- » visualize;
- » decompose or take numbers apart so they can more easily be worked with;
- » think back to something they have done previously that is similar and could help; and
- » identify information that will be helpful in solving the problem.



**Computation and Problem-Solving Strategies**

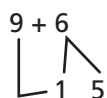
One of the most difficult areas identified by after-school staff is helping students with math. We include some tips on helping students who are being taught computation with some newer and more traditional strategies. We also provide a model for helping students think through word problems that has emerged from high-achieving East Asian countries.

**A. Strategies that use and build number sense**

Addition and subtraction: Working with ten(s)

Help students use numbers that are easy to work with. Get the very young to work with 10. It is easy to add numbers that end in zero in your head. Students should become very comfortable with all the combinations that make 10!

**Problem**

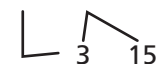


$10 + 5 = 15$   
 $9 + 6 = 15$

**The mathematical thinking**

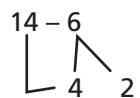
To make 9 into 10 you need 1 more so think of 6 as 1 & 5

$27 + 18$



$30 + 15 = 45$   
 $27 + 18 = 45$

To make 27 into 30 you need 3. Split 18 into 3 & 15.



$10 - 2 = 8$   
 $14 - 6 = 8$

To subtract from 10, first take away 4 ones. See 6 as 4 & 2.

$72 - 38$

$72 - 40 = 32$

$32 + 2 = 34$

$72 - 38 = 34$

It is easy to subtract numbers ending in zero. Subtract 40.

But we subtracted 2 too many. We must put them back now.

## B. Multiplication and division

Children need to understand that multiplying is counting by groups of things, each group having the same quantity. Help them see how the tables are built one group at a time. Some solution strategies that help students understand the multiplication algorithm are:

### 1. Build an array to show the meaning of multiplication.

(4 rows of 12)

4 x 12	Mathematical thinking
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	1 row has 12
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	2 rows have 24
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	3 rows have 36
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	4 rows have 48

### 2. T-tables. These numbers can be recorded in a t-table that gives meaning to the multiplication tables.

Rows	Total
1	12
2	24
3	36
4	48

Later, students can begin reasoning with such tables and not have to write every number.

12 boxes with 18 items per box		
No. Pkgs.	No. Items	Reasoning
1	18	Given
2	36	Add another 18
4	72	Double amount for 2 boxes
6	108	Add amounts in 2 and 4 boxes.

### 3. Area models

These models are more abstract and can allow students to see partial products and can eventually be linked to the traditional algorithm.

Begin by building an array model with base-10 blocks. Students must know how to break numbers apart by place value to do this. Here is an illustration for  $24 \times 45$ . (You would start with something simpler, such as  $8 \times 12$ .)

**24 is split into 20 and 4. 45 is split into 40 and 5.**

X	40				5				
20	100	100	100	100	10	10	10	10	10
	100	100	100	100	10	10	10	10	10
4	10	10	10	10	1	1	1	1	1
	10	10	10	10	1	1	1	1	1
	10	10	10	10	1	1	1	1	1
	10	10	10	10	1	1	1	1	1

There are eight 100 blocks or  $8 \times 100 = 800$ . There are 26 blocks of 10 or  $26 \times 10 = 260$ . There are 20 blocks of 1 or  $20 \times 1 = 20$ .

$$\begin{array}{r}
 800 \\
 260 \\
 + 20 \\
 \hline
 1080
 \end{array}$$

Eventually students chunk numbers and draw four large blocks. This mirrors the fundamental distributive property.

	40	+	5
20	$20 \times 40$		$20 \times 5$
	<b>800</b>		<b>100</b>
+			
4	$4 \times 40$		$4 \times 5$
	<b>160</b>		<b>20</b>
	$800 + 160 = 960$		$100 + 20 = 120$
	<b><math>960 + 120 = 1,080</math></b>		

Then you can connect the numbers from the area model to a multiplication problem. **Keep the full quantities visible at first.** It is 20 times 40 not 2 times 4. When this level is clear, do the same thing but show how you can start the calculation in ones place. Continue to record the full quantities. Finally, when that routine is comfortable, show how the traditional algorithm is another way of doing the same thing. This time not all the partial products are recorded. There is some remembering in the head that you have more tens. What is very tricky is that they cannot be added to the tens place number until that multiplication has been done. **Students who have difficulty “moving over” or remembering when to add in the regrouped figures should be allowed to write the complete numbers as partial products.**

### 4. Division

The language used for division can be an impediment to students understanding what division is all about. For example, to say “9 goes into 81, 9 times” is difficult to visualize. What does that mean? Why does it “go in” so many times? Ask instead, how many groups of 9 are there in 81?

Before students are forced to think abstractly, help them understand what these numbers stand for. Since division is the inverse of multiplication, we are still dealing with groups. In the problem 3,528 divided by 24, they are finding how many groups of 24 there are in 3,528 or how many groups of size 24 could be made. Could there be 100? Certainly.  $100 \times 24$  is 2,400. That leaves 1,128. Then some students might recognize there are at least 20 more. Others might stick with thinking 10 more at a time.

**Beginning Method**

$$\begin{array}{r}
 \overline{24)3,528} \\
 \underline{2,400} \quad 100 \times 24 \\
 1,128 \\
 \underline{480} \quad 20 \times 24 \\
 648 \\
 \underline{480} \quad 20 \times 24 \\
 168 \\
 \underline{120} \quad 5 \times 24 \\
 48 \\
 \underline{48} \quad 2 \times 24 \\
 0 \quad 147
 \end{array}$$

**Advanced Method**

$$\begin{array}{r}
 \overline{24)3,528} \\
 \underline{2,400} \quad 100 \\
 1,128 \\
 \underline{480} \quad 20 \\
 648 \\
 \underline{480} \quad 20 \\
 168 \\
 \underline{120} \quad 5 \\
 48 \\
 \underline{48} \quad 2 \\
 0 \quad 147
 \end{array}$$

As they work through the problem, help them understand what has been accounted for so far and how many more are still left to put into groups.

## Mathematics Websites

### **NASA Math simulations**

One-minute videos of a professor and student focus on applications of math concepts. Several relate to ratios and algebra. In one, Larry Byrd explains basketball throws in terms of geometry.

[www.knowitall.org/nasa/simulations/math.html](http://www.knowitall.org/nasa/simulations/math.html)

### **Escape from Knab**

An interactive game that involves life expenses, investment and choices.

[www.escapefromknab.com/index.html](http://www.escapefromknab.com/index.html)

### **The Food and Restaurant Project**

This article describes a food and restaurant project for early elementary students.

<http://ecrp.uiuc.edu/v7n1/nacif.html>

### **Projects on Pets**

Details a project for elementary school students that incorporates math and science.

[www.nethowto.net/project/index.php?option=com\\_content&task=view&id=83&Itemid=92](http://www.nethowto.net/project/index.php?option=com_content&task=view&id=83&Itemid=92)

### **Angling into Architecture**

Account of a project in which students design a modern high school. The idea can be adapted to a room, a lab, a cafeteria, a playground, a skateboarding site, whatever interests students.

[www.edutopia.org/geometry-real-world-students-architects](http://www.edutopia.org/geometry-real-world-students-architects)

### **Singapore Bar Model Site**

On this site, students can see step by step how to build a model that shows how numbers in a problem are related. This model enhances students' ability to figure out how to solve problems. Problems are designated by grade level.

[www.singaporemathteacher.com/](http://www.singaporemathteacher.com/)

### **NCTM Figure This! Math Challenges for Families**

This site has multiple problems aimed at the middle school level. The material can be accessed online, printed or purchased as a CD. Answers to problems are provided.

[www.figurethis.org/](http://www.figurethis.org/)

### **NCTM (National Council of Teachers of Mathematics)**

There are many resources for all grade levels accessible through the Illuminations site.

<http://illuminations.nctm.org/>

### **Feed the Pig**

A financial literacy program for grades 4, 5 and 6 that can be approached as a project. The project teaches responsibility with money and focuses on shopping and saving.

[www.FeedthePig.org](http://www.FeedthePig.org)

### **Math in Children's Literature**

Site from NCTM gives links and lesson ideas for connecting math to children's literature.

[www.mathcats.com/grownupcats/ideabankmathandliterature.html](http://www.mathcats.com/grownupcats/ideabankmathandliterature.html)

## Project Ideas

**Grocery Shopping**—In preparation, students should talk to their families about what they are planning for food for the week. How do they decide what to buy? Provide students with a budget and grocery ads. You might give them a list of items they would already have on hand, such as salt or mayonnaise. Have them work in teams to plan menus and what to shop for the week. Have recipe books available in the room. What will they buy? Are they within the budget? Can they make their meals with what they bought? How do the meals stack up nutritionally? (Those with online access can access sources such as PeaPod for a more complete listing of items.) Suitable for grades 3 and up. The younger children might think about only lunches or dinners.

**Grocery Receipt Detectives**—Go to a nearby grocery store and look for a discarded, long receipt. Organize the items on the receipt into categories and develop a graph. Study the categories and write a short story about the family that purchased those grocery items.

**Stock Market Game**—Take an imaginary \$100,000 and invest in various stocks. Watch and graph the value of your portfolio over time.

**Fantasy Sports**—Choose a celebrity sports figure. Gather data about this person from the Internet. Defend why they are among the best in their sport.

**Design a Playground**—Draw a proportionally scaled playground. Include as many different geometric shapes as possible. Do the math for space and cost.

**A Map of the School**—Draw a proportionally accurate map of the school in its surrounding area. Figure walking distances to various points within the neighborhood.

**Measurement Olympics**—Plan and execute active events that involve measurement such as: cotton ball throw, standing broad jump, vertical height leap or how many lima beans can you hold in one hand. Have students create other events. Keep track of scores for participants in the events and figure the differences between winners and others.

**How Much Can the Room Hold?**—How many Kleenex boxes would fill your classroom? The multipurpose room? Your school? Your bedroom? Use estimation, reasoning, measurement and problem solving to determine the answer.

**Where Is Math?**—In their school or neighborhood, students could take photographs with digital cameras (or draw pictures) to show different places where math could be found. Students could create a display board/poster and write a brief description, caption or question to elicit discussion on the math they found in the picture.

**Million Dollar Project**—“Give” students a million dollars to spend on a single project. For example, if they bought a house, they could use the newspaper to find a house and create a budget for housing and utilities. If they bought a business, they would need to supply all of the materials for the business.

**Million Dollar Project 2**—Create an ideal playground. Find space on the school grounds and use spatial area concepts to create a playground. Students present their ideas/blueprints to the group.

**String Art**—Students use poster board or tag board to design geometric shapes/patterns using colored string. Patterns can be found in art curriculum or fabrics from varied cultures. Discuss the patterns. The finished designs can be displayed on a school wall or donated to a local children’s hospital or other public building.

**Create a Game**—Students will create a math game—the pieces, questions, packaging, rules, game board, advertisements for the game, etc. When presenting the game, students explain the game and “sell” it. Ask them to identify what math is involved in the game. Invite students to play the game. Donate the games to the school.

**Math Author**—Students write a math book that features a math concept and then illustrate the book. They research other types of math books, from the school or local libraries to create their own math “literature” book. Once completed, students present their books to each other and donate them to the school library or local hospital.

**Share a Treat**—Using a school kitchen (or whatever is available), have students bake and decorate a cake or make cookies. Students could then deliver the cake to a nursing home or senior citizen home in the area. This project involves measurement and following directions. In the absence of a kitchen, identify other treats that could be prepared without an oven or stovetop that could be prepared and shared.

**Flat Stanley**—Have students send Stanley to different parts of the community and beyond. Students will track Stanley’s travels on a map and calculate the miles traveled. The presentation would be a schoolwide bulletin board that is maintained by the students. If “Flat Stanley” is already being done by a class at school, do a similar project using a stuffed animal, which the after-school group can name.

**Walk-It**—If the school has a walking track or enough space in the building (such as in the gym) students can choose a destination and “walk there.” For example, they can walk from their school to Washington, D.C. They plot their journey, discuss mileage and geographical locations, plan the number of minutes to walk each day, estimate the total days for the trip, revise their estimation, etc. Once everyone has arrived in Washington, D.C., have a celebratory event, such as a luncheon at the White House. At the event, they present their chartings of the trip and compare their walking journey to other modes of transportation. They can also talk about what they “passed” along the way.

**What if Math Disappeared?**—Ask students to think about what their day would be like if they didn’t have math. Students can talk about how the world would change if math did not exist. They can investigate careers and try to prove that math is not needed in the careers. Invite guests in to talk about their careers and how math is, in reality, used each day. Students will keep a journal of how they do use math each day.

**Shopping**—For clothing, furnishing a house or apartment, gifts, school supplies, carpeting, paint or physical education equipment. How much do things really cost? What can you get for a budget? How much can you save through use of coupons or discounts? Can you save enough to make a difference by shopping at one store instead of another?

**Plan a Celebration**—(party, wedding, prom, picnic) Estimate how many will be there, food to be served with cost, decorations with cost. Organize, menu, schedule for attending to tasks, create budget, be ready to present for approval to the faculty (if school function) or other audience that will be picking up the tab.

**Nutritious but Delicious School Meals**—Plan lunch menus for the school to serve that would satisfy students’ tastes and follow rules of good nutrition. These menus can then be presented to the district’s food service staff.

**Math in Schools**—With a partner or small group-compile as many instances of math in the school as you can. The possibilities are as broad as students’ imaginations. (Examples: different shapes, statistics of student population and staff, areas/perimeters of spaces, cost of eating lunch each week, grading scales, average heights of students in different grades, steps and other distance measures from door to classroom, volume of rooms, etc.) Organize and create displays of information suitable for an exhibit.

**Puzzles Project**—After completing a number of different math-related puzzles, have students create their own and compile them into a booklet for all class members. Examples: word find, magic square, word arithmetic, word scramble with math vocabulary, rebus, riddles, secret message. (This idea from *Hands-On Math Projects with Real-Life Applications* by Judith Muschla and Gary Robert Muschla. Josey-Bass.)

## Sample Projects

We have included two project learning examples to illustrate how you might plan out your own math project.

- Each project includes an **overview** or purpose of the project. We've included comments on the overview to highlight some of the important concepts, steps or skills that we've discussed in this toolkit and that should be included in your project plan.
- Following the overview are detailed **project sessions** or timeline for completing the project. The timeline is organized by individual after-school sessions. You may need to make adjustments if your time frame differs.

At the elementary level, it is expected that up to one hour of a session may be devoted to homework from the school day so the activities per session are planned for one hour.

For first and second graders, it will be important to break up the hour devoted to the project at appropriate times with activities that help children move and process. For example, students can take seven giant steps, stop, find a partner and tell the partner something about one of the characters in the story.

- Finally, **relevant resources, worksheets**, etc. are provided. These materials will vary by project and may include rubrics, questions for students to answer, websites, recommended reading lists, etc.



## Sample Project #1: Who Has the Time?

### Overview

<b>Project title</b>	Who Has the Time?
<b>Content area(s)</b>	Mathematics, language arts
<b>Grade levels</b>	3-5
<b>Academic goals</b>	<ul style="list-style-type: none"> <li>• Identify tools that measure time.</li> <li>• Identify vocabulary associated with time.</li> <li>• Gain perspective about telling time by discovering the history of time.</li> <li>• Understand changes occur over time.</li> <li>• Create a visual history (in timeline form) of the history of time/ clock.</li> <li>• Integrate language arts through writing.</li> </ul>
<b>State and local standards</b>	See local standards
<b>Skills needed in this project</b>	Can tell time, figure elapsed time, Internet search
<b>Hook/product</b>	Past, Present, Future, It's About Time!
<b>Driving question or big idea</b>	What effect does time have on your life?
<b>Length of project</b>	10-12 hours
<b>Organization; grouping of students</b>	Students can work in pairs or small groups.
<b>Overview of project</b>	<p>Students will choose activities that help them understand the dimensions of time, its measurement, how things change over time, how it can play havoc in their lives and how certain times call for different behaviors. There is opportunity to learn about the history of time and different tools for telling time. They will use research skills as well as integrate writing by creating timelines and stories. The activities will be developed so students understand how time affects their lives in many ways. Without a sense of time, they can miss out on opportunities.</p>
<b>Important data to collect periodically during and after this project is completed</b>	Students will create portfolios. Their final project will be assessed through a rubric. Do children realize how complex the issue of "time" is?
<b>Resources (technology, people and places from community, printed materials, artifacts)</b>	<p>Internet, library, community person from a clock shop, samples of telling time tools (sundials, digital, analogue, etc.)</p> <p>Song (Turn, turn, turn)</p>

**Personal connection**

**Collaboration**

**Choice; integrated skills**

**Variety of resources**

<p><b>Mini-lessons as appropriate</b></p>	<p>Telling time/reading clocks          Internet and/or library searches to gather information          Working as a group          Elapsed time          Reading/constructing a timeline          Roman numerals (old clocks)          Map reading</p>
<p><b>Games and learning activities</b></p>	<p>Time Concentration          Telling Time Bingo          Identify activities you can do in 60 seconds, 2 minutes, etc. Synchronize watches or clocks to represent different time zones          Read time zones on a world map          Use a map scale</p>
<p><b>Assessment/evaluation (answer big question and address curricular standards and objectives)</b></p>	<p>Does the project show understanding of:</p> <ul style="list-style-type: none"> <li>• How time affects our lives?</li> <li>• How to plan ahead so events/actions will be completed on time?</li> <li>• Knowledge of history of timepieces?</li> <li>• Sense of historical development of topic of interest, e.g., transportation, communication devices, home appliances, fashion, toys.</li> <li>• How to apply knowledge of different time zones?</li> <li>• When time and timing is more or less critical to an action?</li> </ul>
<p><b>Student reflections</b></p>	<p>What did you learn about time through your project?</p>
<p><b>Supplies</b></p>	<p>Maps          Various types of clocks          Writing tools/paper          Adding machine tape (for timeline)          Sentence Strips</p>



**Who Has the Time? Project Sessions**

<b>Session Number</b>	<b>Tasks</b>	<b>Materials Needed</b>	<b>Time Needed</b>
1	<p>Play the song <i>To Everything There Is a Season (Turn, Turn, Turn)</i> and ask students what they think the phrase “a time for every purpose under heaven” means.</p> <p><i>Elicit, everything has a time to be done.</i></p> <p>What does this mean for them? <i>There are deadlines, and there is behavior appropriate for certain times and not others.</i></p> <p>Observe that there are big timeframes (seasons, eras, centuries) and smaller ones.</p> <p>Have students discuss the following questions and chart their responses:</p> <p>When do you think about time during the day?</p> <p><i>What time is it?</i>  <i>It’s time to pack up.</i>  <i>You’re wasting time.</i>  <i>Be sure to hand in your work on time.</i>  <i>We’re out of time today?</i>  <i>It’s lunchtime.</i>  <i>If I have to tell you one more time...</i>  <i>What time does the movie start?</i></p> <p>Do you know any sayings about time? Have students share their sayings and the meanings behind them.</p> <p><i>A stitch in time saves nine.</i>  <i>Time heals all wounds.</i>  <i>Take time for all things.</i>  <i>Better late than never!</i>  <i>Here today, gone tomorrow.</i>  <i>And a time for every purpose under heaven.</i>  <i>Time waits for no man.</i></p> <p>Ask students in whole group to think of instances when paying attention to time is especially important. Responses may include:</p> <p><i>Taking medication</i>  <i>Mom says be home by...</i>  <i>Catching a train or plane</i>  <i>Paying bills</i>  <i>Races</i>  <i>Launching a space ship</i>  <i>Football or basketball games (games end or team can incur penalties)</i>  <i>Filing taxes</i>  <i>Attending to time zones when traveling</i>  <i>Job interview</i></p>	<p>Internet</p> <p>research materials</p> <p>poster board</p> <p>markers</p>	30 minutes

Session Number	Tasks	Materials Needed	Time Needed
	<p>Has anyone seen the consequences when time is important and someone is late?</p> <p><i>Burnt cooking</i>  <i>Missed transportation</i>  <i>Late for school/class</i>  <i>Curfew missed; punishment</i>  <i>Assignments late: Grades suffer</i></p>		
2	<p><b>We cannot see or touch time, but it does affect our lives.</b></p> <p>How do we know what time it is? How do we measure and think about it? (clocks, watches, computer, radio, TV, days, months, years, decades, centuries)</p> <p><b>Make a Sand Clock</b></p> <p>Refer back to ways to how we measure time. We will look quickly at one way you probably do NOT use. Use a sharp pencil to poke a hole in the bottom of a cup. Cover the hole in the cup with your finger and fill it with sand. Show students how sand runs through the hole into another cup. (Some children may have seen egg timers that work this way.)</p> <p>Explain that people can measure time by counting how long it takes for all the sand to run out. Sift the sand through the second cup again and count until all the sand has run through again.</p> <p>Then have pairs of students use sand clocks to measure how long it takes to:</p> <ul style="list-style-type: none"> <li>• Say the alphabet</li> <li>• Jump in place 20 times</li> <li>• Sing My Country 'Tis of Thee</li> </ul> <p>Have children predict how long other activities might take and check them out.</p> <p>Ask: Do all the cups become empty at the same time? Some holes could be bigger than others or the amount of sand slightly different. Use a stop watch to test.</p> <p>Sand clocks are not exactly precise. And they are inconvenient to measure long periods of time</p>	<p>Per child:</p> <p>Two paper cups</p> <p>Sand</p> <p>Sharp pencil</p>	1 hour
3	<p>Tell students that there are many things to know about time. You can ask what children are curious about related to time or present a menu of topics to investigate. Each person will find a partner or partners and begin to investigate one of those things.</p> <p>1. How have people measured time throughout history? At one point they did use sand clocks, but how else was time measured? Research when various ways of telling time were used and create timelines using words or pictures. (May need a mini-lesson here on timelines.)</p> <p>2. Investigate two ways of measuring time:</p> <ul style="list-style-type: none"> <li>• Hourglass</li> </ul>	<p>Internet</p> <p>Almanac</p> <p>Encyclopedia</p> <p>Blank paper</p> <p>Pencils or pens</p> <p>Markers</p> <p>Crayons</p>	2 hours

**Choice**

Session Number	Tasks	Materials Needed	Time Needed
	<ul style="list-style-type: none"> <li>• Sundial</li> <li>• Pendulum</li> <li>• Water clock</li> <li>• Wrist watches</li> <li>• Grandfather clocks</li> <li>• Kitchen timers</li> <li>• Public time-keeping (tower clocks, church bells, town criers)</li> <li>• Cuckoo clocks</li> <li>• Timeclocks in the workplace</li> <li>• Others?</li> </ul> <p>Students will prepare to share all the information they can find with the rest of the class. Be on the alert for interesting facts and information they did not know before.</p> <p>Prepare a presentation for the rest of the class. Make it as interesting as you can!</p>		
4	<p>The research session, preparation for and delivery of presentations may take 2 sessions. Encourage students to keep working and to find interesting ways to display or convey what they are learning to other people.</p>	<p>Various types of clocks</p> <p>Paper</p> <p>Markers</p> <p>Pencils</p>	1-2 hours
5-7	<p>Once the first activity has been completed, tell students they now will choose a project that relates to time in their own lives. Present the following or a similar menu. Students work with others who have a similar interest.</p> <ul style="list-style-type: none"> <li>• Create and share a personal lifeline.</li> <li>• Create elapsed time problems and make them into a book for students learning this skill to solve. (You must provide the answers, also.) (May need a mini lesson on elapsed time and mini-discussion about when it is used.)</li> <li>• Create a personal TV Guide for the programs you like to watch during the week, showing the times with analog clocks. Compare the amount of time you watch TV to what is recommended.</li> <li>• Plan a holiday dinner and make a schedule for its preparation so it can be served at a particular time. Include a menu and all preparation that must be made including setting the table and putting food on serving platters. Remember to look up recipes to see cooking times.</li> <li>• Create a time plan for Monday through Saturday that includes going to school, doing chores, homework and other activities.</li> <li>• Figure out and make a display showing how much time it would take to travel to various places within the city, the country, the world, the universe. (Might require a mini-lesson on reading travel schedules and/or on displaying data to show the characteristic you want to highlight, such as the differences in time.)</li> </ul>		45 minutes

**Choice**

**Connect to the school day**

Session Number	Tasks	Materials Needed	Time Needed
	<ul style="list-style-type: none"> <li>• Create a schedule for a field trip to the amusement park. This implies that the group must be together at essential times and must include scheduling transportation to and from the park, lunch and time for a variety of rides. Allow students to imagine or research available activities at the park and how long each takes.</li> </ul>		
8	<p><b>Who Has the Time?</b> presentation day.</p> <p>Each team or group makes its presentation about time in their lives. Might close with the class singing or listening to <i>Turn, Turn, Turn</i>.</p>		

Successful demonstration of knowledge; applause

## Who Has the Time? Mini-Lessons

### Timelines

Probe children’s knowledge of timelines. Have they ever seen one? If not, have one ready to distribute and talk about the key features.

- The line itself is labeled (years, times, months, whatever the unit being used) at various key points.
- It is made to scale. Like a number line, the distance between various points should be proportional. A period lasting twice the time as another should be twice as long. In some instances, this results in a timeline running all around the room and out into the hall. When this happens, it dramatically displays how much time something would take or how much time has passed.
- Before sending students back to create their timelines, have them (1) interpret another timeline and (2) create one as a class.

### Elapsed Time

Probe some situations at the level of your students, such as: Why do you leave to come to school at a certain time every day? (I know how long it takes me to get here.) Then have them make the calculation explicit. (E.g., If you have to be here at 8 o’clock and it takes you 15 minutes, when would you have to leave? [7:45]) Show this, counting off the minutes by fives, on a clockface.

If you started your homework at 3:30 and finish at 5:10, how long did it take to do your homework? How did you figure that out?

The doctor asks you to take a medication for 14 days. If you begin on October 2, what’s the last day you have to take it?

Tell students these kinds of problems are called elapsed time problems because you have to think how much time there is between the start and end of something. This is very important when people make plans and even for many everyday activities. If you think about all the things you do you can come up with many situations about elapsed time.

### Sample Problems

A. Jamie put a pizza in the oven at 1:25. It cooked for 30 minutes. What time was the pizza ready?

1:25	Min.
1:30	5
1:35	10
1:40	15
1:45	20
1:50	25
1:55 Pizza Ready!	30

B. On Monday Tom woke up at (fill in the time). Fifteen minutes went by before he actually got out of bed and another 20 minutes before he went downstairs. What time did he go downstairs?

### Telling Time

Some young children in grades 1-3 may need to work on telling time using an analog clock. One way of helping them is through a game such as Concentration. Cards for Time Concentration are included on page 92 and on the CD-ROM. They can also create clocks using paper plates and brads to take home for practice. If you do this, *the instructor should provide a clock face* to paste on so the numbers are in the appropriate places. It is important for the spatial pattern to emerge.

**Who Has the Time? Song Lyrics\***

**TO EVERYTHING THERE IS A SEASON (TURN, TURN, TURN)**

To everything—turn, turn, turn  
 There is a season—turn, turn, turn  
 And a time for every purpose under heaven

A time to be born, a time to die  
 A time to plant, a time to reap  
 A time to kill, a time to heal  
 A time to laugh, a time to weep

To everything—turn, turn, turn  
 There is a season—turn, turn, turn  
 And a time for every purpose under heaven

A time to build up, a time to break down  
 A time to dance, a time to mourn  
 A time to cast away stones  
 A time to gather stones together

To everything—turn, turn, turn  
 There is a season—turn, turn, turn  
 And a time for every purpose under heaven

A time of war, a time of peace  
 A time of love, a time of hate  
 A time you may embrace  
 A time to refrain from embracing

To everything—turn, turn, turn  
 There is a season—turn, turn, turn  
 And a time for every purpose under heaven

A time to gain, a time to lose  
 A time to rend, a time to sew  
 A time to love, a time to hate  
 A time of peace, I swear it's not too late!

*\*These lyrics are also available as a handout on the CD-ROM included with this toolkit.*



**Who Has the Time? Worksheet\***

**My TV Guide**

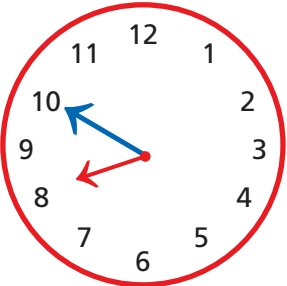
Name: \_\_\_\_\_

For each of your favorite shows write the day, channel and time and draw a clock showing when the show begins.

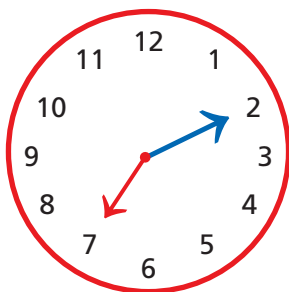
Favorite Shows	Day	Channel and Time	Clock

*\*This worksheet is also available on the CD-ROM included with this toolkit.*

**Telling Time Mini-Lesson: Concentration Cards\***

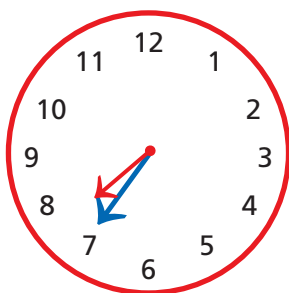
 <p><b>6:40</b></p>	<p>20 minutes to 7</p>
 <p><b>7:45</b></p>	<p>15 minutes to 8</p>
 <p><b>7:55</b></p>	<p>5 minutes to 8</p>
 <p><b>7:50</b></p>	<p>10 minutes to 8</p>
 <p><b>7:20</b></p>	<p>20 minutes after 7</p>

*\*These cards are also available on the CD-ROM included with this toolkit.*



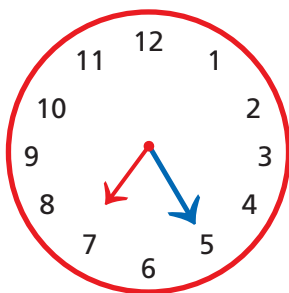
**7:10**

10 minutes after 7



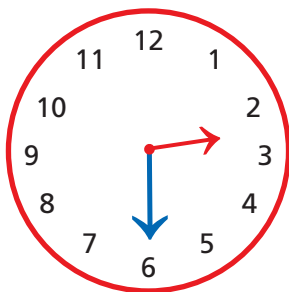
**7:35**

25 minutes to 8



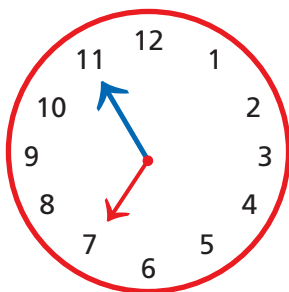
**7:25**

25 minutes past 7



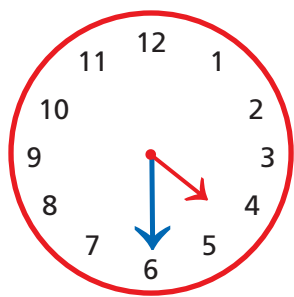
**2:30**

Half past 2

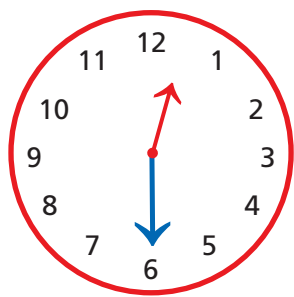


**6:55**

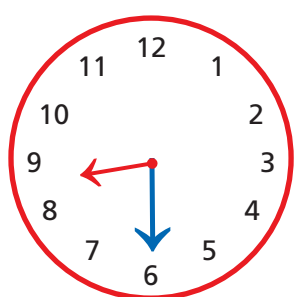
5 minutes to 7



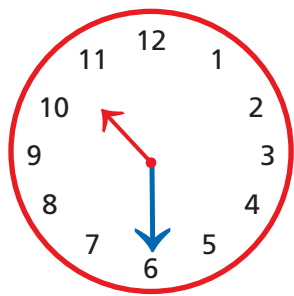
4:30



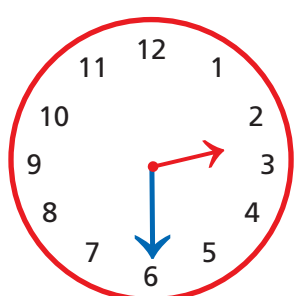
12:30



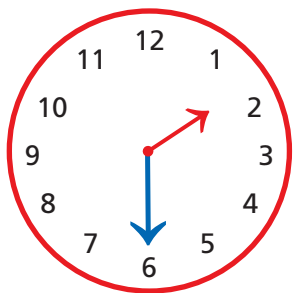
8:30



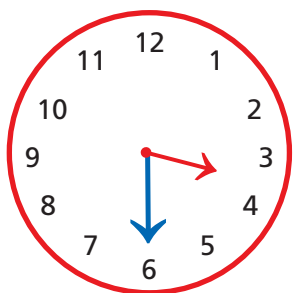
10:30



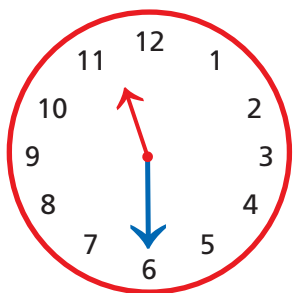
2:30



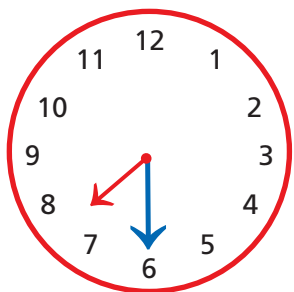
1:30



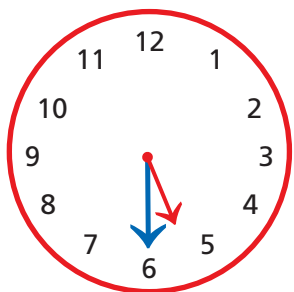
3:30



11:30



7:30



5:30

**Sample Project #2:  
Weather: Math Connections**

Overview

<b>Project title</b>	Weather: Math Connections  Plan adapted from Project SkyMath by the National Center for Atmospheric Research and the UCAR Office of Programs
<b>Content area(s)</b>	Mathematics and science
<b>Grade levels</b>	Middle school
<b>Academic goals</b>	<ul style="list-style-type: none"> <li>• Collection and interpretation of real time weather data</li> <li>• Problem solving</li> <li>• Measurement</li> <li>• Understanding temperature changes</li> <li>• Graphing, predicting magnitudes of change</li> <li>• Application</li> <li>• Communication of findings</li> </ul>
<b>Hook/product</b>	Real time data collection and analysis using a live website
<b>State and local standards</b>	Measurement Algebra Problem solving Scientific Method Technology
<b>Prerequisite skills of students prior to this project</b>	Basic computer skills; Basic graphing and temperature reading skills
<b>Driving question or big idea</b>	Can we predict and explain changes in temperature?
<b>Length of project</b>	Approximately 12 lessons
<b>Organization; grouping of students</b>	Heterogeneous groups
<b>Overview of project</b>	Students will identify questions that can be solved using mathematics, learn how to use online resources to collect and record data over a period of time, connect qualitative descriptions of weather with actual data and construct representations to explain the connection to others.
<b>Important data to collect periodically during and after this project is completed</b>	Individual projects will be accumulated at the end of each lesson in a variety of contexts: journals, mini-projects timelines, schedules, research, etc.

<p><b>Resources (technology, people and places from community, printed materials, library, inventors)</b></p>	<p>Weather websites</p>
<p><b>Mini-lessons as appropriate</b></p>	<ul style="list-style-type: none"> <li>• Graphing</li> <li>• Celsius and Farenheit thermometers</li> <li>• Organizing data</li> <li>• Displaying data</li> </ul>
<p><b>Games and learning Activities</b></p>	
<p><b>Assessment/evaluation (answer big question and address curricular standards and objectives)</b></p>	<p>Can students accurately record, display and describe what the collected data show?</p>
<p><b>Student reflections</b></p>	<p>Journaling at the end of each lesson.</p>

**Weather: Math Connections: Project Sessions**

Session Number	Tasks	Materials Needed	Time Needed
1	<p><b>Brainstorming temperature changes</b> Students work in small groups to list on chart paper (col. 1) <i>What We Know about Temperature</i> and (col. 2) <i>How Temperatures Change</i>, which describes what they know or want to know about how indoor and outdoor temperatures change.</p> <p>Groups share. Should be asked to give evidence for what they claim. (SAVE these lists.)</p> <p>Identify common knowledge and encourage students to propose ways to settle any differences that show up.</p> <p>Have students develop a set of questions they would most like to answer in the next several sessions.</p> <ul style="list-style-type: none"> <li>• Explain they will be doing projects and the questions may help them choose their projects.</li> <li>• Talk about how meteorologists and others interested in temperature and weather use mathematics in their work. They should think about how mathematics can help answer their questions.</li> </ul>	<p>Chart Paper</p> <p>Markers</p> <p>Writing Paper</p>	2 hours
2	<p><b>Keeping records of work</b> Invite students to help decide where to collect outside temperatures from for the next three weeks. They should discuss why the collection should be in the same spot each day and each time.</p> <p><b>Weather Watchers</b> Students reflect on what information they might need to answer questions about the weather. Provide the highest and lowest temperatures from the day before (take from newspaper or TV weather data). What was the range? When do they think highest and lowest temperatures occur during a day? Why at those times?</p> <p>Students discuss what type of data they will record in their logs. What tools should be used? When should they collect data?</p> <p>Push their thinking to select times when they think there will be real differences. Perhaps early morning, late afternoon and one in between. (The times will have to be practical considering where the collection will take place and when someone will be present.)</p> <p>If appropriate, students should make their first entry in the log.</p>		1-2 hours
3	<p>Students explore weather sites on the Internet and record what kind of data are available. (If Internet is not available at school, volunteers may access from home or the public library and report back.) How is the information presented? Does what they see make them want to change how they plan to record their own weather data or provide ideas for how to present their data as part of their projects?</p>	<p>Research materials</p> <p>Internet</p>	2 hours

Surface and connect prior knowledge

Problem solving; challenge

Student choice; interest

Active engagement

Core disciplinary concepts

Reasoning



Session Number	Tasks	Materials Needed	Time Needed
4	<p><b>Some project ideas</b> (Projects should grow out of students' questions!)</p> <p>Where is a good vacation spot in (month) if I want to go to the beach, ski, play baseball, etc.</p> <p>When is it safe to plant a garden in...?</p> <p>When are allergies likely to break out?</p> <p>When do temps fluctuate the most throughout the year?</p> <p>Which parts of the country (world) have the least (or most) violent weather?</p> <p>Where does the weather change the least throughout the year?</p> <p>How does weather affect cooking?</p> <p>What temps are optimal for what activities?</p> <p>How does the temp vary in our classroom/school? (from area to area and over time)</p> <p>How can we describe the temps in the building to convince people we have a problem? What kind of data would be best to use?</p>	<p>Farenheit, Celsius scales, seasons</p> <p>Research safe temps for planting</p> <p>Almanacs</p> <p>Chamber of Commerce propaganda</p> <p>Newspaper, weather bureau archives</p> <p>TV/radio weather people</p> <p>Measures of central tendency and variation</p>	1 hour
5	<p>Preparing to present findings</p> <p>Groups analyze what they found out and decide how to present their findings to make a point they agree on.</p> <p>They then work on preparing the presentation. This may take a couple of sessions.</p>	<p>Notebook paper</p> <p>Pencils</p> <p>Colored pencils</p>	
6	Groups practice their presentations		1 hour
7	Presentation day!		

**Choice; interest; variety**

**Collaboration**

**Create product to share**

**Pride in completion and accomplishment**

## Weather: Math Connections: Websites

### United States Interactive Climate Pages

This website provides easy access to climate information for cities throughout the U.S. Users can get the daily average climate for that city including maximum and minimum temperature, precipitation and snowfall.

[www.esrl.noaa.gov/psd/data/usclimate/](http://www.esrl.noaa.gov/psd/data/usclimate/)

### Online Guide to Meteorology.

[http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/home.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/home.rxml)

### The Weather Eye

Created by KGAN News Channel 2 in Iowa, this website is an excellent resource for K-12 activities.

<http://weathereye.kgan.com/>

### The Weather Channel

This site provides accurate weather forecasts for 2,000 cities around the world, satellite and radar imagery, ski reports, airport delays, weather articles and tutorials.

[www.weather.com/](http://www.weather.com/)





## Science Glossary

**The scientific process/method**—Often described in textbooks as the “scientific method,” this is actually the process of experimentation and lab work. Having students identify what parts of the process they are using is a good way to teach the method to younger students.

**Gathering data**—This is a common practice in science that is easy to teach. Having students collect data using tools like a thermometer or ruler teaches many math skills as well as having them learn how scientists measure changes in data.

**Analyzing data**—Once the students have data, the next step is to interpret and look for patterns within the data set.

**Drawing conclusions from data**—What conclusions can we draw from the data? Did patterns in the data show trends or answer questions posed at the start of the investigation?

**Designing simple experiments**—Although challenging for students, experimental design can be done at different levels of sophistication depending on the abilities and skills of the students.

**Making quantitative and qualitative observations**—Having students learn how to observe and record their observations. This might take the form of students learning how to create field notes and organize their observations in a notebook.

**Making predictions from observations or data**—This is a great skill to develop in students of all ages. Teaching students to look for tendencies in a data set and making predictions is fundamental to scientific practice.

**Presenting data in tables, graphs or charts**—The presentation of quantified data is often a product in many projects. Maps, charts and graphs have specific uses and will require mini-lessons on their construction.

**Creating models/illustrations and physical representations**—Students will often build models as part of their presentation. It is important to consider the materials involved and safety issues that may arise as they make these products.

These are common practices that scientists perform as they investigate questions and solve problems. In any project learning experience, students are likely to engage or employ several of these skills. It is valuable to point out these skills to students, as they use them to evaluate and present scientific information in a project. As a facilitator of an after-school program, you may need to plan mini-lessons to teach specific skills to the students which will require some background knowledge in science or mathematics.

PISA (Programme for Science Assessment) identifies three broad categories of scientific knowledge: identifying scientific issues, explaining phenomena scientifically and using scientific evidence. They classify the content knowledge under these topics:

- earth and space systems
- living systems
- physical systems

TIMSS (Trends in Mathematics and Science Study) looks at three cognitive domains: knowing, applying and reasoning. Their categorization of content is life science, physical science and earth science at fourth grade and biology, chemistry, physics and earth science at eighth grade.

Project learning fits with either framework.

It is also important to recognize the mathematical nature of many of the skills above. The integration of math skills in authentic situations is a great opportunity for students to see a purpose for learning math.

## Science Websites

### Sites on climate change, global warming:

- **Climate Change: Kids Site**—Developed by the Environmental Protection Agency, this site is designed to engage and educate students about climate change.  
[www.epa.gov/climatechange/kids/cc.html](http://www.epa.gov/climatechange/kids/cc.html)
- **The Basics of Global Warming**—Learn about global warming using this site by the Environmental Defense Fund.  
[www.edf.org/page.cfm?tagID=35215&source=ggadgw35215&glid=CJKXuc-6spwCFZJM5QodIkdCnw](http://www.edf.org/page.cfm?tagID=35215&source=ggadgw35215&glid=CJKXuc-6spwCFZJM5QodIkdCnw)
- **Global Warm**—New York Times site dedicated to global warming.  
<http://topics.nytimes.com/top/news/science/topics/globalwarming/index.html#>
- **Climate Change**—Mainted by NewScientist, this site includes numerous articles on climate change.  
[www.newscientist.com/topic/climate-change](http://www.newscientist.com/topic/climate-change)

**Renewable Energy**—Investigations related to renewable energy are available at the website of the Renewable Energy Laboratories. These are designed for grades 6-8.

[www.nrel.gov/docs/gen/fy01/30927.pdf](http://www.nrel.gov/docs/gen/fy01/30927.pdf)

**Science Fair Projects**—Free science fair project ideas, tools and resources.

[www.sciencebuddies.org/science-fair-projects/project\\_ideas.shtml?From=Tab](http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml?From=Tab)

**Science Fair Projects**—Over 400 projects described with directions and arranged by grade.

[www.terimore.com/](http://www.terimore.com/)

**The Why Files**—This site is for grades 5 and up. Billed as science behind the headlines, this site has a wide range of “ripped from the headlines” stories ranging from physical and biological science, to emotions, the changing world and UFOlogy. The stories can provide ideas for further investigation or help you scan today’s news for topics worth investigating, but you may find some posted stories more appropriate for staff than children.

<http://whyfiles.org>

**NASA**—This site for educators provides activities, photos and information about space. Both mathematics and science information are accessible.

[www.nasa.gov/audience/foreducators/index.html](http://www.nasa.gov/audience/foreducators/index.html)

**Space Math @ NASA**—This site offers activities combining mathematics and science.

<http://spacemath.gsfc.nasa.gov/>

**Earth System Science Education Alliance**—Several scenarios that could be used for project learning.

<http://esseacourses.strategies.org/>

## Project Ideas

**Solar System Mural**—Make a proportionally accurate drawing or display of the solar system showing the major planets and the sun with relative distances from each other on the wall in your classroom or nearby hallway. Describe the consequences of position in relation to the sun on each planet’s climate.

**Dinosaur Symposium**—Take a sketch of your favorite dinosaur and adjust the drawing to be accurate life-size. Use chalk to represent the lifesize drawing on your parking lot surface. Research what is known about habitat and inferred about habits. Information on each to be shared.

**Anatomy of a Disaster**—Research details of famous natural disasters. Create a display that discusses the cause, the impact, the costs, any first-hand accounts, the science and geography involved in each.

**Earthquake/Volcano location**—Gather data on the locations and magnitudes of earthquakes and volcanic eruptions that occurred within the same month. Mark these on a map and make observations.

**Water and soil inspection for healthy communities**—Take water or soil samples from the school neighborhood, homes or school and test for conditions that might be harmful. Prepare a report, including information on safe levels and graphic displays that can be distributed to parents, the community or presented to a city council.

**Making Music Is Science as Well as Art**—Find ways to create several instruments from bottle, straws, wine glasses and copper pipe, add your own homemade drum, experiment with other materials to make instruments and then create a brief concert for invited guests. Plans for instruments are available at: [www.sciencebuddies.org/science-fair-projects/recommender\\_interest\\_area.php?ia=Music](http://www.sciencebuddies.org/science-fair-projects/recommender_interest_area.php?ia=Music). Before the performance, the group will explain how different tones were created to enable the performance.

**Will the Leaning Tower Fall?**—Students in grades 9-12 research the Tower of Pisa and write a report about its history. They examine the physics of why the Tower leans and whether it might fall. Finally, they plan a trip to Italy to see the Tower, developing an itinerary and budget for the trip.

[www.education-world.com/a\\_tech/techlp/techlp036.shtml](http://www.education-world.com/a_tech/techlp/techlp036.shtml)

### Sample Projects

We have included two project learning examples to illustrate how you might plan out your own science project.

- Each project includes an **overview** or purpose of the project. We’ve included comments on the overview to highlight some of the important concepts, steps or skills that we’ve discussed in this toolkit and that should be included in your project plan.
- Following the overview are detailed **project sessions** or timeline for completing the project. The timeline is organized by individual after-school sessions. You may need to make adjustments if your time frame differs.

At the elementary level, it is expected that up to one hour of a session may be devoted to homework from the school day so the activities per session are planned for one hour.

For first and second graders, it will be important to break up the hour devoted to the project at appropriate times with activities that help children move and process. For example, students can take seven giant steps, stop, find a partner and tell the partner something about one of the characters in the story.

- Finally, **relevant resources, worksheets**, etc. are provided. These materials will vary by project and may include rubrics, questions for students to answer, websites, recommended reading lists, etc.

## Sample Project #1: Weather

### Overview

This plan is based on suggestions in *Engaging Children's Minds: The Project Approach* by Lilian G. Katz And Sylvia C. Chard.

<b>Project title</b>	Weather project
<b>Content area(s)</b>	Language arts, science, mathematics
<b>Grade levels</b>	2-3
<b>Academic goals</b>	Through the study of weather, develop language arts and mathematics skills, and introduce elementary science concepts.
<b>State and local standards</b>	<ul style="list-style-type: none"> <li>• Language arts: describing observed phenomena</li> <li>• Science: gathering and recording quantified data</li> <li>• Mathematics: number sense and recording data with graphs</li> </ul>
<b>Prerequisite skills of students prior to this project</b>	Emerging writing and drawing skills
<b>Driving question or big idea</b>	Why do people always want to know about the weather?
<b>Length of project</b>	8 sessions (twice a week for 4 weeks)
<b>Organization; grouping of students</b>	20 students from 2nd and 3rd grade Heterogeneous groups of 4 students in each group with stronger writers/drawers mixed with weaker writers/drawers.
<b>Overview of project</b>	Students will investigate the effects of weather on people's lives, their own and people whose weather makes the news. They will learn how weather predictions can help people avoid the worst consequences and how those predictions are made.
<b>Hook/products</b>	Students will observe and record changes in weather conditions that include temperature, clouds, wind and precipitation. They may devise a book of helpful hints for various kinds of weather or become engaged in a relief effort stemming from a current emergency.
<b>Resources (technology, people and places from community, printed materials, artifacts)</b>	<ul style="list-style-type: none"> <li>• Students can use a thermometer, windsock/windmill/pinwheel, weathervane and beaker that collects and measures rainfall.</li> <li>• Weather maps from newspaper or computer</li> <li>• Radio/TV weather persons</li> <li>• Video and newspaper clips of weather events</li> <li>• Weather channel</li> </ul>

Integration  
of skills

Collaboration

Investigation

Life connection;  
product to be shared

Varied  
resources



<p><b>Mini-lessons as appropriate</b></p> <p><b>Disciplinary and interdisciplinary skills</b></p>	<ul style="list-style-type: none"> <li>• Seasons in the local area</li> <li>• Seasons elsewhere</li> <li>• Use of measurement tools (zero as jumping-off point)</li> <li>• Vocabulary</li> <li>• Information about hibernation may be used during session 7</li> <li>• Measurement—reading thermometers, rain/snowfall measures</li> <li>• Graphing (pictograph or bar graph)</li> <li>• Geography for current weather events</li> <li>• Precipitation cycle</li> </ul> <p><b>Student voice</b></p>
<p><b>Assessment/evaluation (answer driving question and address curricular standards and objectives)</b></p>	<p>Can students give examples for, “How do scientists observe and measure changes in weather? How does weather affect our lives?”</p> <p>Students share their learning in a variety of ways: telling, drawing, providing examples, skits. Photo boards, poems, charts, “broadcast.” Do they use terms accurately? Have they grown in ability to measure with tools provided?</p>
<p><b>Student reflections</b></p> <p><b>Self-reflection</b></p>	<p>Students may share reflections about this project during their weather broadcast or other performance.</p>

## Weather: Project Sessions

Session Number	Tasks	Materials Needed	Time Needed
1	<p>Children discuss if weather has ever affected their lives. Poems and songs may be used to reinforce their experiences.</p> <p>Chart responses (postponed game, so hot went swimming, school called off, etc.)</p> <p>Initial discussion: Ask students to talk about what they know and understand about the weather and how it affects daily life.</p> <p>Children can begin with paintings and drawings of their own impressions and ideas about the weather and can draw a worst weather day and best weather day.</p> <p>Stories, poems, songs and books about familiar experiences may stimulate discussion.</p> <p>Homework activity: Observe what the weatherperson talks about on the weather forecast.</p>	<p>Paper</p> <p>Paints</p> <p>Crayons</p> <p>Colored Pencils</p>	2 hours
2	<p>Report back on what weatherperson talked about. (For example, temperature, precipitation, wind, storms, humidity, dew point, clouds, sunshine.)</p> <p>Wonder aloud about how people know all these things. What do the children wonder about in relation to the weather? List.</p> <p>Make class decision on one or more things to investigate. (thermometer, wind sock, precipitation measurement, humidity)</p> <p>How could you do what the scientists do?</p> <p>Some children may be able to begin partner/team investigations. Others may require more whole-class guidance.</p> <p>Weather condition studies:</p> <ul style="list-style-type: none"> <li>Using the thermometer, wind sock, precipitation gauge, students can begin a data-collection plan to record various weather details: temperatures, precipitation, clouds, wind, etc.</li> <li>Students can determine how they will note various data observations for each weather idea observed.</li> </ul>	<p>Thermometer, wind sock, precipitation gauge</p>	2 hours

Personal experience;  
prior knowledge

Topic  
in their  
daily  
world

Interest;  
challenge

Session Number	Tasks	Materials Needed	Time Needed
3	<ul style="list-style-type: none"> <li>Data gathering continues. (Pairs, teams can choose rain, ice, snow, wind, drought, hurricanes, tornadoes, animals &amp; climate...)</li> <li>Study of rain: Children can discuss what materials are most or least waterproof. Students can study their raincoats, boots, shoes and umbrellas.</li> <li>Measurements can be made around puddles to see how quickly the water collects and evaporates.</li> </ul> <p>What do they do differently when it rains? Does it matter whether it rains lightly or heavily?</p> <p>Why do some people want rain and other people hate it when it rains?</p> <ul style="list-style-type: none"> <li>Study of ice: Children can observe the rate at which icicles melt and test predictions about how much liquid will result from melting.</li> <li>Children can also be drawn to how their classroom and their homes are heated, aired or kept cool.</li> </ul>	<p>“The Hundred Languages of Children” is a book documenting the investigations of young children of the rain in their city of Reggio Emilia, in northern Italy.</p> <p>Icicles or ice cubes of different sizes.</p> <p>Various materials can be used to wrap the ice cubes to see impact on melting when wrapped.</p>	2 hours
4	<p>Data gathering continues</p> <ul style="list-style-type: none"> <li>Wind study can occur with making various wind socks, windmills or pinwheels. Students can look for weathervanes around their neighborhood. Students may make their own weathervane. Observations can be made regarding the force and direction of the wind by observing smoke from a chimney or smokestack. Have they ever seen strange things happen because of wind? (Umbrellas inside out, hard to walk, roofs blown off, birds having a hard time...)</li> </ul>	Materials for making windsocks, windmills or pinwheels.	2 hours
5	<p>Data gathering continues</p> <ul style="list-style-type: none"> <li>Kite-making activity can extend to ideas about flying kites, varieties of kites and the construction of kites and paper planes. Balloons may be used. Paper may be attached to balloons to see the impact of the wind on paper attached.</li> </ul> <p>They can describe their trials and discoveries and write instructions telling someone else how to replicate their most successful flyer.</p>	<p>Kites or kite-making materials</p> <p>Balloons</p> <p>Paper and colored markers, crayons</p>	2 hours

Session Number	Tasks	Materials Needed	Time Needed
6	<p>Animals and climate, Sayings and myths</p> <ul style="list-style-type: none"> <li>• Discussions around animals that hibernate in winter can be held. Discussions about birds coming in the spring can lead to observations about how the seasons affect animals.</li> <li>• Perhaps a trip to a local museum to take a close look at animals and birds can relate to how they are affected by climate.</li> <li>• The Internet or a visit from a member of a local bird watching society may be resources.</li> <li>• Most cultures have folklore about the weather. Students can share sayings and stories that are related to the weather.</li> <li>• A study of different seasons may be appropriate at this time (but will be more relevant in locales in which differences in seasons are clearly visible).</li> </ul>	Computers	2 hours
7	<p>Weather Forecasting</p> <p>Are there some things you can tell even without the scientific instruments? (e.g., animal behavior, ring around the moon, types of clouds, grandma's aches are worse)</p> <p>Suggest that children play the roles of people responsible for forecasting and recording the weather. They can play the weather person on television, using a large cardboard box with a television screen "window" cut out of the front. For the background, they can make a satellite picture, a radar map, and charts of statistics about maximum and minimum temperatures, times of sunrise and sunset, etc.</p> <p>Student drawings can add to the forecast performance. This presentation can be used to represent all of the learning that the students have experienced during this project.</p> <p>Know your students. Will they be able to designate roles amicably or do you have to give them a way to decide who does what?</p>	<p>Large cardboard box</p> <p>Perhaps a video camera</p> <p>Chart paper and markers</p>	2 hours

Integrated learning

Career connection

Differentiation by age

The weather broadcast could be a culminating activity, or part of an exhibition of what has been learned about rain, wind, temperature etc.

If the focus was on how weather affects people's lives, posters with facts, drawings or original poems, or murals could illustrate good effects and bad effects. People whose lives were affected by flood or tornado could be "interviewed" or skits presented etc.

**Older students** could investigate weather with a driving question about whether climate is changing and what are the likely effects. This opens up many possibilities for internet research, debate, and a high level of personal engagement.

## Sample Project #2: The Climate Around Us

### Overview

<b>Project title</b>	The Climate Around Us
<b>Content area(s)</b>	Math, science, language arts
<b>Grade levels</b>	4-12
<b>Academic goals</b>	Project to connect weather to current issues, headlines, controversy, application of science and math.
<b>State and local standards</b>	
<b>Prerequisite skills</b>	Some reading and writing ability; research skills; simple graphing and data-analysis skills
<b>Driving question or big idea</b>	Are climate changes affecting the world around us?
<b>Length of project</b>	10-12 hours
<b>Organization; grouping of students</b>	3-4 students/group
<b>Overview of project</b>	Students will find evidence that informs the debate about whether we have serious climate change using tools from the Internet to interviews of local residents (family and friends). If so, what are the causes and possible solutions? Students will select an area that has been notably affected or a city where the climate seems to be changing and create a project that will inform others about their findings and suggestions for how to deal with the phenomena.
<b>Important data to collect</b>	<ul style="list-style-type: none"> <li>• Weather statistics across years</li> <li>• Places where life-styles (e.g., Alaskan ways of life) are being threatened</li> <li>• Wildlife changes</li> </ul> <p>If graphs are used to illustrate findings, check for accuracy and quality construction.</p> <p>Check draft writing and prompt corrections.</p> <p>Talk with groups on the accuracy of the information in their print material, slides or presentations.</p>
<b>Resources (technology, people and places from community, printed materials, artifacts)</b>	<ul style="list-style-type: none"> <li>• Internet – gather some climatological sites to list</li> <li>• Media weather persons from the community</li> <li>• Scientists</li> <li>• Computers to access information and print pictures</li> </ul>

<p><b>Mini-lessons as appropriate</b></p>	<ul style="list-style-type: none"> <li>• How to access information about climate and the climate debate on the Internet. (If you do not have computer access, print off data and distribute copies to the groups.)</li> <li>• Data analysis</li> <li>• Endangered animals</li> <li>• Graphing data for display (all the following still appropriate)</li> <li>• Writing short descriptive paragraphs to inform their audience.</li> <li>• Construction of graphs (each graph should have the months on the x-axis and the temperature and precipitation on the y-axis)</li> <li>• Construction of graphs on a computer</li> <li>• Computer skills for importing pictures or creating graphics for presentations</li> </ul>
<p><b>Assessment/evaluation (answer big question and address curricular standards and objectives)</b></p>	<p>Have students present their final product to teachers and parents; possibilities include an exhibit, a call to action, a debate, a project to engage the community such as conserving small amounts of energy, etc.</p> <p>Informational and persuasive writing or speaking skills can be assessed, as can construction of a graph, and analysis and synthesis of information collected.</p>
<p><b>Student reflections</b></p>	<p>What did you learn doing this project that you would like to share with everyone?</p> <p>Will you make any changes in your own daily life because of what you learned?</p>

## The Climate Around Us: Project Sessions

Session Number	Tasks	Materials Needed	Time Needed
1	<p>Probe students' experience with weather in your area or what they have read or heard about.</p> <p>Talk about how any observed changes affect the students personally, if at all.</p> <p>Ask how climate change might affect people worldwide (ways of life, jobs, food growing, droughts, disease).</p> <p>Tell students that they are to investigate the allegations that climate change is an urgent problem.</p> <p>They can choose a way to present their findings after doing some research about it.</p> <p>Ask what people might want to know related to the climate change and make a list.</p> <p>Mini-lesson on working as a group.</p>	Have a sample of articles and books on hand	1 hour
2	<p>Have groups select a perspective to pursue.</p> <p>Groups brainstorm the questions they want to find information on and what kind of product they want to have. They may distribute the work and talk about how they will keep each other current on where everybody is.</p> <p>Types of projects they might pursue:</p> <ul style="list-style-type: none"> <li>• Brochure</li> <li>• Debate</li> <li>• Visual presentation (exhibit)</li> <li>• Interviews with scientists (radio or TV show)</li> <li>• Poster urging action</li> </ul>	<p>List from session 1 (can be enhanced)</p> <p>Internet access, or printouts of articles</p>	
3	Continue to work on gathering information and meet to decide on best ways to convey/display it.		
4	Peer feedback when content is finished. Is it clearly understood? Polish and think about presentation.		
5	Practice presenting; peers as coaches		
6	Final presentation of products		

## The Climate Around Us: Mini-Lessons

Mini-lessons for science may include aspects of gathering, recording, analyzing and displaying information.

### **Formulating a question for exploration.**

Be clear about what you want to find out!

### **What evidence will be necessary to answer the question?**

### **How much data, how many instances, should be gathered?**

Although there is no definitive number, students should understand that a few isolated instances do not provide enough evidence to draw a conclusion.

### **How to display data to show what is important.**

Charting or graphing, different kinds of graphs, scale that keeps the data in perspective.

### **How to find and use data from websites, real time or archived.**



# INTERDISCIPLINARY



## Interdisciplinary Websites

### **Buck Institute for Education**

Along with material about project learning itself, there is a link from which students can join structured online projects.  
[www.bie.org/index.php/site/PBL/web\\_resources/](http://www.bie.org/index.php/site/PBL/web_resources/)

### **The Center for Innovation in Engineering and Science Education**

Site for interdisciplinary online projects. Used by teachers worldwide.  
[www.ciese.org/currichome.html](http://www.ciese.org/currichome.html)

### **Integrated Curriculum Collaborative**

Amphitheater Public Schools presents integrated curriculum collaborative project learning activities.  
[www.amphi.com/teachers/pgreenleaf/edtech/pblactivities.html](http://www.amphi.com/teachers/pgreenleaf/edtech/pblactivities.html)

### **PBL: Exemplary Projects**

Lists projects and formats for developing interdisciplinary projects. Aligns with standards, assessment and research. Science oriented but also hosts other topics for investigation.  
[www.wested.org/pblnet/other\\_gp.html](http://www.wested.org/pblnet/other_gp.html)

### **The Project Approach**

This site contains information about the Engaging Children's Minds Institute and links to projects for grades 1-3, such as:

- Faces to the Window: "The Construction Project"
- Looking at the Trees around Us
- Project on Pets
- The Food and Restaurant Project
- The Llama Project

[www.projectapproach.org/](http://www.projectapproach.org/)

### **The Project Approach, Catalog 2**

This site contains both tips about project learning and examples of projects from around the world.  
<http://ceep.crc.uiuc.edu/eecearchive/books/projcat2.html>

### **Project-Based Learning**

Contains general information about Project Learning and a few projects for older students, including one on architecture.  
[www.edutopia.org/project-learning](http://www.edutopia.org/project-learning)

## Project Ideas

**Amazing Alaskan Animals**—This project immerses elementary students in a study of Alaska’s animals in their environment. Students will contribute to a “big book” highlighting the animal they choose.

[http://teachersnetwork.org/impactii/profiles02\\_03/alaska.htm](http://teachersnetwork.org/impactii/profiles02_03/alaska.htm)

### Buying a Car—

- Math: Interest rates, incentives, price.
- Science: Technology involved in airbags, gas mileage, brakes.
- Social studies: History of company, Kelly Blue Book.
- Communication arts: Advertising, information, warranty, etc.
- Reading: Search Internet for information. Ask sales staff questions.
- Activity: Go to car dealer and go through process of picking out car/paperwork.

**Chef for a Week**—Groups will plan a week of lunches for the school cafeteria (or to bring to school as brown bag). Daily menus must include all food groups and a designated healthy choice. Submit menu, cost for 100 students and prices to be charged. (Cost adapted if bringing own lunches.) Menu can show calories. Poll can be conducted to identify popular choices before planning. Be prepared to present the plan to cafeteria head or cooks. Healthy choice must be explained nutritionally.

**Exemplary Projects**—Includes projects of varying content including a mock trial around the Amistad.

[www.wested.org/pblnet/exemplary\\_projects.html](http://www.wested.org/pblnet/exemplary_projects.html)

**Faces to the Window: The Construction Project**—What’s happening in YOUR neighborhood? Construction taking place next to the school or in the neighborhood is a good foundation for learning about the complexity of building.

<http://ecrp.uiuc.edu/v4n1/berry.html>

**Foot to Height**—Students combine mathematics with forensic science to study how bones of the feet can reveal interesting facts about a person. [www.cyberbee.com/whodunnit/foot.html](http://www.cyberbee.com/whodunnit/foot.html)

**Forensics 101**—Middle school students learn about forensic anthropology and solve mysteries using hands-on activities from math, science, language arts, art and technology. A series of four forensics projects are also available to download at <http://teachersnetwork.org/readyssettech/sedewitch/forensics.htm>

**Let’s Go Shopping**—In this project, elementary school students set up a classroom store. Students learn about the different roles and responsibilities connected to running and stocking a store and of being a customer and paying for merchandise. [http://teachersnetwork.org/impactii/profiles01\\_02/Greenberg.htm](http://teachersnetwork.org/impactii/profiles01_02/Greenberg.htm)

**Ohio Resource Center**—High school-level instructional units from exploring the effect of different treads on tires to planning a wedding reception. <http://pathways.ohiorc.org/>

**Personal Finance**—Understanding the use of money in the world has many possible lenses which can be combined in a project or investigated separately.

- Math: Set up a budget given a salary. What must come out of it? Rent, gas, food, utilities, medical expenses, recreation, clothing
- Social studies: How citizenship affects your living, taxes, employment, choices on where you want to live.
- Communication arts: Make phone calls to check on setting up living arrangements, etc.
- Reading and writing: Applications, filling out forms, use newspapers/ads.
- Science: Tools to tend to house and yard, energy conservation.
- Recipe—
- Math: Ingredients, fractions.
- Science: Baking, physical/chemical.

- Language arts: Write paragraph.
- Social studies: Where ingredients came from, demographics.
- Activity: Make (cook/bake) the recipe item. Scale up or down for more or fewer people.

**Soccer Field Development**—Designing a soccer (or other playing) field could involve:

- Math: Construction and design of the field, how much grass seed; survey and leveling of land, drainage, irrigation and seating arrangements.
- Science: Soil testing, pick test for drainage, fertility of land and amount; use of chemicals, turf growing season and research on correct types.
- Social studies: Civic organization – cooperative fund-raising and economics of the use of the field.
- Communication arts: Press releases and justification to school board, community, etc. Explanations of the what, why and how of the project.
- Grant development: Communication with other agencies that have completed this project, research on size, etc. for the field.

**Story Quilting**—This literacy-based project integrates social studies, math, art and technology. Late elementary students start the project though a piece of literature and extend their learning to research the author, the time period and more. [http://teachersnetwork.org/impactii/profiles00\\_01/Espinoza.htm](http://teachersnetwork.org/impactii/profiles00_01/Espinoza.htm)

**Tour de France**—Integrated learning using the Tour de France (Or, the Alaskan sled dog race or a triathlon, etc.)

- Social studies: Geography (trace the path), topography, cities, historical significance and cultural impacts.
- Math: Routing and distance, km - mi conversion; endurance ratio (pacing).
- Science: Bike mechanics (gears, correct tires, pedals, handle bars vs seat heights, etc.).
- English/reading: Foreign language (linguistics) newspapers/magazines, journaling of what has occurred, diary, etc.

**Witness for the Prosecution**—High school students take on the role of investigative journalist and read the play *Witness for the Prosecution* by Agatha Christie. After each act of the play, students write news stories using facts from the play. [www.teachnet-lab.org/fklane/pmaslow/witness.htm](http://www.teachnet-lab.org/fklane/pmaslow/witness.htm)

## Sample Project: Anatomy of a Disaster

### Overview

<b>Project title</b>	Anatomy of a Disaster
<b>Content area(s)</b>	Interdisciplinary
<b>Grade levels</b>	4-12
<b>Academic goals</b>	<ul style="list-style-type: none"> <li>• Research</li> <li>• Problem solving</li> <li>• Science—natural disasters</li> <li>• Social studies—Human impact on environment</li> <li>• Language arts—Written presentation</li> <li>• Technology</li> </ul>
<b>Hook/product</b>	What causes disasters?
<b>Prerequisite skills of students prior to this project</b>	<ul style="list-style-type: none"> <li>• Ability to research the Internet or in the library</li> <li>• Note-taking</li> <li>• Science: natural cause, geographic impact, natural cycles and needs of living things, weather cycles</li> <li>• Math: maps, graphs, charts of data</li> <li>• Language arts: narratives, presentation skills</li> <li>• Social studies: human-environmental interactions, geography, governmental policies, recommendations for improved safety</li> </ul>
<b>Driving question or big idea</b>	How do people cause and how can they lessen the impact of natural disasters?
<b>Length of project</b>	5 sessions (may need to add 6th session if unable to do all presentations in one session)
<b>Organization; grouping of students</b>	Can work in pairs or small groups or class can undertake one project and have subgroups work on different aspects of the project.
<b>Overview of project</b>	<p>Students are assigned or select a natural disaster from history. They research and discover what made that natural event a disaster.</p> <p>They then prepare a presentation analyzing what they found and proposing actions to make disasters less likely.</p>
<b>Resources (technology, people and places from community, printed materials, artifacts)</b>	<ul style="list-style-type: none"> <li>• Newspaper files</li> <li>• Web archives</li> <li>• Natural history museums</li> <li>• TV archives</li> </ul>

<p><b>Mini-lessons as appropriate</b></p>	<ul style="list-style-type: none"> <li>• Vocabulary</li> <li>• Interpreting data</li> <li>• Displaying data to highlight a point</li> <li>• Perhaps some writing skills</li> </ul>
<p><b>Student reflections</b></p>	<p>What did I learn about natural phenomena and disasters?</p> <p>Or—</p> <p>You can post three rules to help people avoid disasters. What will they be?</p>

**Anatomy of a Disaster: Project Sessions**

<b>Session Number</b>	<b>Tasks</b>	<b>Materials Needed</b>	<b>Time Needed</b>
1	<p>Discuss what constitutes a natural disaster and distinguish them from man-made events.</p> <p>Include: volcano eruptions, hurricanes, floods, tornadoes, fires, earthquakes, blizzards, plagues and epidemics, wildlife intrusions, severe storms, lightning strikes, droughts, tidal waves</p> <p>Explicitly point out disasters that are not natural phenomena, such as car accidents and arson.</p> <p>Allow time for initial Internet search or perusal of a series of pictures and articles depicting such events. Then have each team select the disaster they would like to explore.</p>	<p>Chart paper</p> <p>Markers</p> <p>Writing paper</p>	45 minutes
2	<p>Discussion of the expectation that at the end of the project, each team will make a presentation to the rest of the class. If there are topics that are particularly significant locally, you may arrange for related officials to be present or to take the students to their place of work to present.</p> <p>Begin research to find data and anecdotes about the chosen topics.</p>	Internet access	45 minutes
3	<p>Plan presentations using:</p> <ul style="list-style-type: none"> <li>• PowerPoint</li> <li>• Story board</li> <li>• Exhibit</li> <li>• Debate</li> <li>• White paper</li> <li>• Posters</li> <li>• Campaigns</li> </ul>	<p>Computer with appropriate software</p> <p>Poster board</p> <p>Markers</p>	45 minutes
4	Rehearse presentations		30-45 minutes
5	<p>Presentations</p> <p>Reflections</p>		45 minutes



# Strategies for Helping Students





# Questioning

If we want students to think, we must hold back from thinking for them. It is easy to tell them what to do, but it is more beneficial to help them figure it out for themselves. One of the most effective ways of pushing students is through the questions we ask in response to their questions or errors. Below are some prompts that help students think instead of focusing only on right answers or being told how to do things. Most can be adapted to any academic discipline.

1. What are the questions? What do you have to find out?
2. What do you know that will help you? If you have no information, where can you find some?
3. Can you close your eyes and visualize?
4. Can you represent that somehow so I can see what you see?
5. What is the next step?
6. Can you show us?
7. Stop there! Let's record what you just said.
8. How can I write that?
9. Can you give me an equation?
10. Are you done?
11. What was the question you started with? Have you answered it?
12. Is the answer reasonable?
13. Did anyone think about this differently?
14. Is there another way to think about this?
15. What do you think would happen if...
16. I saw Alex do this...what do you think about that?
17. What do you think Tayesha was thinking?
18. Do you agree with him/her?
19. Are there any questions for her?
20. Why do you think they have different answers?
21. What do you think went wrong?
22. Is there another question we could ask?
23. What does (or could) this represent?
24. Are you telling me that...?
25. Does that mean the same thing as...?
26. Can you say it a different way?
27. How can they both be right?
28. How are the solutions alike? Different?
29. Can you explain what Laura did?
30. Why?
31. What if...?
32. Suppose that...
33. Can you give an example of...?
34. Can you think of an example that disproves this?
35. Do you see a pattern?
36. Is this always true?
37. How do you know?
38. I'm not sure. Convince me that what you just said is true.
39. What do you think? Why do you think so?
40. Why does that make (or not make) sense?
41. Tell me how...
42. How many agree? Disagree?
43. Can you think of other approaches we've used? Would any be helpful here?
44. Summarize what you found out in no more than three sentences (or six words), please.

45. If you could only make one statement, what would it be?
46. What would the next one be?
47. What would the nth one be?
48. Can you think of a rule that would help us find any number?
49. Why do you like (or dislike)?
50. What else have we done that is similar to this?

# Feedback

Feedback on work or performance can move students to improve and excel. Effective feedback to students has three primary qualities. It must be timely, specific and credible. Praise for that which is not worthy will destroy its value. Praise for everything makes it impossible for students to know the quality of their work. Praise for effort should not be confused with praise for results.

Feedback is about the work, not the student. According to research, it should force the student to engage cognitively in the work. (Black and Wiliam; Thompson) The questions posed by the teacher should point them to missing or erroneous information and provide a clue (not a prescription) for how to proceed to make the work better. Pointing out what specifically students did well also serves as motivation to keep going. The task remains doable. For example, saying, “You used words that help me see precisely what is happening” or “Your calculations seem to be correct, but I can’t tell what your answer means. Please label what you have found out. What is your answer to the question?” can help students grow. “Great work!” or “keep trying” do not provide clues about what is done well or needs improvement.

## Vocabulary Development

Vocabulary development is essential for all subjects. Students should be engaged, not just in the memorization of definitions but in thinking about what words mean in specific subjects or circumstances and what they do not mean. One model for approaching vocabulary in content areas is to develop the concepts behind the words first, and introduce the words when students understand.

Available word walls, posting words or phrases on the wall, for frequent brief review or reference is a strategy for reinforcing vocabulary. A written model for students to keep and study from is the Frayer model. On a paper folded into four quadrants, students write the important word or phrase in the center. They write their own definition in the upper left, characteristics in the upper right, an example of the word in the lower left and a non-example in the lower right. Then the class comes up with a class definition that is written below the students’ own definition (see Figure 1). This model can help move the student to a more formal and perhaps more precise understanding of the word.


**Figure 1: The Frayer Model**

<b>Meaning</b>	<b>Characteristics/Facts</b>
Divisible evenly by only itself and 1.	Makes only a linear display, one row.
Natural number whose only factors are 1 and itself.	Can be odd or even. Find them using the Sieve of Eratosthenes or making arrays.
<b>Examples</b>	<b>Non-examples</b>
2 3 7 11 137	4 24 56 -16

PRIME NUMBER

The model can also be used to examine meanings of words in cross-curricular settings (see Figure 2).

**Figure 2**

<b>Reading</b>	<b>Mathematics</b>
Something you earn at college. <ul style="list-style-type: none"> <li>• “Third degree”—a phrase indicating intense interrogation.</li> <li>• Relative extent—to what degree are you satisfied?</li> </ul>	A precise measurement for angles. <ul style="list-style-type: none"> <li>• a circle has 360 degrees</li> <li>• a triangle has 180 degrees</li> <li>• a right angle has 90 degrees</li> </ul>
 <b>DEGREE</b>	
<b>Geography</b>	<b>Law</b>
A line or point of the earth’s surface defined by its angular distance from standard meridian or north or south.	Measure of guilt in U.S. law fixed by statute, such as murder in the first degree.  Sometimes carries maximum or minimum penalties.

**Working Together—Cooperative Groups/Teams**

Cooperative groups should be formed to work on a task or project to which every member of the group can contribute something. Multi-ability tasks or projects enable students with different strengths and talents to contribute to the work. The abstract thinker may be less gifted at creating a display for the group’s findings or making the mathematics visible. It is important for the instructor to let students know everyone is expected to contribute to a group project.

It is wise to assign responsibilities within a cooperative group and teach appropriate behaviors. One set of responsibilities, depending on the task, could be:

- Facilitator – responsible for keeping the group on task and seeing that norms for behavior are followed;
- Materials person – responsible for getting and returning any materials the group needs;
- Recorder – keeping a written record of the group’s work or thoughts so they can be reviewed, summarized or conveyed to others; and a
- Reporter – who presents the group’s findings to the rest of the class. Sometimes each group member will be involved in the presentation. In this case, the job may be that of checking that everything is in order and ready.

Other jobs may include art or poster preparation, researcher, timekeeper or encourager. Assignments to groups can be done in a number of ways: voluntary association (which may leave some students out), assigning students with various achievement levels or strengths to a group, self-selection by the particular project they want to pursue or random selection by icebreaker-type activities. Regardless of how groups are assigned, it is important that there is someone in the group who can assume a leadership role. It is also important that students understand the nature and expectations of any roles assigned. This may require mini-lessons and modeling.

Students must also understand the norms of behavior during project work (and at other times). Norms are rules for how people should behave in given circumstances. When working collaboratively, students “must learn to ask for other people’s opinions, to give other people a chance to talk, and to make brief sensible contributions to the group effort.” (AFT, 1994) General norms might include:

- listening respectfully to each other;
- contributing;
- asking for help when needed;
- helping when asked; and/or
- being aware of safety considerations.

Behaving according to the norms that are set will help the whole group succeed.

Groups may be given a short group task to accomplish while an observer takes notes on how norms are followed and roles are fulfilled. Feedback to the group will help them become more aware of their part in the group.

### **Metacognition**

One difference between novices and experts is that experts know what they are trying to accomplish, where they are, and what they still need to do. They are also aware of the strategies they use and why they use them. It is important to help students develop the ability to assess where they are and understand what they are doing. Often, providing a graphic organizer of some sort can help them keep track of where they are in a project, what they have done and what they still must do.

In addition to a written note taker, the instructor should frequently probe what groups are doing and why. If a group does not appear to understand the task or a skill they need to use, the instructor must ask questions or provide examples to help move the group along.

Finally, staff need to teach metacognitive strategies within the context of the discipline/subject area being taught. They can model metacognitive strategies by doing “think-alouds” with the students so the students can see the teachers’ thinking processes.

To monitor their own thinking and develop metacognition, students should ask themselves the following questions:

1. How is what I’m hearing/seeing like what I already know?
2. What do I understand?
3. What don’t I understand?
4. What comes next? What predictions can I make about the future, or future steps?
5. What have I learned that’s new?

(National Research Council)





# Games & Icebreakers



## **Games and Icebreakers**

This section provides a number of games that can help students practice skills in various disciplines. They can also be used as warm-ups, closers or breaks during training sessions or staff meetings enabling staff to experience them before using them with students. Games are an enjoyable way for students to practice skills. Care must be taken to craft rules so one person does not always end up as the winner and discourage participation.

# Icebreakers

## Getting To Know You

Have students line up silently according to the month and day of birth. Have pairs face each other and exchange information specified by you (likes, dislikes, favorites, what they most want other students to know about them, etc.). Then have members of each pair introduce the other.

## Find Your Partner

Distribute cards with famous partners (Romeo and Juliet; Mickey and Minnie Mouse; Angelina and Brad, etc.) and have each person find his or her partner. The duo may be paired to work on a task together or find out something interesting about each other to share with the class.

A variation of this activity is to prepare cards that have four items that can be grouped. When the groups are together they will work as teams on a task.

## It's a Match

On 3x5 cards, write down adjectives that describe people (happy, fun, direct, appreciative, creative, kind, analytical, adventurous, etc.). Make enough that each participant will have three cards and include duplicate cards. Instruct participants to exchange cards with others in the room until they get three cards that best describe them. Allow five minutes for participants to complete the exercise. When time is up, ask participants to introduce themselves and share the three words that best describe them.

## Truth or Not

Ask participants to write down three statements about themselves. Tell them to make sure one is false. Participants then circulate around the room, introducing themselves to each other, sharing their statements, and asking each other to identify the false statement. Allow five-10 minutes for participants to mingle. Bring the group back together and ask participants to read their statements and have the large group guess which is the false statement.

## Bingo

Create a bingo card with boxes that contain questions like:

- Who has three siblings?
- Who speaks a foreign language?
- Who knows how to water ski?
- Who grew up in the city?
- Who likes beets?

Leave a line in the box under the question for the answer. When participants enter the room, give them a card and ask them to find another participant in the room who is the answer to each question. For example, a person who grew up in the city writes his or her name on the line of the other person's card. Participants may not use their own name on their card.

## Postcard Select

Prepare postcard sets, 3x5 cards with stickers affixed, or objects of different colors. There should be as many of each category as you want to have in working tables or groups. Each person draws an object or card from a bag and finds others with the same category; like groups sit together. To get to know each other, have groups exchange answers to questions such as:

- Share something about yourself that you think no one at the table may know.
- Describe a positive experience in the past week.

- Share your biggest challenge at school.
- Share something you would like to know more about.

### **Team Building**

Divide students into groups of four or five people by having them number off. Tell the newly formed groups that their assignment is to find 10 things they have in common with every other person in the group. (No body parts [we all have legs; we all have arms] and no clothing [we all wear shoes, we all wear pants]). This helps the group explore shared interests more broadly. One person must take notes and be ready to read their list to the whole group upon completion of the assignment. This activity may give clues to interests that may form the basis for projects.

### **People Search**

This review technique may be used after a break or at the start of a new session. Each person receives a search sheet and asks other students or participants to answer one of the questions on the sheet. The person’s name and answer are jotted on the grid. The first person to complete all the boxes is the winner. Each question must be responded to by a different person, ensuring that contact is made with a number of people.

### **I Have, Who Has...?**

This activity can be adapted for any subject. It is a looping review activity in which each student receives a card that begins with the answer to a question and then asks another question. The last question in a round will be the question for the first “I have...” statement that was made. The round ends with that answer.

To plot your activity, print this chart from the CD-ROM included with this toolkit.

I have	Who has
I have	Who has
I have	Who has
I have	Who has
I have	Who has
I have	Who has
I have	Who has
I have	Who has
I have	Who has

## Concentration

This activity adapts the TV game “Concentration” to almost any subject.

Using thirty 3x5 index cards, create 15 questions/problems that relate to a targeted area of study. Write each problem or question on a card and write the answer to each question on another card.

Arrange the cards in random order in six rows of five cards on a bulletin board or have small groups of students play at desks arranged in quads. Place a 3x5 sticky note on top of each card to cover the content and number the sticky notes in order from one to 30.

If playing whole class, start the game by calling the name of a student. You might use the popsicle stick method of calling on students (see page 136). That will help keep *all* students focused on the game. (If playing in small groups, play rotates clockwise.) The game continues in this way:

- The student calls out a number.
- Lift the sticky note with that number on it to reveal a question or an answer.
- If a *question* is under that sticky note, students call out another number under which they hope to find the matching answer; if the number they called out reveals an *answer* underneath, students call out another number under which they hope to find the matching question.
- If the cards under the two numbers reveal a *matching* question and answer, then the student earns 1 point. If the cards do not match, the sticky note with the number on it is returned to its spot and all students do their best to recall what question or answer was revealed under each number so when they’re called on, they will be able to make a match.
- Keep playing until all matches have been revealed.
- Store each edition of the game cards in an envelope labeled with the skill the game teaches. Keep them all in a “Concentration” file so you can use them from year to year, or repost an old game from time to time.
- Let a different student serve as emcee each time the game is played. That student can select popsicle sticks to determine which student’s turn it is, and reveal the puzzle questions and answers.
- After your students are familiar with the game, why not put them to work creating Concentration game cards that the entire class can play? Have a team of students create a game. Check their work and have them make editing revisions before creating the actual game cards. The students who create the puzzles can serve as emcees when it is time to play their game.

## Concentration Across the Curriculum

Following are just ten ideas, out of thousands, for adapting the Concentration game to review skills across the curriculum:

- Adapt for any kind of math skill you are teaching—from addition facts to algebraic equations. Write the problem on one card, the answer on another.
- If you are studying phonics, write the word on one card, its phonetic spelling on another.
- For a book you are reading aloud, match the names of different characters with a statement that tells something about that character.
- In chemistry, match the chemical symbol with the name of the element. For example, H matches hydrogen, Ag matches gold, and so on.
- If you are teaching students to tell time, have them match the card that shows the time on a clock face with the card that shows the time in digital format (for example, 7:45). Or match the digital form to the words that tell the time (for example, quarter to 8).
- Use vocabulary words. Students match each word card with its definition card.
- If you teach a foreign language, have students match a vocabulary word in that language with its English translation.
- Studying geography? Match states and their capitals.



- Homonyms can make a fun theme for a game. Match *there* with *their*, *hour* with *our*, *I* with *eye*, and so on. (Other ideas: match synonyms or antonyms.)
- To bolster spelling, match two words that clearly *attempt* to spell the same word. For example, *school* and *skool* or *mispell* and *misspell*. Students match the two words, then tell the one that is spelled correctly. (Resource: Spelling Test (<http://web.archive.org/web/20060423181345/www.sentex.net/~mmcadams/spelling.html>) for word lists.)
- Are you teaching about inventors in science class? Match the name of the inventor with his or her invention.

### **Popsicle Stick Method**

To use this popular method of selecting kids, simply write each student's name on a popsicle stick and place the sticks in a jar or can. Draw a stick; the person whose name is on the stick responds next.

*Note:* In a game such as this one, you do not want to lose students' attention once they have been called on. If their popsicle stick is selected and you leave it out of the can after they have responded, they have no stake in paying attention to the game after they have had their turn. However, if you return their stick to the can, they know they have as much chance as anybody else to be called on again.

### **Out of the Box**

In this vocabulary game that can be adapted to focus on any subject matter, the teacher places students into small groups. A topic is presented, and the students are given a few minutes to brainstorm unique and unusual words related to this topic.

Let students use their dictionaries. It will be good practice for developing solid dictionary skills.

When the instructor announces that time is up, s/he reads a list of 10 words that have been preselected for this topic. If the subject is "cheese," "cheddar" might be on the teacher's list, but "Camembert" is not as common and will likely win a point for the team. Students check their lists as a group and cross out every word that is also read by the teacher. They then award their team one point for each word that does not appear in the teacher's list. Each group reads its list of original words. The students draw a line through any words shared by another team and give their team another point for every word that no other team mentions. A new word is given and play continues.

Create a version of this game for any classroom subject by choosing categories that the students have encountered in class. Topics for social studies might include climate and transportation and music could feature opera or rhythm. The possibilities are limitless!

### **Boggle**

This commercial game in which letter cubes are tossed and players form words using adjacent letters can be played whole class or in small groups. Add a twist—once a list of words is created for a throw, see who can use the most words just created in a single sentence.

### **Just the facts, please**

In this game, students form a circle and throw a ball to someone else, saying a number as they throw. The first person may say "6," the second "plus 3," and the third would then give the sum "9." If the sum is correct, he starts a new number fact; if he is wrong, he sits down. Last person standing is the winner. (This may be played with any operations.)

### **Easy facts**

To help children learn facts where one or two are added or subtracted, make a set of cards that has the answers to each number plus one, plus two, minus one, and minus two. Distribute answer cards to 10 students. The other students are referees. Ask the person to stand who has the number that is "one more than six" or "two less than five." If someone stands, the referees verify whether the response is correct. If correct, the student writes the equation on the board (6+1=7).

### **Buzz (or Pong)**

Students form a circle. Select a factor. Students will count by ones in turn but for any number that is a multiple of the number chosen the student must say “buzz” (or “pong”) instead of the number. If the number is spoken, the student is eliminated and stands or sits in the center of the circle. Good practice for single digit multiplication and division. Promotes quicker recall. For highly proficient students the game can be extended to include multiples of two numbers, the second requiring a response of “bizz” or “ping.” Some answers will then be “bizz, buzz” or “ping, pong.” This version generally produces fast eliminations and lots of laughter.

### **Bowling with Numbers**

In these games, bowling pins are set up and numbered. Students roll two or three dice, pick cards or spin spinners and use those numbers to create number sentences that result in 1 through 10. Students may use appropriate operations with the numbers to knock down as many pins as they can. For example, if they roll 1, 6 and 4 they can get a strike this way:

$$1 = 6 - 4 - 1$$

$$2 = (6-4) \times 1$$

$$3 = (6-4) + 1$$

$$4 = 6 - \sqrt{4} \div 1$$

$$5 = 4 + 1^6$$

$$6 = 6 \times 1^4$$

$$7 = \sqrt{4} + 6 - 1$$

$$8 = \sqrt{4} + 6 \times 1$$

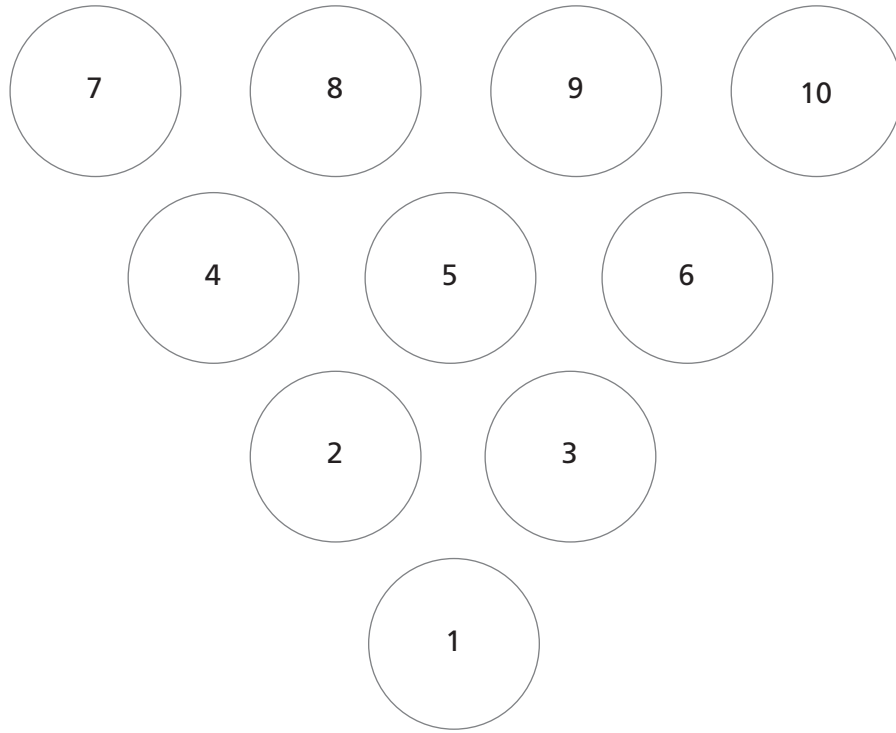
$$9 = 6 + 4 - 1$$

$$10 = (6 + 4) \times 1$$

Games can be scored like regular bowling (highest score after 10 frames) or each round can be discrete, allowing for more “winners.”

# Bowling with Numbers\*

(Source: *Measuring Up*, Mathematical Sciences Education Board)



## Equations

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*\*This worksheet is available on the CD-ROM included with this toolkit.*



**Number Boggle\***

In Number Boggle, players must use three adjacent numbers and any operation to create a valid number sentence. Using the game board that follows, for example, a student could use  $15 - 3 = 12$  as a legal, valid expression. But they cannot use  $5 + 1 = 6$  because the numbers are not adjacent. Expressions are to be recorded on the lines provided. The game can be played individually with a target set for most expressions created or as a two-player game. If one player cannot create any more expressions at some point, the other player gets to try. If he can, he wins. If not, the game ends in a tie.

15	9	6	7
3	12	8	5
7	4	13	2
5	1	11	10


15	9	6	7
3	12	8	5
7	4	13	2
5	1	11	10


*\*This worksheet is available on the CD-ROM included with this toolkit.*

## Contig

Required: Three number cubes or spinners, a score pad, markers and Contig board.

### Rules

1. Two to five players.
2. Each player rolls all three cubes and determines the sum. Smallest sum goes first.
3. Player rolls three cubes and uses one or two operations on the numbers rolled. He then is allowed to cover the resulting number on the board with a marker. (The first play of the game cannot score because there is no number covered to which he can be adjacent.) Play passes to the player on the right. A player may NOT cover a number that has been previously covered.
4. To score Contig, a player must cover a number on the board that is adjacent vertically, horizontally or diagonally to another COVERED number. One point is scored for each ADJACENT COVERED NUMBER.
5. When a player rolls the cubes and is unable to produce a number that has not already been covered, play goes to the next player. If he passes the dice believing there is no play when there is one, any of the other players may call out his mistake. The first player to call the error may place his marker on the proper uncovered square.
6. A cumulative score is kept for each player. A player is eliminated when he fails in three successive turns to produce a number that can be covered. When all players have experienced three successive failures to produce a coverable number, the game ends. The player with the highest cumulative score wins.

After students are comfortable with the game, and with higher-level students, these challenges might be explored:

- a. How were the numbers on the board selected?
- b. What numbers could be used if you use two cubes?
- c. How many ways can you cover each number in Contig?
- d. What is the highest possible number for three cubes? Two cubes? Four cubes?

**Contig\***

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>
<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>
<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>
<b>41</b>	<b>42</b>	<b>44</b>	<b>45</b>	<b>48</b>	<b>50</b>	<b>54</b>	<b>55</b>
<b>60</b>	<b>64</b>	<b>66</b>	<b>72</b>	<b>75</b>	<b>80</b>	<b>90</b>	<b>96</b>
<b>100</b>	<b>108</b>	<b>120</b>	<b>125</b>	<b>144</b>	<b>150</b>	<b>180</b>	<b>216</b>

*\*This worksheet is available on the CD-ROM included with this toolkit.*

### Fractions Construct a Sum\*

Use only the following numbers to make fractions in the boxes below such that the sum comes as close to 1 as possible without being 1 exactly.

Number pool: 1, 3, 4, 5, 6, 7

numerator	+	numerator
denominator		denominator

numerator	+	numerator
denominator		denominator

This task is from Behr, Wachsmuth & Post (*Journal for Research in Mathematics Education*, Vol. 16, No. 2, 1985).

*\*This worksheet is available on the CD-ROM included with this toolkit.*

# Templates



## **Templates**

In this section you will find templates for planning projects and a form for data collection that can be reproduced. (Remember data is more than just test scores. We are interested in attitudes and attendance, participation and social skills. The most helpful information for teachers is to know where students get hung up and what feeds their enthusiasm.) There is also a sample form for the exchange of information between school day and beyond school day staff. These templates are also available on the included CD-ROM.

## School Day/Beyond School Day Communication

<p>This month in grade _____ we are working on</p> <p>_____</p> <p>_____.</p>	<p>This month in grade _____ we are working on</p> <p>_____</p> <p>_____.</p>
<p>Particular student needs:</p>	<p>Particular student needs:</p>

From School Day Staff \_\_\_\_\_

To Beyond School Day Staff \_\_\_\_\_

**Beyond School Day/School Day Communication**

<p>The students in our after-school program are currently working on a project on</p> <p>_____</p> <p>_____.</p>	<p>In the tutoring or homework part of our after-school program students will work on</p> <p>_____</p> <p>_____</p>
<p>Notes about particular students:</p>	<p>Notes about particular students:</p>

From Beyond School Day Staff \_\_\_\_\_

To School Day Staff \_\_\_\_\_



## Project Plan

<b>Project title</b>	
<b>Content area(s)</b>	
<b>Topic</b>	
<b>Prerequisite skills needed</b>	
<b>Academic goals</b>	
<b>Driving question or big idea</b>	
<b>Length of project</b>	
<b>Organization/grouping of students</b>	
<b>Overview of Project</b>	
<b>Important data to collect periodically during and after the project is complete</b>	

<b>Resources available (technology, people and places from community, printed materials, artifacts)</b>	
<b>Mini-lessons as appropriate</b>	
<b>Games and learning activities</b>	
<b>Hook/product</b>	
<b>Assessment/evaluation (Answer big question and address curricular standards and objectives)</b>	
<b>Student reflections</b>	

## Project Sessions

Session Number	Tasks	Materials Needed	Time Needed
1			
2			
3			
4			
5			

## Student Checklist for Project

Group Members \_\_\_\_\_

<b>Task</b>	<b>Description</b>	<b>Group Member Responsible</b>	<b>Target Date</b>	<b>Done</b>
1	Identify project focus.			
2	Decide on project result to be shared (performance or products).			
3	Determine resources available and supplies needed.			
4	Make work plan and assign responsibilities, including making sure you have needed supplies.			
5	Do first round of work and share first results. Make any adjustments to plan that seem necessary, including asking for assistance or assessment of your direction.			
6	Continue research and second round of work.			

<b>Task</b>	<b>Description</b>	<b>Group Member Responsible</b>	<b>Target Date</b>	<b>Done</b>
7	Think further about how results will be presented. Begin to fill in more details of presentation plan.			
8	Double check where everyone is and how the work fits together.			
9	Driving question has been answered.			
10	Draft actual product or practice performance.			
11	"Dress rehearsal"			
12	You're on!			



# Professional Development Modules



## **Training Modules**



In this section, there are five professional development modules. Each module has an explicit step-by-step presenter's guide for the content, arranged in three columns. The text contains embedded slide miniatures that support the content (the full PowerPoint is also included on the CD-ROM), detailed activity descriptions and directions with special notes to support presenters. The modules include:


- predicted time needed for each part;
- activities to be used;
- materials and supplies needed; and
- facilitator notes that include points to stress, questions to pose, tips for presentation and goals for after-school teachers.

Following the plans are masters for the handouts referenced in the modules. The masters are also available on CD-ROM for your use. Facilitators should thoroughly review the materials before conducting a session, prepare any posters that will be needed and reproduce any handouts that will be used. If an LCD projector is not available for the slides, they can be reproduced as transparencies and used with an overhead projector.





# Module 1: Overview

Time	Activities	Notes
40 minutes	<p><b>As participants arrive</b>, have them make a tent card with their names and the information requested on the slide.</p> <div data-bbox="500 380 1021 772" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="color: #0070C0; margin: 0;"><b>Tent Card</b></p> <div style="text-align: center; margin: 5px 0;">  </div> <p style="margin: 5px 0;">Write your name in the center and in the corners of your tent card write:</p> <ol style="list-style-type: none"> <li>1. What is a talent you bring to the after-school program?</li> <li>2. Have you been involved with after-school programs before?</li> <li>3. What level do you work with?</li> <li>4. What is one thing you would like to get out of today's training?</li> </ol>  </div> <p><b>ACTIVITY 1: Overview of Day and Getting Started</b></p> <p><b>1. Purpose.</b> Provide an overview of the training day, letting participants know:</p> <ul style="list-style-type: none"> <li>• This training was developed by the American Federation of Teachers with a grant from the C.S. Mott Foundation.</li> <li>• It is designed to help groups bring some academic learning focus to their programs where there is none or to help those who teach regular day add some spice to the after-school venue.</li> <li>• Project Learning can help students become excited about learning and bring benefits in and out of school as it calls on skills and processes everyone needs.</li> <li>• By the end of the day you should know why this is a good strategy, where to find resources to help you, and how to plan and implement projects. After you have had time to try a project or two, we will follow up on how the implementation went and discuss any problems you encountered.</li> <li>• We expect participants to try project learning in their programs and will reconvene for one half-day to follow-up.</li> </ul>	<p>Supplies:</p> <ul style="list-style-type: none"> <li>Chart paper</li> <li>Markers with broad tips</li> <li>Double-entry journals</li> <li>Tent cards or heavy paper to make them</li> <li>LCD projector &amp; slides, DVD player or computer</li> </ul>



Time	Activities	Notes
	<p data-bbox="277 144 992 178">Display the title slide and go over the agenda for the day.</p> <div data-bbox="483 210 1005 600" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;">  </div> <p data-bbox="277 653 1170 747"><b>2.</b> Ask participants to stand and silently form a sequential line based on the month and date of their birth. Once the line is formed, have participants call out their birth dates to verify a correct sequence.</p> <p data-bbox="277 770 1203 865">Once the sequence is correct, have the line move into a circle and ask participants who have used project learning to give a brief description of a project they had their students do. Return to seats.</p> <p data-bbox="277 888 1187 982"><i>FACILITATOR NOTES:</i> Other icebreakers for initial introductions and sharing can be used if birth dates are inappropriate. See the Games and Icebreakers section for additional ideas.</p> <p data-bbox="277 1058 1203 1121"><b>3. Debrief.</b> Pose the following questions and lead a brief discussion about them:</p> <ul data-bbox="277 1144 1211 1566" style="list-style-type: none"> <li>• Why did we use such a personal method as birthdays to have you line up? (To help each person be personally invested. Each person’s contribution mattered to the success of the activity.)</li> <li>• Why did we ask you to line up <u>silently</u>? (Had to communicate in other ways, be aware of others and engage in collaborative problem solving.)</li> <li>• How did that help build a sense of community? (Helps everyone know they are an important part of the solution and so is everyone else. Everyone must participate.)</li> <li>• What other kinds of strategies could be used to help people feel comfortable with a new group or in a new setting? (List brainstormed suggestions on chart paper for later reference.)</li> </ul> <p data-bbox="277 1635 1211 1835"><b>4. Double-entry journal.</b> Introduce the double-entry journal to participants. The first column can be used to record notes related to the content of the workshop. Many of the strategies that will be used in the workshop, including the birthday line, can be used with students. The second column is for notes related to those strategies or other ideas from the group. Allow a couple of minutes for any notes to be made about the opening activity.</p>	

Time	Activities	Notes
20 minutes	<p><b>5. The Learning Environment.</b> Note that in this workshop facilitators and participants expect some learning to occur.</p> <p>(a) Surface what helps the participants learn. Chart these as “workshop norms.”</p> <p><i>FACILITATOR NOTES:</i> Ideas may include:</p> <ul style="list-style-type: none"> <li>• Respectful listening</li> <li>• Active participation by all</li> <li>• Transparency of purpose</li> <li>• No side conversations</li> <li>• No domination by one person</li> <li>• Protocol for dealing with concerns</li> <li>• Agreement on use of electronic devices (e.g., for note-taking only; cell phones on vibrate; considerate of others)</li> <li>• Politeness</li> </ul> <p>(b) Establish your signal for bringing the group back together or to silence during the workshop. (A handclap pattern, a bell, lights off, etc.)</p> <p>(c) Talk about the need to also establish rules or norms with after-school classes. Briefly discuss how important it is to set the limits and rules for after-school. There should be no more than four or five. Have students develop the rules to help maintain a good atmosphere. Rules must be taught and practiced. They become very important when using a less formal learning strategy such as project learning. Later we’ll talk more about rules that might be appropriate when using project learning.</p> <p><b>ACTIVITY 2: The Challenges of After-School</b></p> <p><b>1.Carousel.</b> Unveil previously hung posters with the questions below for a carousel activity. Small groups will move from poster to poster adding their responses to the questions. Tell groups they will have two minutes at each poster and must move to the next on your signal. Movement is clockwise.</p> <p>a) What do students do as they enter the class?</p> <p>b) What activities usually take place?</p> <p>c) What is your biggest challenge?</p> <p>d) How is your program like or unlike regular school?</p> <p>e) What kind of communication do you have with the regular day school or teachers?</p> <p><i>FACILITATOR NOTES:</i> If participants have not worked in any after-school programs, modify the questions to focus on their expectations and the prior knowledge they bring to the session.</p>	<p>Supplies:</p> <p>Chart paper</p> <p>Posters with pre-printed laminated or hand-written headings</p> <p>Markers</p>



Time	Activities	Notes
	<p data-bbox="277 144 1187 180"><b>2. Whole group sharing</b> and discussion of carousel posters. See SLIDE 2.</p> <div data-bbox="496 201 1019 590" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p data-bbox="513 222 883 289"><b>Carousel: A Look at Our Findings</b></p> <ul data-bbox="513 306 935 443" style="list-style-type: none"> <li>• Return to your original poster.</li> <li>• Select a reporter.</li> <li>• Read the question and share the responses you find on your poster.</li> <li>• And we'll debrief as a whole group!</li> </ul>   <span data-bbox="984 562 997 579">2</span> </div> <p data-bbox="277 625 1203 758"><i>FACILITATOR NOTES:</i> This activity is meant to surface current practice in after-school and challenges that project learning may be able to help with. As you review the responses to the questions, pose additional questions to bring out the following if they are not mentioned.</p> <ul data-bbox="277 779 1203 1713" style="list-style-type: none"> <li>• Atmosphere is not as constrained as regular day time-wise and should not be as formal. But <i>rules</i> and <i>procedures</i> must be established so students know limits and establish routines.</li> <li>• After a long, intense day, students need to renew themselves. Think of how adults react in a one or two-hour meeting or workshop! It is vital to provide a <i>transition time</i> during which there may be exercise, a snack, movement, a game, music or personal sharing time.</li> <li>• What are the extra challenges? (Often no progress reports or accountability for students; getting students to come regularly; resources; mixed ages; space used may be someone else's, etc.)</li> <li>• Different opportunities can be provided. <ul style="list-style-type: none"> <li>–Although some time is spent on homework and perhaps some tutoring during after-school time, it is also a time for less prescriptive work.</li> <li>–There is opportunity for more exploratory work, more time for student performances and addressing student interests.</li> </ul> </li> <li>• Differences from regular day might include more time for: problem solving, collaborative skills, connections within and across content, application of skills, in-school connections to real life, “can do” positive attitude, more informal, students arriving at different times, cross-grade groups.</li> <li>• Ask how many participants have used group work. Stress that tasks should lend themselves to group work, having multiple layers or making use of multiple talents. Sitting at the same table does not make a group. Discuss ways in which roles can be distributed in a small group so everyone has a responsibility.</li> </ul> <p data-bbox="298 1734 1203 1829"><i>Note: Cooperative small groups</i> require a particular set of formal strategies for working with students in groups. Without these, they will not be successful. See <i>Ensuring Participation in Small Group Work</i> on page 194.)</p>	

Time	Activities	Notes
	<p><b>3. Debrief and reflect.</b> After discussing the posters, give participants time to make notes in their two-column journals as the discussion continues.</p> <ul style="list-style-type: none"> <li>• Ask participants whether they gained any new ideas or knowledge from other people's responses.</li> <li>• Probe whether they think they could use a carousel format with students. Elicit some examples.</li> <li>• How does the carousel promote needs of older youth? (avenue for self-expression, movement, small-group effort, sense of belonging in group, everyone's thoughts matter, risk-taking without personal embarrassment, etc.—all of which are important in youth development.)</li> </ul> <p><i>FACILITATOR NOTES:</i> Mention the following if not brought up.</p> <ul style="list-style-type: none"> <li>• Carousels are good for surfacing prior knowledge.</li> <li>• They can be used to prompt students to come up with different ideas or solutions.</li> <li>• They can elicit ideas from students who are shy about participating orally.</li> <li>• They promote expression, movement and multiple perspectives.</li> <li>• They also promote group collaboration around ideas and support the idea that everyone can contribute.</li> <li>• Carousels are another strategy that is good to use with students of all ages.</li> </ul>	


# Module 2: What and Why

Time	Activities	Notes
5-10 minutes	<p><b>ACTIVITY 1: Project Learning</b></p> <p><b>1. Research base.</b> Mention very briefly the need to be aware of what works well to help children learn. Research has identified many strategies worth spending time on. Elements of project learning have been found to be effective in promoting student learning.</p> <div data-bbox="448 491 971 884" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="color: #4F81BD;">Research-based strategies</p> <ul style="list-style-type: none"> <li>• What does “research-based strategy” mean?               <ul style="list-style-type: none"> <li>◦ A strategy that research has found to be effective in promoting learning</li> </ul> </li> <li>• What’s the value of using <i>research-based</i> strategies?               <ul style="list-style-type: none"> <li>◦ We owe it to students to use what has been found to actually work</li> <li>◦ Such strategies will build their confidence because they <i>will</i> be learning</li> </ul> </li> </ul>  <span style="float: right;">3</span> </div> <p><i>FACILITATOR NOTES:</i></p> <ul style="list-style-type: none"> <li>• Researchers have gathered evidence that some strategies seem to be very effective in promoting learning. Given limited time, we want to use what is known to be effective.</li> <li>• Stress that educators have a lot of knowledge based on their first-hand classroom experiences but also need to be open to expanding their repertoire of strategies that are known to be powerful.</li> <li>• Strategies recommended in these materials are more than theories. They have been tested in more than one setting.</li> <li>• All the research referred to in this workshop and document is Level III research, not theory or opinion. Students benefit when we use what we know works.</li> </ul> <div data-bbox="448 1430 971 1822" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="color: #4F81BD;">Levels of Research</p> <p style="color: #4F81BD; font-size: small;">Ellis and Fouts (1997)</p> <ul style="list-style-type: none"> <li>• Level I      Theory building</li> <li>• Level II     Test the theory</li> <li>• Level III    Replicate results in large-scale studies and school/district implementations</li> </ul>  <span style="float: right;">4</span> </div>	<p>Supplies:</p> <p>Edutopia video on Project Learning (This video is included on the CD-ROM and can also be found at: <a href="http://www.edutopia.org/project-based-learning-overview-video">www.edutopia.org/project-based-learning-overview-video</a>)</p>


Time	Activities	Notes
15 minutes	<p><b>ACTIVITY 2: Research on the Brain and Basic Psychological Needs</b></p> <p><b>1. Brainstorm.</b> Tell participants that when we discuss what we know about learning, we can now refer to a growing body of research on how the brain functions. Technology has produced amazing real-time pictures of brain functioning under different circumstances. We will look at some of that research in a minute. Ask for ideas about what basic needs might be and write them on chart paper.</p> <p><b>2. Psychological needs.</b> Draw attention to the fact that some needs are physical and others are psychological. Today we will concentrate on the psychological. Display the poster or slide of Basic Psychological Needs. See SLIDE 5.</p> <div data-bbox="493 621 1016 1012" data-label="Diagram"> </div> <p>Explain the meaning of each component that, in combination with the other two, helps create a psychologically healthy person who is able to function well and learn.</p> <p>a) <b>Competence</b> refers to feeling able to do what you need to do. You know it is okay to make mistakes; that's how everyone learns. Eventually you will be able to do it. You do not feel dumb!</p> <p>b) <b>Relatedness says</b>, "I belong. People like me and I like them. I know how to get along with people and work with them even if we are not best friends. I am not alone."</p> <p>c) <b>Autonomy means</b>, "I do not feel like a prisoner who cannot make any decisions, who must wait for someone else's direction for every thing I do or want to do." You know where and how to find what you need. <i>Overlapping</i> both autonomy and competence, is believing that you know how to do things <i>or can learn how</i>.</p> <p><b>2. At tables</b>, take five minutes to share a "snapshot" of a student for whom these needs are not being met. What was the impact on the rest of the group?</p> <p><b>3. Take a few reflective comments</b> on what is important about this research for after-school. Be sure that the transferable strategies of <b>brainstorming</b>, used to start this activity, and the <b>opportunity to reflect</b> at the end are highlighted. Encourage participants to note these in their journals.</p>	


Time	Activities	Notes
15 minutes	<p><b>ACTIVITY 3: Project Learning Defined and Examined</b></p> <p><b>1. Definition.</b> Share the following formal definitions related to project learning from many that exist. See SLIDES 6 and 7.</p> <div data-bbox="443 289 966 682" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>Project Learning</b></p> <p><b>Projects are complex tasks, based on challenging questions or problems, that:</b></p> <ul style="list-style-type: none"> <li>○ involve students in design, problem-solving, decision making, or investigative activities,</li> <li>○ give students the opportunity to work relatively autonomously over extended periods of time, and</li> <li>○ culminate in realistic products or presentations.</li> </ul> <p style="text-align: right; font-size: small;">Jones, Rasmussen and Moffitt, 1997; Buck Institute, 1999; Thomas, 2000</p>  </div> <div data-bbox="443 720 966 1113" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>Project Approach</b></p> <p><b>A way of teaching and learning that emphasizes children’s active participation in the planning, development and assessment of their own work; children are encouraged to take initiative and responsibility for the work that is undertaken.</b></p> <p style="text-align: right; font-size: small;"><i>Engaging Children’s Minds: The Project Approach</i> Katz and Chard</p>  </div> <p>Ask what elements are common in both. (Student is involved in planning, has responsibility/autonomy, self-assessment, initiative, the work takes time, etc.)</p> <p><i>FACILITATOR NOTE:</i> Stress that although some people make fine distinctions between project-based, project approach and service learning—and you will hear them all in education circles—we stress the commonalities among these practices. They are all venues in which students can connect what they learn to life, apply what they learn, and deepen their appreciation and understanding of school content and its usefulness.</p>	




Time	Activities	Notes
15 minutes	<p><b>2. Stress</b> that every project should culminate with students demonstrating worthwhile knowledge in a product or event. See SLIDE 8.</p> <div data-bbox="467 241 990 640" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><b>Projects</b></p> <ul style="list-style-type: none"> <li>• <b>Should culminate in a product or presentation that will be shared with others</b></li> <li>• <b>Should include the use of big ideas from one or more disciplines</b></li> </ul>  </div> <p><b>3. Video of PBL.</b> Show the nine minute video on Project-Based Learning from Edutopia.</p> <p>Note that not everything in the video is possible in participants' situations, but some are. Ask participants to take note of the products or events related to the highlighted projects and also what they see as doable for them.</p> <p>Elicit comments about the video:</p> <ul style="list-style-type: none"> <li>• What did you notice about the children?</li> <li>• What were the characteristics of projects without big price tags?</li> <li>• What products or events were students working toward?</li> </ul> <p><i>FACILITATOR NOTES:</i> Viewers should note the excitement.</p> <p>Some may refer to not having resources. If so, remind them, for example, that worms and kites are not expensive. They can work with the program's administrators to secure donations from local businesses. Restaurants will donate menus. Companies may loan a worker. Donors appreciate a thank you in the local newspaper, TV or even school newsletter extolling their donations. Good publicity for them!</p> <ul style="list-style-type: none"> <li>• Student excitement was prompted by the products, exhibitions or presentations that they were engaged in. They were working to gather real data or produce something that shows what they can do, not worrying about what they cannot. Care and quality is often heightened when the students can produce something to share with others outside their class.</li> <li>• Emphasize that if knowledge used in projects is explicitly linked to what students are learning in school, projects should foster more interest and enthusiasm for school day learning. After-school staff should explicitly make this connection.</li> </ul>	

Time	Activities	Notes
45 minutes	<p><b>ACTIVITY 4: Examine an Annotated Project Plan.</b></p> <p>a) Display a list of the following topics: <i>psychological needs, motivation, environment conducive to learning, active engagement, multiple paths</i> and <i>responsibility</i>. Ask what role each might play in student learning. Accept a few ideas for each and affirm that these have all been confirmed by researchers to be important in promoting student learning. Note that project learning engages them all.</p> <ul style="list-style-type: none"> <li>• <b>Psychological needs.</b> Students need a <i>sense of autonomy</i> (their own ideas will have a chance to emerge and be heard; they will have choices within a project), <i>sense of relatedness</i> (they will not be distracted by fear or isolation if they are part of a group), <i>sense of competence</i> (believing they can makes them try; they will have responsibility; having a share in a successful project builds positive emotions).</li> <li>• <b>Motivation.</b> Motivation is the hook to engage students. They are motivated when you tap their intuitive knowledge, their interests and help them apply school knowledge to real situations. They are also motivated when they have a sense of progress to their goal.</li> <li>• <b>Environment conducive to learning.</b> Students do not learn in chaos or when bored. Rules and procedures must be established and taught. (If you have time, take a few minutes to talk about having no more than four or five and some that are appropriate in the after-school setting.) Collaborative work should have clear goals, designated roles to keep the group on track, a way to get assistance or needed supplies, and each group member is accountable for the work. High expectations are crucial.</li> <li>• <b>Active engagement.</b> Discussion, reasoning and thinking out loud help students better understand content and goals. Civil exchange is critical not only for successful group work but in society. Knowledge is more likely to be transferable and retained. Knowledge does not appear in isolated bits in the world; real life connects different “bins” of knowledge. This builds stronger memory chunks. Project learning is a venue to practice all of these ideas.</li> <li>• <b>Multiple paths.</b> Students bring different prior knowledge and experience and do not all think alike. They succeed when using strategies they can make sense of. Project Learning is not scripted and allows their creativity to flow.</li> <li>• <b>Responsibility.</b> Having to figure things out creates good problem solvers, which creates an “I can” attitude. In project learning, students learn to help each other, how to ask for help, how to communicate better, and that they must make choices. Success is sweeter because they figured it out. Instructors need an arsenal of questions to guide students, must support and encourage, find resources, be alert for safety issues, anticipate and be prepared to shore up content knowledge related to the project.</li> </ul>	<p>Recommend the article <i>Powerful Learning: Studies Show Deep Understanding Derives from Collaborative Methods</i> by Barron and Darling-Hammond.</p> <p>Have puzzle pieces ready to hang on wall. (See page 184. Templates are also included on the CD-ROM.) Post each one after taking ideas from participants.</p> <ul style="list-style-type: none"> <li>• Psychological needs: autonomy; relatedness; competence</li> <li>• Interest/ motivation: hook; sense of progress</li> <li>• Environment/ structure</li> <li>• Clear goals/ challenge</li> </ul> <p>What content might students have a chance to talk about during project work?</p> <p>How could the teacher draw attention to content?</p> <p>There may be questions raised here about the difference in autonomy level for projects done by younger and older students. Be prepared to elicit the limitations of early grade students’ knowledge, independence and their attention span.</p>

Time	Activities	Notes
30 minutes	<p>b) Ask participants to open their binders to one of the sample projects that is annotated. Allow 15 minutes to read and reflect on the annotations about what has just been discussed with their neighbors. Ask the whole group whether they have any questions about what they just read.</p> <p><b>ACTIVITY 5: Analyze an Unannotated Plan.</b></p> <p>a) <b>Have participants open the binder</b> to an unannotated lesson plan and also distribute the four sample projects to each table group.</p> <ul style="list-style-type: none"> <li>• <i>Amazing Alaskan Animals</i></li> <li>• <i>Forensics 101</i></li> <li>• <i>Let's Go Shopping</i></li> <li>• <i>Story Quilting</i></li> </ul> <p>Display SLIDE 9.</p> <div data-bbox="506 730 1032 1121" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="color: #4F81BD; font-weight: bold;">Project Learning</p>  <ul style="list-style-type: none"> <li>• <b>Motivation</b> - What in the project helps motivate student learning?</li> <li>• <b>Learning environment</b> - What does the project do to create a good learning environment?</li> <li>• <b>Content knowledge</b> - What do the students need to know/do in order to do the project effectively?</li> <li>• <b>Roles</b> - What roles do the students and teacher(s) assume that help the students learn?</li> </ul> <p style="font-size: small; margin-top: 10px;">aft <span style="float: right;">9</span></p> </div> <p>Each group selects one plan in which they will look for—and mark with Post-it notes—instances of:</p> <ul style="list-style-type: none"> <li>• Psychological needs met</li> <li>• Research-based strategies that address: <ul style="list-style-type: none"> <li>o Motivation</li> <li>o Good learning environment</li> <li>o Collaboration</li> <li>o Sense of progress</li> <li>o Responsibility</li> <li>o Multiple paths available</li> <li>o Active engagement</li> </ul> </li> <li>• Worthwhile content</li> <li>• Product or event</li> </ul> <p>Circulate during group work. Answer questions related to the task and what people find.</p>	<p>Possible prompts following examination of plan at tables.</p> <ul style="list-style-type: none"> <li>• Did students have choices?</li> <li>• Did it set up collaboration?</li> <li>• What was the academic content?</li> <li>• What process skills did children need?</li> <li>• What is the staff/teacher's responsibility?</li> </ul> <p>Supplies:</p> <p>Sample projects (see page 189)</p> <p>Post-it notes</p>

Time	Activities	Notes
15 minutes	<p>b) <b>Brainstorm types of products or events</b> that projects could culminate in. Write them on chart paper or the board.</p> <p><i>FACILITATOR NOTES:</i> Be sure these are included:</p> <ul style="list-style-type: none"> <li>• Performances (play, song, dance, TV interview or program)</li> <li>• Debates</li> <li>• Exhibitions (informational, artistic, data and conclusions from experiments)</li> <li>• Presentations or reports (for appropriate audience in or out of school on issues)</li> <li>• Campaign or fundraising (goodies for military, material for after-school program or school, homeless, worthy causes, pedestrian safety, better school lunches, etc.)</li> <li>• Service to school or community</li> <li>• Physical products such as books, rag dolls, meals, newsletters, etc.</li> </ul> <p>c) <b>Give participants a chance to make notes</b> about the annotation activity and share a possible way to use annotation with students.</p> <p><b>ACTIVITY 6: Why Break the Mold?</b></p> <p><b>Typical U.S. teaching</b></p> <p>a) Share SLIDE 10, which gives a research view of U.S. teaching.</p> <div data-bbox="462 1066 985 1459" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><b>Typical U.S. teaching</b></p> <ul style="list-style-type: none"> <li>• “We were struck by the similarity among U.S. lessons.”</li> <li>• Seems based on the belief that mathematics is a set of procedures so best learned piece by piece <ul style="list-style-type: none"> <li>○ Therefore, break content into small pieces</li> <li>○ Demonstrate how to solve</li> <li>○ Have students practice</li> <li>○ Reduce any confusion as it arises</li> <li>○ Correct seatwork</li> </ul> </li> </ul> <p style="text-align: right;"><i>The Teaching Gap</i> Stigler and Hiebert</p>  </div> <p>The researchers are James Hiebert and Jim Stigler, who devised the first videotaped study of teaching in conjunction with TIMSS, the <i>Third International Mathematics and Science Study</i>. This research emerged from videotapes of 100 randomly chosen teachers of eighth-grade mathematics.</p> <p>Typical U.S. teaching was based on telling and having students practice. Connections to why something is learned were missing. So was the chance to explore different ways of doing a task if a student did not understand the way presented.</p>	

Time	Activities	Notes
	<p>Typical U.S. teaching was based on telling and having students practice. Connections to why something is learned were missing. So was the chance to explore different ways of doing a task if a student did not understand the way it was presented.</p> <p>b) Ask table groups to consider what they know of project learning so far and the statement about typical U.S. teaching and create a sentence of no more than 25 words to explain a major difference between the two. Have the sentences shared. Use SLIDE 11 if time.</p> <div data-bbox="462 478 987 869" data-label="Complex-Block"> <p><b>Why Break the Mold?</b></p> <ul style="list-style-type: none"> <li>• <b>Help students see the value of school learning</b></li> <li>• <b>See content used in real life and not just in isolation</b></li> <li>• <b>Experience a sense of completion and success</b></li> <li>• <b>Recognize their value as learners and contributors</b></li> </ul> <p>11</p> </div> <p>c) Summarize this section by referring to the benefits project learning can have for students both academically and socially. If we can ignite the fire of excitement to learn more, to work together or to help students recognize that school learning is useful, students win! The basic elements of project learning can do this.</p> <p>Display SLIDE 12.</p> <div data-bbox="462 1184 987 1575" data-label="Complex-Block"> <p><b>Connecting Learning to Life</b></p> <p><b>Project Learning helps students:</b></p> <ul style="list-style-type: none"> <li>• See value of in-school learning</li> <li>• Experience a sense of progress</li> <li>• Use different ways to solve problems or complete a task</li> <li>• Experience success and challenge</li> <li>• See task as meaningful</li> <li>• Be actively engaged</li> <li>• Recognize they can contribute</li> </ul> <p>12</p> </div>	<p>If time is tight, use SLIDE 11 to summarize how project learning can ignite the fire of excitement and do the wrap up.</p>

Time	Activities	Notes
15 minutes	<p><b>ACTIVITY 7: Morning Wrap-Up</b></p> <p><b>1. Call attention to the afternoon’s agenda</b> and let people know they will begin to engage in the process of planning a project. See SLIDE 13.</p> <div data-bbox="449 302 971 695" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p><b>Afternoon Agenda</b></p> <ul style="list-style-type: none"> <li>- A Snowball fight</li> <li>- The resources in your manual</li> <li>- Considerations for planning</li> <li>- Project lesson plan template</li> <li>- Applying your knowledge to planning a project (small group)</li> <li>- Reflections</li> <li>- Debrief and next steps</li> </ul>  <span data-bbox="922 663 946 684">13</span> </div>	

# Module 3: Hooking Your Students


Time	Activities	Notes
7 minutes	<p><b>ACTIVITY 1: Reflections (snowball activity)</b></p> <p>Ask participants to write something they have learned so far on a piece of paper. Have them crumple the paper and throw it to someone else in the room. When the facilitator says stop, take the snowball nearest you and add another concept. Continue to throw the Snowballs until four or five concepts are on each piece of paper. Have participants read one concept from the snowball they end up with in round robin fashion until all the ideas have been shared. (Ask people not to repeat something that has already been read.) <i>Note:</i> Warn participants to aim away from people’s heads to avoid possible eye injuries.</p>	Plain paper for each participant
20 minutes	<p><b>ACTIVITY 2: Getting To Know the Binder</b></p> <p><b>Walk through binder.</b> Display SLIDES 14 and 15. Assign various sections of the binder to small groups or pairs to examine and report back on what is in the different sections. Allow 10–15 minutes to examine. Then have each group report out.</p> <div data-bbox="453 934 976 1327" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><b>Rich Resources Are in Your Binder</b></p> <ul style="list-style-type: none"> <li>• As a small group, skim your assigned binder section and prepare to share what kind of information you find.</li> <li>• Select a reporter to share with whole group: What’s in your section?</li> <li>• Whole group “reveal”</li> <li>• Debrief</li> </ul> </div> <div data-bbox="453 1390 976 1782" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><b>Binder Resources</b></p> <ul style="list-style-type: none"> <li>• Igniting the Fire – Background and Research</li> <li>• Project Learning</li> <li>• Project Examples and Resources</li> <li>• Strategies for Helping Students</li> <li>• Games &amp; Icebreakers</li> <li>• Templates</li> <li>• Professional Development Modules</li> <li>• References</li> </ul> </div>	<p>Supplies:</p> <ul style="list-style-type: none"> <li>Chart paper</li> <li>Markers with broad tips</li> <li>Double-entry journals</li> <li>Pens</li> <li>Markers</li> <li>Laminated puzzle pieces (on page 184 and included on the CD-ROM)</li> <li>Large Post-it notes to post on the puzzle pieces if lamination markers are not available</li> </ul>

Time	Activities	Notes
10 minutes	<p><i>FACILITATOR NOTES:</i> Be sure that these points are included as groups give descriptions:</p> <p>a) <b>Igniting the Fire Background and Research</b> lays out a philosophy of academics in after-school programs. Project learning is not intended to be the whole program.</p> <p>b) <b>Project Learning</b> has background on this strategy and its benefits, and how they will differ according to the age of students.</p> <p>c) <b>Project Examples, Resources and Websites</b> contains sections on reading, writing, mathematics, science and interdisciplinary projects. Each lists important Ideas for the academic area, project ideas, one or two sample projects, examples of mini-lessons students might need for the projects, and a number of websites where you can find projects related to the content area.</p> <p>d) <b>Strategies for Helping Students</b> has tips on a few important instructional strategies for academic learning: questioning and feedback, vocabulary development and metacognition—being aware of your own thinking and learning.</p> <p>e) <b>Games and Icebreakers</b> has some additional activities for icebreakers or refreshing the mind when breaks are needed.</p> <p>f) <b>The Templates section</b> contains templates for in-school/out-of-school communication, project planning, and a checklist you can give to <i>students</i> as they engage in project work.</p> <p>g) <b>Professional Development Modules</b> has detailed modules for what we are doing today so a program can use them and encourage more people to use project learning.</p> <p><b>ACTIVITY 3: Connecting your students to project learning</b></p> <p>Talk about the importance of choosing a topic for a project that will be interesting and have value for students. A project should:</p> <ul style="list-style-type: none"> <li>• be about something that piques students’ interest;</li> <li>• have a connection to what is being learned during the school day;</li> <li>• lend itself to collaboration; and</li> <li>• allow all students to contribute to its success.</li> </ul> <p>Ask participants to think for a minute about a topic that would interest their students and that would be appropriate for a project. (Remind them of the list of various project products created earlier.) Have each person think alone for one minute, share with the person sitting next to them (three minutes), then that pair turns and shares with another pair six minutes). Agree on one idea to be shared with the larger group. <b>KEEP TRACK OF THE TIME!</b> After sharing, identify this process as a <i>think, pair, share</i> strategy.</p>	<p>If the group is new to after-school programs, they can discuss ways of learning what student interests are: surveys, interviews or brainstorming.</p>



Time	Activities	Notes
	<p><i>FACILITATOR NOTES:</i></p> <ul style="list-style-type: none"> <li>• Emphasize that after-school projects should be <i>collaborative efforts</i>, not individual activities or individual investigations, unless such investigations are part of a larger project such as global warming, in which all aspects will be integrated into one presentation.</li> <li>• Ask whether there is room within each idea suggested for students to have choice.</li> </ul> <p><b>Younger, older students.</b> Elicit how projects might differ for different age students (primary, intermediate, older youth) for the same idea. You can hold this discussion around one of the ideas suggested earlier or use the environmental topic.</p> <p><i>FACILITATOR NOTES:</i> Some ideas related to environmental projects—</p> <ul style="list-style-type: none"> <li>• Primary and intermediate may focus on the environment in their room, the school grounds or the cafeteria. (Cleanliness, neatness, recycling plastic or aluminum. They might poll people on whether and why they think it is important to recycle.)</li> <li>• Intermediate could investigate information about global warming and choose to either hold a debate, present an exhibition, create a book or investigate local water quality.</li> <li>• Middle and high school students would also investigate the issue using online and print sources, and perhaps engage in a campaign to raise funds for a green organization or devise a community service project.</li> <li>• In general, because of limitations of experience and learning, primary children will have shorter, less complex projects and the very young will make more use of learning games.</li> <li>• Late middle and high school students would have more autonomy. They, nevertheless, need close monitoring and feedback.</li> </ul>	

# Module 4: Planning a Project


Time	Activities	Notes
45 minutes	<p><b>ACTIVITY 1: Considerations Checklist</b></p> <p>Talk about the need to be purposeful about projects. They should be more than time fillers and more than ways to engage students. At their best, they relate to the goals and needs of the school district and children. The Considerations Checklist that you will introduce now will identify some critical things for planners to consider.</p> <p><b>1. General Considerations.</b> Use SLIDE 16 to introduce the checklist and lead a discussion about the considerations. If the training is for participants from a single program, the first four questions can be discussed in the whole-group setting.</p> <div data-bbox="444 674 967 1066" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center; color: #0070C0;"><b>Considerations Checklist</b></p> <ol style="list-style-type: none"> <li><b>1. Goals of your after-school program?</b></li> <li><b>2. How a project relates to:</b> <ul style="list-style-type: none"> <li>- School curriculum</li> <li>- Interests, social and academic skills</li> <li>- Available time</li> <li>- Available or obtainable materials</li> </ul> </li> <li><b>3. Safety</b></li> <li><b>4. Psychological needs &amp; abilities</b></li> <li><b>5. Communication</b></li> <li><b>6. Space and storage for unfinished work</b></li> <li><b>7. What rules/procedures will be necessary</b></li> </ol> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;">  <span>16</span> </div> </div> <p><i>FACILITATOR NOTES:</i> Whether a program’s goal is strengthening content skills and knowledge, recreational, sports or child care, some time can be devoted to help children’s learning through project learning.</p> <p><b>2. a)</b> To create or select a project, know what students are learning in school—you want to link to that—and know their interests. While children may acquire new knowledge during project work, projects will primarily help cement and apply previously studied knowledge.</p> <p>b) Is the program connected to the school day? If not, recommend a liaison between the program and school to facilitate everyone working toward common ends in the interest of the children. Refer to the School Day/Beyond School Day Communication form on page 145 as a way to exchange information.(This form is also available on the CD-ROM.)</p> <p>c) Elicit ways to get to know students’ interests (surveys, getting to know you activity such as birthday line, etc.).</p> <p>d) Will you do project learning twice a week for longer periods or use some of each day for it?</p> <p>e) What resources can you tap into? (program budget, donations from community, people in community, large or small businesses, field trip within walking distance)</p>	

Time	Activities	Notes				
30 minutes	<p><b>3. Psychological needs.</b> Once you select a project area, how will you offer choice to students? Will they help select the overall area? Will they be offered a list of various ways to approach the topic? Will different sub-groups have responsibility for different aspects, depending on their interests? How will you establish a clear goal? Who could the product or event be for? For what purpose?</p> <p>Younger students will obviously need more direction in establishing such ends than older ones.</p> <p>What are students' social interaction skills? Can they deal with abstract as well as concrete, see others' perspectives, listen to ideas beyond their own?</p> <p><b>4. Communicating with school and parents.</b> We mentioned communicating with school day staff. What should be communicated to parents or caregivers about the project? Should children dress in "knock-around" clothing because they will be painting, digging in a garden, handling worms? If cooking, is your child allergic to an ingredient we might use? If doing a neighborhood walk, wear comfortable shoes, etc.</p> <p><b>5. After-school space</b> may be used by others during the school day. Think about the materials and supplies, how they will be distributed, collected and stored. Where will incomplete artifacts for a particular project be kept?</p> <p><b>6. Project Learning</b> must be well organized to work well. What is the procedure when students arrive? How do they move from whole class to groups? How does a group quietly get the attention of the instructor? How will you keep students aware of the timetable for completing projects and keep them moving toward the goal?</p> <p><b>ACTIVITY 2: The Project Plan Template</b></p> <p><b>1. SLIDE 17</b></p> <div data-bbox="467 1260 990 1654" style="border: 1px solid black; padding: 10px;"> <p style="text-align: center; color: #4F81BD; font-weight: bold;">Planning Templates</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 5px;"><b>Big Picture</b></th> <th style="text-align: left; padding: 5px;"><b>Session detail</b></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px; vertical-align: top;"> <ul style="list-style-type: none"> <li>• Project title &amp; goals</li> <li>• Hook</li> <li>• Possible products</li> <li>• Length of project</li> <li>• Overview</li> <li>• Resources</li> <li>• Activities</li> <li>• Possible mini-lessons</li> </ul> </td> <td style="padding: 5px; vertical-align: top;"> <ul style="list-style-type: none"> <li>• Session number</li> <li>• Tasks</li> <li>• Materials needed</li> <li>• Estimated time</li> </ul> </td> </tr> </tbody> </table> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <span style="font-weight: bold; font-size: 12px;">17</span> </div> </div> <p>Ask participants to look at the blank templates you have distributed. Ask whether there are questions about any of the categories. They can refer back to the plan they looked at in the morning.</p>	<b>Big Picture</b>	<b>Session detail</b>	<ul style="list-style-type: none"> <li>• Project title &amp; goals</li> <li>• Hook</li> <li>• Possible products</li> <li>• Length of project</li> <li>• Overview</li> <li>• Resources</li> <li>• Activities</li> <li>• Possible mini-lessons</li> </ul>	<ul style="list-style-type: none"> <li>• Session number</li> <li>• Tasks</li> <li>• Materials needed</li> <li>• Estimated time</li> </ul>	<p>If your training is more than one day long, spend time on the details of setting up cooperative group strategies, such as setting norms for work, holding everyone in the group accountable, ensuring participation, roles within groups (such as, organizer/leader, recorder/reporter, distributor/collector, encourager)</p> <p>Supplies:</p> <p>Distribute blank templates.</p> <p>Tell participants there are copies on page 147 of their toolkit and on the CD-ROM.</p>
<b>Big Picture</b>	<b>Session detail</b>					
<ul style="list-style-type: none"> <li>• Project title &amp; goals</li> <li>• Hook</li> <li>• Possible products</li> <li>• Length of project</li> <li>• Overview</li> <li>• Resources</li> <li>• Activities</li> <li>• Possible mini-lessons</li> </ul>	<ul style="list-style-type: none"> <li>• Session number</li> <li>• Tasks</li> <li>• Materials needed</li> <li>• Estimated time</li> </ul>					


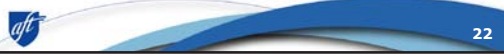


Time	Activities	Notes
60 minutes	<p><b>2. Facilitating Student Engagement During Planning</b>—Remind participants that as they get ready to do some actual planning, they should keep in mind both research and practical issues. For example, we can look at ways to increase student motivation from four vantage points: topics chosen, instructional activities, possible products and creating a sense of progress. These are described in more detail in the <b>Enhancing Student Engagement handout</b> (see page 193), which will be used in the next activity.</p> <p><b>ACTIVITY 3: Planning a Project</b></p> <p><b>1. Prepare participants to work in small groups</b> (organized by grade clusters or site) to explore and begin actual development or adaptation of a project-based lesson for their students. They are to use what they know about their own program and students to select a focus for their projects.</p> <ul style="list-style-type: none"> <li>a) Distribute blank project templates. Advise groups to record their first ideas on the template. Once they have settled on ideas, transfer them to chart paper, which is available at the front (or back) of the room along with markers. The chart paper will be posted when finished.</li> <li>b) Distribute the <i>Enhancing Student Engagement</i> handout (page 193) and draw attention as well to the Resources section and all its suggestions.</li> <li>c) If you have Internet access, connect to a website that is focused on Project Learning and point out the pages of website listings within the Resources section.</li> <li>d) Encourage groups to consider creating original projects or to adapt one that they may find.</li> <li>e) Encourage linking to local current happenings or resources that can serve as “hooks” for high interest student projects.</li> <li>f) Remind participants to choose or create projects that support local learning goals.</li> </ul> <p><i>FACILITATOR NOTES:</i> Monitor groups as they work and be available to answer questions. Assist by posing questions rather than doing the planning for the groups.</p> <p>Give 15-minute and 5-minute warnings before you expect to bring the group together again to look at the progress on their projects. With 15 minutes remaining, groups should begin to transfer their ideas to chart paper if they have not already done so.</p> <p><b>2. Gallery Walk or Group Sharing.</b></p> <ul style="list-style-type: none"> <li>a) Have one member of each group explain their ideas to the whole group.</li> <li>b) After this sharing, encourage participants to take a gallery walk to examine the ideas a second time and take notes in their double-entry journals.</li> <li>c) Each group should share the progress they have made and the challenges they found as they began to plan.</li> </ul>	Supplies: Chart paper Markers

Time	Activities	Notes
30 minutes	<p>d) Stress that feedback from someone else on project plans before implementation is important because plans are complicated. Additional eyes can uncover hidden pitfalls, unclear directions, missing steps, and help to make the project stronger. They may simply know of additional resources. Ask for group reaction to whether what they see so far has potential to engage students, give them choice and promote responsibility.</p> <p>e) Have someone identify academic content and social skills that are related to the proposed projects.</p> <p>f) Ask whether participants think it was helpful to get a taste of the planning process and to have done it collaboratively.</p> <p><b>ACTIVITY 4: Reflection on the Day.</b></p> <p><b>1. Discuss the expectation</b> that everyone will incorporate project learning into their after-school settings. The group will reconvene (in six weeks to two months) to assess what has happened since this training.</p> <p>Participants will bring back and share at least one plan-in-development or project learning experience that they have used in after-school, along with any artifacts they have (student work, video, etc.), plus the project plan. The follow-up session will address further questions and concerns and celebrate their progress in igniting the fire of learning in students through the use of Project Learning.</p> <p><b>2. Discuss the power of debriefing and reflection</b> as strategies to help students organize, reflect and remember. Participants should take a couple of minutes to reflect silently on the day and then voice words or phrases that describe their reactions to the day. Record the words and phrases and, as a group have participants create a sentence with them that summarizes the day.</p> <p><b>3. Feedback from participants.</b> Use the evaluation form on page 195 (and also available on the CD-ROM) or design your own. It is important, especially if you are just beginning to train staff, to get honest feedback on what went well and suggestions for improvement for future groups.</p>	

# Module 5: Follow-Up

Time	Activities	Notes
20 minutes	<p><b>ACTIVITY 1: Two Truths and a Lie</b></p> <p><b>1. Welcome back</b>—Express eagerness to hear more about what has been happening with people’s after-school teaching.</p> <p><i>FACILITATOR NOTES:</i></p> <ul style="list-style-type: none"> <li>• Post a sign-up sheet where participants can list their names, project titles, and grade levels as they come in.</li> <li>• Hang the Project Learning puzzle pieces from Module 2 so they can be seen. Project Learning is in the middle and the other pieces are titled Psychological Needs, Environment, Clear Goals/Challenge and Motivation.</li> </ul> <p><b>2. Ice Breaker</b>—Two Truths and a Lie</p> <p>Explain how the activity is done. Two trainers model it. SLIDE 18. Show only top part until game is over.</p> <div data-bbox="444 835 967 1230" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>Two Truths and a Lie</b></p> <ul style="list-style-type: none"> <li>• <b>Participants write three statements about themselves.</b></li> <li>• <b>Two are true but one is not.</b></li> <li>• <b>Their partner or tablemates must guess which is not true.</b></li> </ul> <p style="text-align: center; color: #4F81BD;">This game builds camaraderie and team spirit and can provide glimpses into students’ interests.</p>  <span style="float: right;">18</span> </div> <p>The size of your group may affect your decision to play as a whole group or divide into small groups. Give everyone two minutes to write three sentences about themselves. They will describe two true things and one untrue thing. Have each person read the three statements and others guess which is the lie. This icebreaker provides a quick catch up time and useful information for the facilitators.</p> <p>Ask what participants think the benefit of the activity is for students. (A way to build camaraderie and team spirit, to get to know each other better. Teachers may also pick up on their interests.)</p>	<p>Advance Planning:</p> <p>Contact participants about possibly inviting one or more student representatives from their after-school program to share his/her experiences.</p> <p>Remind participants to bring copies of one of the projects they have used.</p> <p>Supplies:</p> <p>Chart paper</p> <p>Markers with broad tips</p> <p>Video for closing inspiration</p>

Time	Activities	Notes
25 minutes	<p><b>3. Agenda and reminders</b></p> <p>Review the agenda for the day. SLIDE 19.</p> <div data-bbox="516 268 1039 663" data-label="Image"> </div> <p>Remind everyone about the double-entry journal and that activities used in the training can be adapted for use with students.</p> <p><b>ACTIVITY 2: Review of Project Learning</b></p> <p><b>1. Distribute cards for the Match Game.</b> (Template is included on page 196 and on the CD-ROM.) SLIDE 20.</p> <p>Each table group has a complete set of cards. Each set has question cards in bold type and answer cards in regular print. Groups are to match the answers to the questions laying the cards on the table for all members to see. When groups are finished, the presenter will show the slides that reveal the correct matches. Groups are to check and keep track of their accuracy. The group(s) with the greatest accuracy will be declared <i>Keepers of the Flame</i>.</p> <div data-bbox="516 1243 1039 1638" data-label="Image"> </div> <p><b>FACILITATOR NOTES:</b> This game can be used for review of content during After-School. Use Slides 21-24 below to have participants check their work. They must keep track of correct responses.</p>	





Time	Activities	Notes
	<div data-bbox="488 138 1011 533"> <h3>The Match Game (1)</h3> <ol style="list-style-type: none"> <li><b>What is project learning?</b> Project learning is a process in which students apply what they learn to deepen their understanding. It usually ends with a product or performance.</li> <li><b>How is project Learning different from traditional learning?</b> <ul style="list-style-type: none"> <li>It is more centered on students' interests</li> <li>It is not done for a grade</li> <li>It emphasizes and helps students use their talents.</li> <li>Students have a choice.</li> <li>They can see the usefulness of what they learn.</li> </ul> </li> <li><b>What is the importance of motivation in project learning?</b> Students are more likely to put forth effort to complete a product when they are interested in reaching the goal.</li> </ol>  </div> <div data-bbox="488 571 1011 966"> <h3>The Match Game (2)</h3> <ol style="list-style-type: none"> <li><b>Why monitor student progress frequently?</b> You can observe misconceptions or errors and address them before they become ingrained, or help students keep projects on the right track.</li> <li><b>Why it is important to have a guiding question or big idea?</b> If you don't know what you want students to focus on neither your instruction nor the students' efforts are likely to get them there.</li> <li><b>What are some community resources for after-school?</b> Journalist, weatherman, science museum, carpenter, restaurant owner, fire fighter</li> </ol>  </div> <div data-bbox="488 1003 1011 1398"> <h3>The Match Game (3)</h3> <ol style="list-style-type: none"> <li><b>What are some guidelines for group work?</b> <ul style="list-style-type: none"> <li>Group members should have roles.</li> <li>Each member should contribute to the work.</li> <li>Mutual respect should be taught including listening.</li> </ul> </li> <li><b>How does project learning meet student needs?</b> <ul style="list-style-type: none"> <li>It provides choice and challenge.</li> <li>It gives a sense of accomplishment.</li> <li>It allows students to feel part of a group.</li> <li>It helps them see how what they learn is used.</li> </ul> </li> <li><b>How do you establish a good learning climate?</b> <ul style="list-style-type: none"> <li>Set 4-5 rules and procedures from the start.</li> <li>Let students help identify what helps them work and get along.</li> <li>Have students practice them.</li> <li>Be consistent in enforcing them.</li> </ul> </li> </ol>  </div> <div data-bbox="488 1436 1011 1831"> <h3>The Match Game (4)</h3> <ol style="list-style-type: none"> <li><b>When would you use a mini-lesson?</b> Use a mini-lesson when students have difficulty with a needed skill.</li> <li><b>Why gather data? When and how?</b> Gather data to learn whether students are engaged or have become better at doing something. Observe while working to see whether social skills have improved.</li> <li><b>Name possible products of a project.</b> An exhibit, play or puppet show, debate, presentation to a specific group, community campaign, booklet to help other students learn, a video, poem or story, talk or game show.</li> </ol>  </div>	<p data-bbox="1230 1556 1466 1791">You will get significant feedback on the use of projects and the needs of the participants from this activity.</p>
	<p data-bbox="277 1856 1208 1925">Remember to list on a poster the instructional strategies being used during the session.</p>	



Time	Activities	Notes
45 minutes	<p><b>ACTIVITY 3: Follow-up Feedback</b></p> <p><b>1. Project sharing.</b> Participants will now share projects they have implemented. Draw attention to the project learning puzzle pieces poster. Ask participants to touch on any of those elements that were part of their project design as they make their presentations.</p> <p>Use the sign-up poster to call on individuals (or teams) to share the projects they have worked on.</p> <p>Facilitators should ask leading questions along the way if important information is not addressed. For example:</p> <ul style="list-style-type: none"> <li>• Why did you choose the project topic you did?</li> <li>• What choices did you provide for students?</li> <li>• What kind of responsibility did your youngsters take?</li> <li>• What knowledge did students need that they had learned in school? Did you make that connection explicit to highlight how school learning supports doing projects?</li> <li>• Tell us what the children got out of the project and what you got out of it.</li> </ul> <p><b>2. Students share.</b> (<i>Note: Bringing in students will not always be possible, but should be investigated.</i>) Prior to the follow-up training, have teachers (or program directors) invite one or more after-school student(s) to attend the session to discuss their views of Project Learning compared to other kinds of learning they have experienced. Allow sufficient time for students to prepare a brief presentation. Students and teachers should understand that the purpose of the visit is to give feedback about project learning and it should be relatively brief (10-15 minutes).</p> <p>Students will be introduced by their instructor(s) to share what they have learned and/or present a final project. After students' presentations, ask for their views on the use of Project Learning and whether they respond any differently to this kind of instruction than to regular instruction and whether it contributes anything different to their learning.</p> <p><b>3. T-Charts.</b> <i>If the sharing has allowed the group to address both successes and struggles, you may be able to skip this activity.</i> Distribute chart paper and direct each table group to make a t-chart with two columns headed "What Went Well" and "What I Want To Improve." The charts relate to participants' experiences with project learning. Allow 10-15 minutes to post ideas on the charts. Have each group designate a spokesperson to give a brief synopsis of the group's chart. When the charts have been presented, the facilitator should lead a brief discussion to elicit similar successes and/or challenges.</p> <p><b>FACILITATOR NOTES:</b></p> <ul style="list-style-type: none"> <li>• This is intended as a <i>quick</i> assessment of project implementation that may point to issues that need more attention during this session.</li> <li>• The chart items should be framed in general terms such as insufficient resources, student behavior, difficulty storing material, inconsistent attendance, etc.</li> </ul>	

Time	Activities	Notes
40 minutes	<ul style="list-style-type: none"> <li>• As you monitor groups during chart creation and during the discussion, keep them moving forward. Redirect discussion from personal issues or negative results to comments about implementing the projects. Validate concerns, but do not dwell on them. Look for trends and areas that need to be addressed.</li> <li>• Draw attention to similarities in posters. Are there items that were problematic across sites?</li> <li>• Explain that the posters will be used in the next activity to reflect on continually improving one’s project work.</li> </ul> <p><b>ACTIVITY 4: Reflection on Project Implementation</b></p> <p>Display SLIDE 25 and distribute the Checklist for Review of Project Implementation (see page 200). Advise that having heard the great work people have done, it is time to focus on the challenges and think about how to make things work even better. There are a couple of tools to help.</p> <div data-bbox="488 764 1013 1157" data-label="Image"> </div> <p>Have participants think about the elements on the checklist. Display SLIDE 26 and have participants fold a blank sheet of paper in half and then in half again forming four boxes or quadrants. Label the quadrants using the four topics listed in slide 26. These topics should also be discussed. This can be done in table groups with voluntary sharing. Monitor the conversations and help focus them where necessary.</p> <div data-bbox="488 1444 1013 1837" data-label="Image"> </div>	Distribute paper to be folded into four parts.

Time	Activities	Notes
20 minutes	<p>Each person should refer to these tools as they reflect on the elements that went well or that could have gone better (indicated on their posters). Do they give clues to why things did or did not go as well as they hoped?</p> <p><i>FACILITATOR NOTES:</i> Participants review the needs, link it to the t-chart and identify which things they can do something about using one color sticky note. Use another color to indicate <i>I have no control over it</i>. Emphasize the importance of celebrating what works and finding solutions for those things they would like to improve.</p> <p><b>ACTIVITY 5: Next steps</b></p> <p><b>1. The PLAN Form.</b> Distribute the PLAN forms (on page 201 and also included on the CD-ROM) and explain that this is where participants will record their assessment and reflections on their experience. SLIDE 27.</p> <div data-bbox="516 688 1040 1083" data-label="Diagram"> </div> <p><b>2. Proactive reflection.</b> This activity serves as an example of a proactive review process. In the previous activity, participants identified areas to strengthen when planning and implementing projects. They identified what they could not control. In anticipation of future project planning, they can reflect on what challenges they can overcome and what they will need to do in order to improve the experience for students. Explain the sequence of reflection shown on the slide.</p> <p><i>FACILITATOR NOTES:</i> PLAN's meaning—</p> <p><b>P</b> stands for the <i>project</i> title. What project was used?</p> <p><b>L</b> is what participants have <i>learned</i> during their project implementation or this follow-up that might strengthen the effectiveness of the project they presented or future projects.</p> <p><b>A</b> stands for the <i>action(s)</i> needed to put this learning into effect.</p> <p><b>N</b> stands for what the staff members <i>need</i> to overcome any obstacles.</p> <ul style="list-style-type: none"> <li>• This is both a reflective and planning piece that participants can use to improve their practice.</li> <li>• Encourage participants to share their PLAN with a partner. You might have them form a circle, count off “one, two” and each pair share. Slide 28 should guide the sharing.</li> </ul>	Distribute PLAN forms, one per participant.

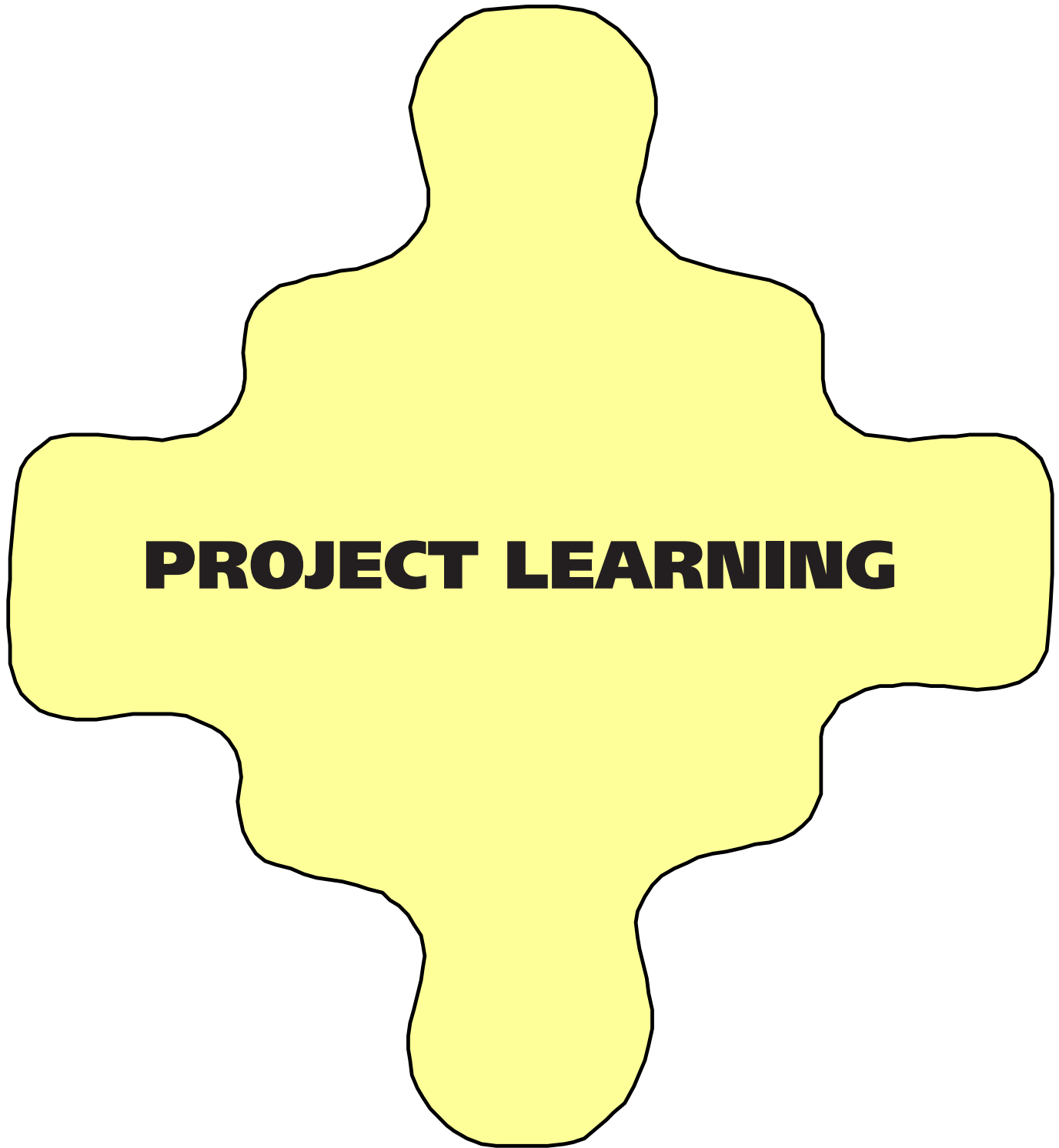
Time	Activities	Notes
	<div data-bbox="488 138 1013 531" data-label="Complex-Block"> <p><b>Share your conclusions</b></p>  <ul style="list-style-type: none"> <li>• <b>How did you include or create</b> <ul style="list-style-type: none"> <li>- Choice and Challenge?</li> <li>- Team Engagement &amp; Responsibility?</li> <li>- A Good Learning Environment?</li> <li>- Product Sharing?</li> </ul> </li> <li>• <b>What challenging issues did you run into?</b></li> <li>• <b>How did/can you solve them?</b></li> <li>• <b>What went well? Why?</b></li> </ul> <p> 28</p> </div> <ul style="list-style-type: none"> <li>• After the sharing, suggest that participants arrange to meet or e-mail in about three weeks to discuss their progress revising their plans. Also distribute the handout Transferrable Techniques (see page 202).</li> </ul> <p><b>ACTIVITY 6: Celebrations</b></p> <p><b>1. Shout outs!</b> Invite participants to “pop up” or “shout out” something to celebrate about after-school and project learning.</p> <p>Display SLIDE 29, which gives ideas about things to share.</p> <div data-bbox="488 959 1013 1352" data-label="Complex-Block"> <p><b>Celebrations</b></p>  <ul style="list-style-type: none"> <li>• <b>Something of value you learned today.</b></li> <li>• <b>Student aha! or progress you observed during Project Learning.</b></li> <li>• <b>Evidence of how engagement in a project impacted students during the regular day</b></li> </ul> <p> 29</p> </div> <p><b>2. Wrap-Up.</b> Encourage participants to communicate with each other and the facilitators. Remind everyone that facilitating project learning is a journey. Each time we do it, we become more aware and better at it. The more the path is traveled, the smoother and clearer it becomes.</p>	<p>Motivational quotes or video to share with participants.</p> <p>Motivational quote to close.</p>

**Double-Entry Journal**

Topic/Activity	Notes

**Module 2, Activity 4 and Module 5, Activity 3**

Pieces for Puzzle Poster. Cut out, enlarge, if desired, and reproduce. Laminate.



# **PSYCHOLOGICAL NEEDS**

**Autonomy**

**Relatedness**

**Competence**



**Active**

**Responsibility**

**Multiple paths**

**ENVIRONMENT**



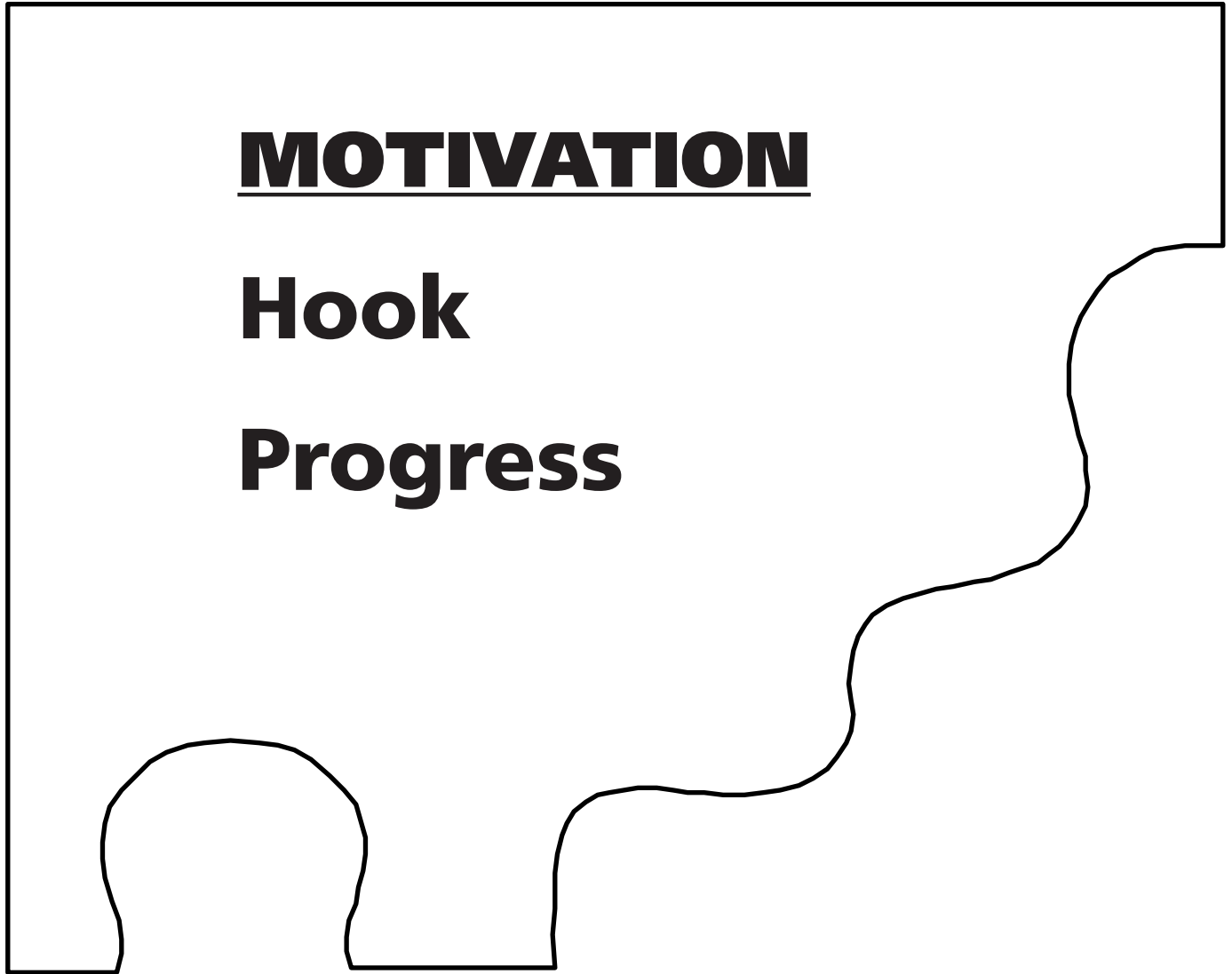


**CLEAR GOALS/  
CHALLENGE**

# **MOTIVATION**

**Hook**

**Progress**



## Module 2, Activity 5: Sample Projects

### **AMAZING ALASKAN ANIMALS**

By Ada Marcus, P.S. 46, Bayside, N.Y.

Detailed plans available at: [www.teachersnetwork.org/impactii/profiles02\\_03/marcus.pdf](http://www.teachersnetwork.org/impactii/profiles02_03/marcus.pdf).

#### **Grade Levels**

2-6

#### **How It Works**

In this program, children are immersed in a study of Alaska that focuses on animals and their adaptation to the environment. They learn note-taking skills while listening to nonfiction books about Alaska. A shared reading of realistic fiction about sled dogs (*Silver* by Gloria Whelan) motivates them to view the [Iditarod.com](http://Iditarod.com) website and follow the mushers through the Iditarod Race in March. Meanwhile, pairs of children choose an Alaskan animal to learn more about, with the focus on how these animals adapt to their unusual environment. Children use the computers and search engines like *Yahooligans!* to gather information about their animal and are taught, in a series of mini-lessons, how to write a simple research report. They are introduced to the following categories for which they need to find information: diet (what the animal eats and what eats it), life cycle and adaptation (how it looks and special features). Using a t-chart, children are taught to list their facts and then list a thought related to each fact. This helps them with their reading skills by making them think deeply about what they are writing. In additional mini-lessons, children are taught to categorize and bullet their notes, write a first draft, and eventually conclude with a final draft. The children work in pairs to gather and share information but final drafts are individually written. Each student also draws a large picture of his/her animal, which, along with the research information, is part of a class “big book” that is the culmination of their work.

#### **The Students**

Amazing Alaskan Animals was introduced to a third-grade class consisting of 21 heterogeneously grouped children who are average to below average in ability and academic achievement. They worked on this project approximately three times a week for about eight weeks. This program is highly adaptable to other ages and achievement levels and can be used with smaller or larger groups. Children work at their own levels and feel successful in the process.

#### **What You Need**

To successfully complete this program, you will need some basic art supplies (butcher paper, poster board, tempera paints, crayons, markers, scissors and glue). In addition, you need access to computers and the Internet. Grolier’s software is helpful but not essential. You will need fiction and nonfiction library books about Alaska. Lesson plans, mini-lessons and book lists are available.

#### **Overall Value**

This is an interdisciplinary program that involves many skills—reading, writing, listening, speaking, group work and cooperation, research and using technology. The culminating “big book” is presented to the school library and gives the children a sense of pride and accomplishment. Children are learning and immersed in the environment, and they are eager to learn more.

## **FORENSICS 101**

By Hilary Sedewitch, IS 230Q, N.Y.

Detailed plans available at: [www.teachersnetwork.org/readyssettech/sedewitch/forensics\\_sedewitch.pdf](http://www.teachersnetwork.org/readyssettech/sedewitch/forensics_sedewitch.pdf).

### **Grade Levels**

6-9

This unit is an introduction to forensic science and combines fun, hands-on activities with the application of skills from math, science, literacy, art and technology. Students solve mysteries, learn about the work of forensic anthropologists and the F.B.I. Students are already familiar with the many crime dramas and reality shows they see on television—these activities are fun for middle school students to explore in pairs and small groups.

### **Objectives**

Students will learn to communicate information and ideas in ways that are appropriate to the purpose and audience through spoken, written and graphic means of expression. Students will use information-gathering techniques, will analyze and evaluate information, and will use information technology to assist in collecting, analyzing, organizing and presenting information.

### **Internet Used**

The Internet is an integral part of this project. Students are directed to websites where they can work independently to gather the information necessary to complete the activities. In this way, the teacher becomes more of a facilitator.

### **Materials Used**

The ideal setup to conduct this project would be a set of laptop computers, enough for students to work in pairs. You will also need a Polaroid or digital camera with a printer. Large chart paper, sketch pads, art supplies, cocoa powder, paint brushes, Plexiglass and scotch tape are also required. Library books on forensic science are also great to have on hand.

### **Standards Addressed**

LITERACY: Students will read and comprehend informational materials; demonstrate familiarity with a variety of functional documents. SCIENCE: Students will demonstrate understanding of structure and function in living systems; demonstrate understanding of the designed world; demonstrate understanding of health; demonstrate understanding of the impact of technology; demonstrate understanding of the impact of science; work individually and in teams to collect and share information and ideas; record and store data using a variety of formats. MATH: Students will understand the concepts of and become proficient with the skills of mathematics; communicate and reason mathematically; become problem solvers by using appropriate tools and strategies through the integrated study of number sense and operations, algebra, geometry, measurement, and statistics and probability.

### **Overview of Tasks and Areas of Exploration**

1. Focus on measurement, relating foot size to height.
2. Use deductive reasoning to solve a mystery.
3. Learn about fingerprinting and dust for fingerprints.
4. Witness an incident and describe the perpetrator to a "sketch artist."

### **Assessment**

Students are assessed in a variety of ways, since there are many components to this project. Student posters can be graded following a teacher-designed rubric, which evaluates their work by teamwork, accuracy, creativity and effort.

### **Teacher Tips**

Teachers adapting this unit should do some research prior to the unit on Forensic Science. Have a library on

the various topics. Visit all the websites you provide to students in advance—there are many resources for this topic on the web, and you should always know where you send students to look for information.

### **Overall Value**

During their middle school years, students begin to question the relevance of what they are learning, and whether or not college will be in their future. This unit shows students that the skills they are learning today can start preparing them for a great career after college. According to a study by The College Board, careers in Forensic Science are on the rise.

This project contributes to student learning in many ways. Middle school learners often tune out, but this unit pulls them back in. It allows them access to the computers they love and feels like fun. It allows them to interact with their peer learners, but in a structured way. The poster projects for each activity are an outlet for collaboration and creativity.

## **LET'S GO SHOPPING**

**By Florann Greenberg, P.S. 14Q, Corona, N.Y.**

**Detailed plans available at: [www.teachersnetwork.org/impactii/profiles01\\_02/Greenberg.pdf](http://www.teachersnetwork.org/impactii/profiles01_02/Greenberg.pdf).**

### **How It Works**

In *Let's Go Shopping*, the students set up a classroom store. This gives them insight into the concept of ownership while they develop their mathematics and problem-solving skills in a socially interactive fashion. The students bring in items to be sold (empty boxes, cans, etc.) and determine the pricing with specific guidelines determined by the teacher according to the level of the students and the skills to be taught. Prices can be altered during the year to fit the curriculum and as the students' skills increase. Merchandise can also be varied. The students sort items into categories and discuss the jobs and responsibilities of the store employees. A "Grand Opening Sale" is held and the shopping experience begins. Students assume different roles, assigned and rotated by the teacher. They also act as bookkeepers that record and solve relevant problems in their notebooks. The customer is given a wallet or canister with a predetermined amount of money and a shopping list. The customer sorts the money, and the class and the customer count the money and compare answers. Information needed to solve the problem is brainstormed and organized into columns in the students' notebooks. The customer proceeds to the store and a clerk helps him/her locate the items to be purchased. The cashier adds the cost of each item on the cash register and the head book-keeper at each table uses the calculator to do the same. The children at their seats record and solve the appropriate number story in their notebook. The customer pays the cashier by counting out the money.

### **The Students**

The difficulty of the problems can be adjusted to fit the needs of the students and focus on the math skills being covered. The concept of competitive pricing can also be introduced. Problem creation can be used as an enrichment activity. Students can make up their own story problems to use during lessons or center time. Integration of the writing standards is also possible. Students can write a narrative account about going shopping, or a narrative procedure explaining the solution to a problem, or even an informational report.

### **What You Need**

Materials can be kept simple. Empty bookshelves or a cardboard prefabricated supermarket can be used. Items to be sold are brought in by the class. The toy cash register, approximately six calculators, real coins, and punch-out coins are all easy to acquire.

### **Overall Value**

This program makes learning the necessary skills more practical and meaningful by demonstrating their importance. Students learn about money, using addition, subtraction, multiplication and division, and other problem-solving skills. Student interaction is inherent in this activity. Students also develop their self-esteem and have fun in the process.

## **STORY QUILTING**

**By Helene Espinoza, P.S. 206Q, New York City, N.Y.**

**Detailed plans available at: [www.teachersnetwork.org/impactii/profiles00\\_01/espinoza.htm](http://www.teachersnetwork.org/impactii/profiles00_01/espinoza.htm).**

### **How It Works**

*Story Quilting* is an interdisciplinary program based in literacy, but integrating social studies, math, art and technology. The project includes an author study, read-alouds, analysis of craft, research, hands-on exploration of geometry, and a “virtual” museum trip. We begin with a look at the work of Faith Ringgold, with a focus on *Tar Beach*. The children reflect on this book and list “noticing’s” which include her illustrations and their quilted borders. After visiting her website ([www.artincontext.org/artist/ringgold/bio.htm](http://www.artincontext.org/artist/ringgold/bio.htm)) and watching a biographical video, they learn how quilting became the vehicle for her art and storytelling. Via the Internet, pairs of students explore museums and view her works and those of other quilters. Simultaneously, other groups research her and her work through nonfiction books and learn about the art of quilting. They become aware of the element of design and geometry in quilting and use pattern blocks and/or quilting tiles to create their own quilt patterns. From a magazine article, they learn how quilts were used during the time of the Underground Railroad to give clues that helped escaping slaves find freedom, and revisit Faith Ringgold through her book *Aunt Harriet’s Underground Railroad in the Sky*. This leads to discussions of Harriet Tubman and to the literary comparison of two poems about Tubman written in different voices. The study culminates with the design in paper of an ABC quilt honoring Harriet Tubman that incorporates all they’ve learned about quilting as a storytelling medium.

### **The Students**

Three classes of fourth and fifth graders (20 students in each) participate in this project during our extended-day Project Read program. Minimum technical expertise is required since sites are bookmarked for the students. Participants meet in the library, where there is Internet access. The program can be adapted easily for other grade levels. Since it touches so many curriculum areas through varied modalities (aural, tactile, visual, etc.), diverse interests and styles of learning are addressed.

### **What You Need**

The materials needed are Internet access, works by Faith Ringgold, appropriate nonfiction books for research, quilting tiles or pattern blocks and basic art supplies.

## Module 4, Activity 2 & 3: Project Planning Template and Planning a Project

### Enhancing Student Engagement

#### 1. Topics/Tasks that ignite student interest in learning:

- **Choice**—When students have the opportunity to select their own topic it promotes interest and engagement (Wiggins and McTighe). This is not to be confused with setting students afloat to go anywhere they wish. A small menu should be carefully created to address a targeted area and should provide an opportunity to apply identified knowledge and skills.
- **Contemporary**—Try to select topics that are in the news and occurring right now. At the secondary level, for example, students are often motivated by topics that create debate or differences of opinion. Politics or environmental issues often create a great opportunity for students to explore and challenge their beliefs and opinions. If selected, be sure the approach to the project is consistent with district policy on the treatment of controversial issues and focuses on the students use of skills, evidence gathering, etc. and not on ideology.
- **Exciting or interesting to age group**—Try to identify topics that are of interest to your particular age group.

#### 2. Instructional Activities should:

- **Be challenging**—Try to create activities that push students to apply or learn new skills. It is important to note that these skills may need to be taught in a mini-lesson. Such mini-lessons should be anticipated and planned.
- **Be interactive**—Provide opportunities for students to work in groups and share ideas. Often the traditional classroom does not promote as much social learning as a less structured after-school setting (Johnson; Sharan and Sharan).
- **Use a variety of skills: visual/auditory/kinesthetic**—Students learn in a variety of ways. Providing a range of opportunities and methods for students to express learning will help ensure that all students can contribute to group projects (Cohen; Willingham).

#### 3. Products / Presentations should:

- **Be purposeful**—Any effort to generate meaning for the products that students produce will further motivate them. Having more than just a grade promotes ownership and pride in the product and strengthens students' "can-do" attitudes and persistence.
- **Integrate skills**—As students work on a project it is important to integrate the various skills they will use. A science project will often involve reading and writing and some use of mathematics. The more skills identified and used, the more likely the time spent on the project will be regarded as useful.
- **Provide opportunity for service learning**—Service learning is a great opportunity to promote purpose in a project.
- **Provide opportunity for students to teach other students**—Another great purpose for a project is to actually teach other students or adults. Learning fairs, symposiums or skits can often teach the audience.
- **Have a meaningful assessment**—Develop assessments that are authentic and linked to the identified skills and objectives. Be clear about what students need to know and do to meet these assessment objectives (Wiggins and McTighe).
- **Provide opportunities for collaboration**—Students can and do learn from each other. The research on social learning in the classroom is clear. Projects that promote student interaction have implications for social learning as well as cognitive lessons. Remember that productive ways of interacting must be taught and should be practiced.

#### 4. Give students a sense of progress:

- **Intermediate checks for progress**—It is crucial to identify “mileposts” or session goals so students can assess their progress and monitor their production. Creating a sense of progress is a crucial component in maintaining student engagement.
- **Student self-assessment**—Group and individual reflection is helpful in developing metacognitive skills in students. It is well established in the research community that creating an awareness of achievement and areas for further growth is essential to overall student learning (National Research Council).
- **Provide clear identification of learning goals and project quality**—Efforts to establish goals on a rubric or list will enhance student understanding and clarify expectations. This can be linked to the intermediate checks for progress. Having clear expectations for the final product helps students know what is expected so they can work towards meeting high level expectations.
- **Student accountability**—Assure that all students are held accountable for their work each day. If students are in groups, make sure that each student is clear about what they are expected to do (Rosenholtz and Wilson).

### Ensuring Participation in Small-Group Work

*This information is from Classroom Tips: Working with Cooperative Small Groups, an American Federation of Teachers brochure.*

Some studies have found that low-achieving students spend less time off task in cooperative small groups than in traditionally structured classrooms. Factors that influence student participation include:

- **Tasks**—The type of task will affect student participation. Conceptual tasks that require different abilities to perform them increase participation by students who have weaknesses in basic skills.
- **Motivation**—Competition among groups working on factual material or low-level skills increases students’ motivation to help one another.
- **Norms**—Teaching students norms for cooperative behavior and using rules within groups to enforce these norms increase equal participation in groups.
  - Ask for help when it is needed.**
  - Listen to others carefully.**
  - Help others when asked.**
  - Make sure everyone contributes.**
- **Group composition**—Mixing group members in terms of academic achievement, gender, ethnicity and socioeconomic status promotes maximum participation.
- **Accountability for all**—Accountability can be established by requiring each group member to produce an individual product (such as a worksheet or test) using the group to help, or by structuring the task so that each group member is responsible for a specific part.
- **Feedback**—It is essential for students working in cooperative groups to receive feedback from the teacher in their group products and on the quality of the group process. Students working in groups give and receive peer feedback and need to be taught how to respond constructively to one another.

Be sure to explain that the whole group is responsible for the quality of the final product even when the labor is divided. So they need to help and support each other.



## Module 4, Activity 4: Participant Evaluation Form

1. Site of training \_\_\_\_\_
2. Level of children you work with \_\_\_\_\_
3. Identify on to three things learned at the workshop that you can use in your after-school work.
  
4. What do you understand project learning to be? Why is it good for student learning?
  
5. Was the amount and kind of information provided about project learning too little, too much, or probably sufficient?
  
6. What additional kinds of information about projects would you have liked to have?
  
7. Do you intend to try a project?
  
8. Are there enough examples of projects in the binder to get started? If not, what else would be helpful?
  
9. Do you think the sites referenced will be helpful as you think about projects you might try?
  
10. Did you feel that the workshop facilitators tried to address your concerns? If not, please explain.

**Thank you for being here and for your attention!**

## Module 5, Activity 2: Review of Project Learning

The Match Game cards to review project learning. Print on Avery 5464 Label or Copy, cut apart, and paste onto 3x5 cards.

### 1. What is project learning?

Project learning is a process in which students apply what they learn to deepen their understanding. It usually ends with a product or performance.

### 2. How is project learning different from traditional learning?

- It is more centered on students' interests.
- It is not done for a grade.
- It emphasizes and helps students use their talents.
- Students have a choice.
- They can see the usefulness of what they learn.

### 3. What is the importance of motivation in project learning?

Students are more likely to put forth effort to complete a product when they are interested in reaching the goal.

**4. What is the benefit of monitoring student progress frequently?**

You can observe misconceptions or erroneous practices and design instruction to address them before they become ingrained.

**5. Why it is important to have a driving question or big idea?**

If you don't know what you want students to focus on, neither your instruction nor the students' efforts are likely to get them there.

**6. What are some community resources for after-school?**

- Journalist
- Weatherman
- Science museum
- Carpenter
- Restaurant owner
- Firefighter

**7. What are some guidelines for group work?**

- Group members should have roles.
- Each member should contribute to the work.
- Mutual respect should be taught.

**8. How does project learning meet student needs?**

- Project learning provides choice and challenge.
- It gives a sense of accomplishment.
- It allows students to feel part of a group.
- It helps them see how what they learn is used.

**9. How do you establish a good learning climate?**

- Set up 4-5 rules and procedures from the start. Have students practice them.
- Be consistent in enforcing them.
- Let students help identify what helps them work and get along.

**10. When would you use a mini-lesson?**

Use a mini-lesson when students have difficulty with a needed skill.

**11. Why would you gather data?  
What and when?**

- Gather data to learn whether students are engaged or whether they have become better at doing something.
- Gather data to see whether social skills have improved.

**12. What are some products that can result from a project?**

- An exhibit
- A play or puppet show
- A debate
- A presentation to a specific group
- A campaign for something in the community
- A booklet to help other students learn
- A video
- A poem or story
- Talk or game show

## **Module 5, Activity 4: Checklist for Review of Project Implementation**

### **PLANNING**

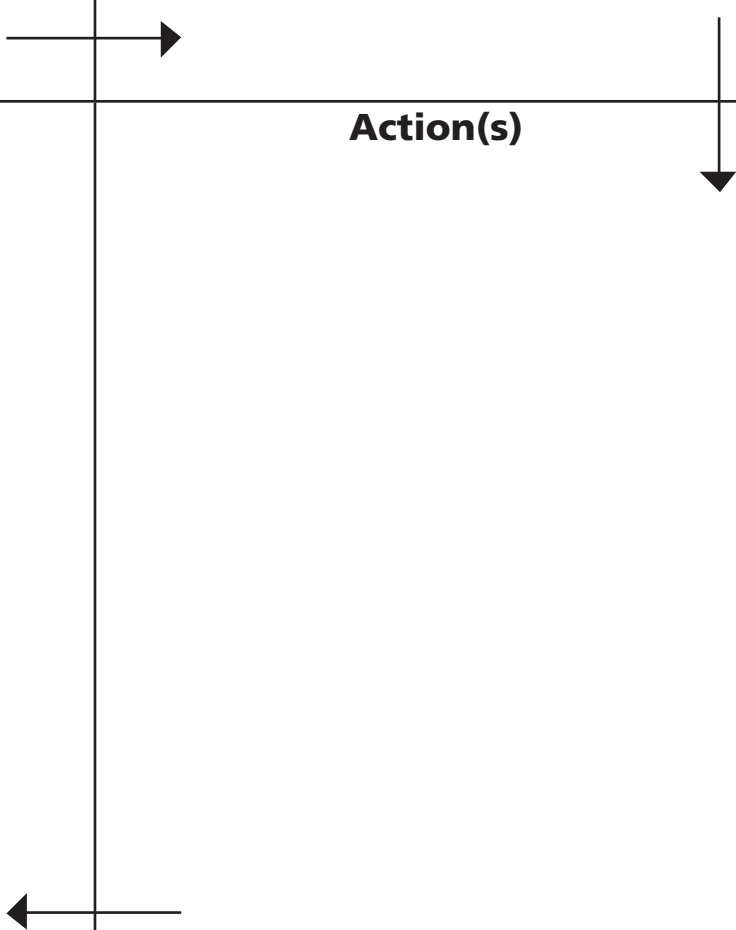
1. Was the goal consistent with that of the after-school program?
2. Was the goal of the project clear?
3. Did it focus on an important idea or question?
4. Was there a hook to catch the interest of the students?
5. Was the length of time allowed appropriate?
6. Were necessary resources available?
7. Was management of the project planned?
8. Did the organization of groups work?
9. Were mini-lessons anticipated and planned?

### **ASSESSMENT**

10. What can you say about children's learning during the project?
11. What did students get out of it (their reflections, feedback)?
12. Did students take pride in what they produced?
13. Did they collaborate in a helpful way?
14. Were they able to articulate their goal to others?
15. Did you communicate with parents/guardians and school day staff?

**Module 5, Activity 5: PLAN Form**

<p><b>Project Title</b></p>	<p><b>Lessons Learned</b></p>
<p><b>Need(s)</b></p>	<p><b>Action(s)</b></p>



## Module 5, Activity 5: Transferrable Techniques

These training techniques can also be used with after-school students.

Technique	Description	Value for Students
Carousel	Pairs or groups rotate through posters adding new responses to questions or problems.	Thinking enhanced by others; multiple views or strategies highlighted and respected.
Birthday line	Line up in order of birth month/date without speaking.	Prompts need to communicate in new way, cooperate. Builds community.
Think-Pair-Share	Think alone, then with a partner, decide what to share with large group.	Each person must think first and not rely on someone else.
Debrief	After an activity, explicitly talk about its value or the learning sought.	Students will not always figure it out on their own. Make explicit what is important.
Cooperative small groups	Small teams solve problems or complete projects together Participant leaders	A needed skill in the world. Everyone must be able to contribute.
Venn Diagram	Graphic organizer	Helps distinguish what is alike and what is different about two or more things.
Jigsaw	Break up tasks, having different people read & report on different parts when there is lengthy reading or several ideas to research or work on.	Everyone learns all the information but must concentrate on only one aspect.
Gallery Walk	Teams rotate to provide bulleted answers to questions posted on charts. Works best with open-ended questions, but can also be used as tour of desks to see various representations for a problem, art work, etc.	Team building, listening, problem solving, recognizing other perspectives, analyzing and comparing.
Reporting Out	With small-group work, a representative of a team will explain the group's conclusions.	Accountability for small-group work. Teams can pick a reporter or the teacher can call on someone at random. The latter is motivation to make sure each team member understands what has been done.
Annotation	Helps students compare and discuss different levels of work or ways to approach tasks.	



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