2,000 hear... at event story

By Bob Mahlburg
Fort Worth Star Telegram

About 2,000 grade school kids and teachers gathered in Fort Worth Friday for the Authors' Conference yesterday to hear tips from two authors and tales from storytellers.

“It’s fun to listen to them,” fifth grader Dana, 8, a student at the Carlson Applied Learning Center who helped plan the event.

Featured authors included...
Introduction to the performance standards for Applied Learning

Applied Learning focuses on the capabilities people need to be productive members of society, as individuals who apply the knowledge gained in school and elsewhere to analyze problems and propose solutions, to communicate effectively and coordinate action with others, and to use the tools of the information age workplace. It connects the work students do in school with the demands of the twenty-first century workplace.

As a newer focus of study, Applied Learning does not have a distinct professional constituency producing content standards on which performance standards can be built. However, the Secretary's Commission on Achieving Necessary Skills (SCANS) laid a foundation for the field in its report, Learning a Living: A Blueprint for High Performance (1992) which defined the concept of “Workplace Know-how.” We worked from this foundation and from comparable international work to produce our own “Framework for Applied Learning” (New Standards, 1994). That framework delineated nine areas of competence and spelled out their elements. The nine areas of competence were as follows:

- Collecting, analyzing, and organizing information;
- Communicating ideas and information;
- Planning and organizing resources;
- Working with others and in teams;
- Solving problems;
- Using mathematical ideas and techniques;
- Using technology;
- Teaching and learning on demand;
- Understanding and designing systems.

The Applied Learning performance standards have been built upon this framework. The standards have also been built on the experience of the Fort Worth Independent School District's applied learning initiative and the application projects developed by Mountlake Terrace High School in Washington.

We adopted the approach of developing distinct standards for Applied Learning rather than weaving them through the standards for the core subject areas. The advantage of establishing distinct standards for Applied Learning is that it focuses attention on the requirements of these standards and asserts an explicit role for Applied Learning as a domain for assessment and reporting of student achievement. “Cross-curricular” standards run the risk of being absorbed and lost within the expectations of the different subjects. However, the disadvantage of this approach is that it may be interpreted as advocating the development of Applied Learning as a subject in its own right to be studied in isolation from subject content. That is not the intention of these standards. We do not advocate development of Applied Learning as a separate subject. We expect that the work students do to meet the Applied

Learning performance standards will take place generally within the context of a subject or will draw on content from more than one subject area. This expectation is stated in the performance description for A1, Problem Solving.

There are five performance standards for Applied Learning:

A1 Problem Solving;
A2 Communication Tools and Techniques;
A3 Information Tools and Techniques;
A4 Learning and Self-management Tools and Techniques;
A5 Tools and Techniques for Working With Others.

A1, Problem Solving is the centerpiece of the standards. The performance description defines problem solving projects focused on productive activity and organized around three kinds of problem solving:

- Design a product, service or system in which the student identifies needs that could be met by new products, services, or systems and creates solutions for meeting them;
- Improve a System in which the student develops an understanding of the way systems of people, machines, and processes work; troubleshoots problems in their operation and devises strategies for improving their effectiveness;
- Plan and organize an event or an activity in which the student takes responsibility for all aspects of planning and organizing an event or an activity from concept to completion.

The performance description specifies the criteria for each kind of problem solving project. These criteria become progressively more demanding from elementary school to high school.

The four “tools and techniques” standards are designed to work in concert with the Problem Solving standard. Each of these standards describes tools and techniques that are needed for success in completing projects of the kinds outlined above.

The tools and techniques described in A2 - A5 (such as gathering information, publishing information, learning from models, and working with others to complete a task) are only meaningful when considered in the context of work that has a genuine purpose and audience. The key to effective use of these tools and techniques is the capacity to put them to use in an integrated way in the course of completing a real task. It is critical, therefore, that they be learned and used in such contexts rather than prac-
ticed in a piecemeal way as skills for their own sake. Students are expected to demonstrate their achievement of the tools and techniques standards in the context of problem solving projects. This is reflected in the examples listed under the performance descriptions. At the same time, it is unlikely that any one project will allow students to demonstrate their achievement in relation to all of the standards. This is evident from the work samples and commentaries. In fact, it is likely that a project that attempts to cover all of the parts of the standards will accomplish none of them well.

The Applied Learning performance standards reflect the nine areas of competence defined in the Framework for Applied Learning. But the match is not complete. $A_6$, $A_8$, $S_6$, and $S_8$ embody many of the competencies that were defined by the “Framework for Applied Learning” in “Using mathematical tools and techniques” and “Using technology.” These competencies have not been duplicated in Applied Learning. However, the Applied Learning standards do include an explicit requirement that students use information technology to assist in gathering, organizing, and presenting information. Given the importance of ensuring all students develop the capacity to make effective use of information technology, we resolved that the overlap among the standards in this area was warranted. (See “Introduction to the performance standards for Science,” page 130, for discussion of the resource issues related to this requirement.)

Another area in which we decided that some overlap was warranted relates to $A_2$. The first part of this standard, which requires an oral presentation, is similar to one of the requirements of the Speaking, Listening, and Viewing standard in English Language Arts, $E_3$. The difference is that the Applied Learning standard focuses explicitly on presenting project plans or results to an audience, whereas the purpose of the presentation is not specified in $E_3$. As the cross-referencing of examples under the performance descriptions indicates, oral presentations that meet the requirements of $E_3$ may also satisfy the requirements of $A_2$; however, the reverse would not necessarily be the case.

The capacities defined by the tools and techniques standards ($A_2$ - $A_5$) are difficult to pin down. There is a tendency to describe them in terms of general dispositions that render them almost impossible to assess in any credible way. Each part of these standards is defined in terms of a work product or performance that students can use to provide concrete evidence of their achievement. The overall set of products and performances required to meet the standards is similar at each grade level, but the specific requirements differ and grow in demand from elementary to high school. (See “Appendix IV: The Grade Levels Compared: Applied Learning,” page 240.)

The first year of developmental testing of Applied Learning portfolios in 1995-96 provided an opportunity to test these performance standards (as they were presented in the Consultation Draft) in practice. Students in about 50 classrooms conducted projects designed around the standards. Their experience and the experience of the teachers who supported them was a valuable source of information for refining the performance descriptions. Refinements were also made in response to reviews by representatives of business and industry groups and community youth organizations such as 4-H, Girl Scouts of the U.S.A., Boy Scouts of America, Junior Achievement, and Girls and Boys Clubs of America. The refinements were largely confined to the detail of the performance descriptions, but there were two more significant changes, both related to $A_3$. The first was the definition of more explicit requirements for using information technology, especially at the high school level, in response to comments from business and industry representatives. The second was the inclusion of a specific requirement for “research” as set out in $A_6$. Research was implicit in the draft performance standards. The decision to make it explicit arose in the process of review of student projects where it was clear that the successful projects were those in which students had invested energy in research and could demonstrate that research in the work they produced.

Experience in using the standards to shape student work raised several issues. It was notable that most projects focused on “design” and on “planning and organizing.” There were fewer examples of “improving a system.” This was not surprising, but indicates the need to focus attention on gathering examples of such projects.

The circumstances in which the projects were conducted varied markedly. Some projects were initiated by the teacher and some were initiated by students; some projects were conducted by whole classes, some by small groups of students, and some by individuals; some projects were conducted as part of classwork and some were conducted largely outside class. It was clear, however, that regardless of how a project was initiated, a critical part of its success was the development of a sense of responsibility among the students involved for figuring out the work that needed to be done to complete the project and for making sure that the work got done. What was less clear were the relative merits of different arrangements of whole class, small group, and individual projects. A further question was the appropriate level of scaffolding of projects by teachers and the degree of scaffolding that is appropriate at different grade levels. Our capacity to resolve this last issue was complicated by the fact that, for most of the teachers and students involved, these were the first projects of this sort they had ever undertaken. The work samples and commentaries should be read with this fact in mind. These are issues that can only be resolved through practice and experience.
# A1 Problem Solving

Apply problem solving strategies in purposeful ways, both in situations where the problem and desirable solutions are clearly evident and in situations requiring a creative approach to achieve an outcome.

The student conducts projects involving at least two of the following kinds of problem solving each year and, over the course of elementary school, conducts projects involving all three kinds of problem solving. 
- Design a Product, Service, or System: Identify needs that could be met by new products, services, or systems and create solutions for meeting them.
- Improve a System: Develop an understanding of the way systems of people, machines, and processes work; troubleshoot problems in their operation and devise strategies for improving their effectiveness.
- Plan and Organize an Event or an Activity: Take responsibility for all aspects of planning and organizing an event or an activity from concept to completion, making good use of the resources of people, time, money, and materials and facilities.

Each project should involve subject matter related to the standards for English Language Arts, and/or Mathematics, and/or Science, and/or other appropriate subject content.

## Design a Product, Service, or System
A1a The student designs and creates a product, service, or system to meet an identified need; that is, the student:
- develops ideas for the design of the product, service, or system;
- chooses among the design ideas and justifies the choice;
- establishes criteria for judging the success of the design;
- uses an appropriate format to represent the design;
- plans and carries out the steps needed to turn the design into a reality;
- evaluates the design in terms of the criteria established for success.

### Examples of designing a product, service, or system include:
- Design a library system to manage classroom resources. 3a, 3b
- Design a tree house, accounting for physical and financial constraints. 2d, M8c
- Design a guide to the school library for younger children. 3b, 4a, 5a, E2d
- Design and produce a weekly school news service for broadcast on the PA system or closed circuit video network. 4a, 5a, E3d
- Design a classroom work area for ongoing project work.
- Design a weather station and provide a daily weather reporting service for the school. 2b, 2c, 4a, 5a, 5b, M1a, M1c, M1f, M6b, S3b, S3c
- Design a musical instrument. 3b, S1b

## Improve a System
A1b The student troubleshoots problems in the operation of a system in need of repair or devises and tests ways of improving the effectiveness of a system in operation; that is, the student:
- identifies the parts of the system and the way the parts connect with each other;
- identifies parts or connections in the system that have broken down or that could be made to work better;
- devises ways of making the system work again or making it work better;
- evaluates the effectiveness of the strategies for improving the system and supports the evaluation with evidence.

### Examples of troubleshooting problems in the operation of a system or improving the effectiveness of a system in operation include:
- Repair a bicycle, skateboard, or other means of transportation. 5b
- Improve the system for distributing sports equipment during recess and lunch times. 2b
- Clean up an aquarium. 2a, 3b, S2a, S2c
- Improve the system for collecting trash in the school. 2a, 5c, M7b, S4b, S6b, S7a
- Investigate the food choices of students buying food from vending machines near the school and make recommendations for ways of improving the nutritional value of the food available. 3a, 3b, M8a, S4c

## Plan and Organize an Event or an Activity
A1c The student plans and organizes an event or an activity; that is, the student:
- develops a plan for the event or activity that:
  - includes all the factors and variables that need to be considered;
  - shows the order in which things need to be done;
  - takes into account the resources available to put the plan into action, including people and time;
- implements the plan;
- evaluates the success of the event or activity by identifying the parts of the plan that worked best and the parts that could have been improved by better planning and organization;
- makes recommendations to others who might consider planning and organizing a similar event or activity.

### Examples of planning and organizing an event or an activity include:
- Organize a storytelling conference. 2b, 2c, S3a, 5a, E2c, E5b
- Plan a class excursion to the zoo or museum.
- Organize a drive to raise money for a specific purpose. 2a, 2c, 3b, M1a, M4b
- Plan a camping expedition, including all necessary supplies and a budget. 2a, M6b, M8d, S2a, S2c, S4b, S4c, S4d
A2 Communication Tools and Techniques

Communicate information and ideas in ways that are appropriate to the purpose and audience through spoken, written, and graphic means of expression.

A2 a The student makes an oral presentation of project plans or findings to an appropriate audience; that is, the student:
• organizes the presentation in a logical way appropriate to its purpose;
• speaks clearly and presents confidently;
• responds to questions from the audience;
• evaluates the effectiveness of the presentation.

Examples of oral presentations include:
A presentation to the custodian of proposals for improving the system of collecting trash in the school. 1b, 5c, 3c
A presentation to the principal of a proposal for an overnight camping trip. 1c, 3c
A presentation to a school assembly of results of a fundraising drive. 1c, 3b, 3c
A presentation to the class of the results of a project to clean up an aquarium. 1b, 3b, 3c, 5c

A2 b The student composes and sends correspondence, such as thank-you letters and memoranda providing information; that is, the student:
• expresses the information or request clearly;
• writes in a style appropriate to the purpose of the correspondence.

Examples of letters and memoranda include:
A letter inviting students at another school to a storytelling conference. 1c, 2c, 3a, 5a
A letter of thanks to a visiting speaker. 1c, 2c, 4a, 5a, 5b
A memorandum asking teachers to explain to their classes new procedures for distributing sports equipment during recess and lunch times. 1b
The use of E-mail to send the daily weather reports to teachers, parents, and community members. 1b, 2c, 4a, 5a, 5b

A2 c The student writes and formats information for short publications, such as brochures or posters; that is, the student:
• organizes the information into an appropriate form for use in the publication;
• checks the information for accuracy;
• formats the publication so that it achieves its purpose.

Examples of publishing information include:
Design a format for publishing daily weather reports. 1a, 2b, 4a, 5b, 5c
Design a poster advertising a fundraising drive. 1c, 3b
Produce a program for a storytelling conference. 1c, 2b, 3a, 5a
Create and maintain a Web site for the duration of the fundraising drive. 1c, 3b

A3 Information Tools and Techniques

Use information gathering techniques, analyze and evaluate information and use information technology to assist in collecting, analyzing, organizing, and presenting information.

A3 a The student gathers information to assist in completing project work; that is, the student:
• identifies potential sources of information to assist in completing the project;
• uses appropriate techniques to collect the information, e.g., considers sampling issues in conducting a survey;
• distinguishes relevant from irrelevant information;
• shows evidence of research in the completed project.

Examples of gathering information to assist in completing project work include:
Investigate the systems used to manage library collections, e.g., through interviews with librarians and field visits to libraries, in order to inform a project to design a library. 1a, 3b
Research the nutritional value of foods available in the vending machines near the school to inform a project to make recommendations for improving the nutritional value of food available. 1b
Conduct surveys to identify the reading interests and preferences of intended participants at a storytelling conference in order to inform the design of the conference program. 1c, 2b, 2c, 5a

A3 b The student uses information technology to assist in gathering, organizing, and presenting information; that is, the student:
• acquires information for specific purposes from on-line sources, such as the Internet, and other electronic data bases, such as an electronic encyclopedia;
• uses word-processing, drawing, and painting programs to produce project reports and related materials.

Examples of using information technology to assist in gathering, organizing, and presenting information include:
Use word-processing and drawing programs to design a guide to the library for younger students. 1a, 4a, 5t
Use a drawing program to present daily results of a fundraising drive. 1c, 2a, 2t
Use an electronic card catalogue to research information on sound for the design of a musical instrument or to find out about the requirements of freshwater animals and plants for a project to clean up an aquarium. 1a, 1b, 2a
Use the Internet to obtain advice from professional librarians during the project to design a library. 1a, 3a
**A4 Learning and Self-management Tools and Techniques**

Manage and direct one's own learning.

**A4 a** The student learns from models; that is, the student:
- consults with or observes other students and adults at work, and identifies the main features of what they do and the way they go about their work;
- examines models for the results of project work, such as professionally produced publications, and analyzes their qualities;
- uses what he or she learns from models to assist in planning and conducting project activities.

**Examples of learning from models include:**
Examine published guides similar in design to the students’ proposed guide to the library. 1a, 2b, 3c  
Study the way news reports are presented on radio and television to inform development of the students’ own newscasts. 1a, 2c, 5a, 5c  
Visit a meteorological station and observe the work of forecasters to inform the weather station project. 1a, 2b, 2c, 5a, 5b

**A4 b** The student keeps records of work activities in an orderly manner; that is, the student:
- sets up a system for storing records of work activities;
- maintains records of work activities in a way that makes it possible to find specific materials quickly and easily.

**Examples of tools and techniques for keeping records of work activities include:**
Maintain a project log book.  
Create and use a table of contents.  
Use dividers or colored tabs to categorize material.

**A4 c** The student identifies strengths and weaknesses in his or her own work; that is, the student:
- understands and establishes criteria for judging the quality of work processes and products;
- assesses his or her own work processes and products.

**Examples of tools and techniques for identifying strengths and weaknesses in one’s own work include:**
Make a list of the desirable qualities of a piece of work before starting and use the list to review and revise the work at the end.  
Use a review of previous project work to guide planning of a new project.  
Ask a friend to critique a piece of work in draft form.

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**A5 Tools and Techniques for Working With Others**

Work with others to achieve a shared goal, help other people learn on-the-job, and respond effectively to the needs of a client.

**A5 a** The student works with others to complete a task; that is, the student:
- reaches agreement with group members on what work needs to be done to complete the task and how the work will be tackled;  
- takes a share of the responsibility for the work;  
- consults with group members regularly during the task to check on progress in completing the task, to decide on any changes that are required, and to check that all parts have been completed at the end of the task.

**Examples of working with others to complete a task include:**
Work on the production of a weekly school news service. 1a, 4a, 5c  
Share responsibility for collecting information from a weather station and preparing daily reports. 1a, 2b, 2c, 4a, 5b  
Organize a storytelling conference. 1c, 2b, 2c, 3a

**A5 b** The student shows or explains something clearly enough for someone else to be able to do it.

**Examples of showing or explaining something to someone else include:**
Show how to fix a specific breakdown in a bicycle. 1b  
Explain how to figure out the average morning temperature recorded at school during the winter. 1a, 2b, 2c, 4a, M4c  
Show how to operate a video camera. 1a, 4a, 5a

**A5 c** The student responds to a request from a client; that is, the student:
- interprets the client's request;  
- asks questions to clarify the demands of a task.

**Examples of responding to a request from a client include:**
Talk with the custodian to determine problems to be solved in a system for collection of trash in the school. 1b, 2a  
Respond to a written request from a teacher to include some information in a weekly school news broadcast. 1a, 2c, 4a, 5a  
Interview younger children to identify sections they use in the library and things they find confusing about accessing information and use the interview to inform the design of the guide to the library. 1a, 3b, 4a

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To see how these performance descriptions compare with the expectations for middle school and high school, turn to pages 240-245.

The examples that follow the performance descriptions for each standard are examples of the work students might do to demonstrate their achievement. The examples also indicate the nature and complexity of activities that are appropriate to expect of students at the elementary level.

The cross-references that follow the examples highlight examples for which the same activity, and possibly even the same piece of work, may enable students to demonstrate their achievement in relation to more than one standard. In some cases, the cross-references highlight examples of activities through which students might demonstrate their achievement in relation to standards for more than one subject matter.
Work Sample & Commentary: Designing and Building a Bike Trailer

The task

Students were asked to devise a project that would advance their study of a school subject and involve obtaining the assistance of experts from outside the school. The project proposal had to be approved by the teacher and the building principal. Students could work individually or in groups of two or three. This project was undertaken by two students: the work shown here is drawn from the portfolio prepared by one of the students. The students decided to design and build a bike trailer, and to produce a guide to making a bike trailer.

Circumstances of performance

The project was completed both in and out of school time. It occupied about one hour each day for two days per week for most of the year. The students sought assistance from two mentors. They received peer and teacher feedback on drafts of their guide prior to publication.

What the work shows

A1 a Problem Solving: The student designs and creates a product, service, or system to meet an identified need; that is, the student:
- develops ideas for the design of the product, service, or system;
- chooses among the design ideas and justifies the choice;
- establishes criteria for judging the success of the design;
- uses an appropriate format to represent the design;
- plans and carries out the steps needed to turn the design into a reality;
- evaluates the design in terms of the criteria established for success.

This work sample illustrates a standard-setting performance for the following parts of the standards:

A1 a Problem Solving: Design a product, service, or system.
A2 b Communication: Compose correspondence.
A2 c Communication: Publish information.
A3 a Information: Gather information.
A4 a Learning and Self-management: Learn from models.
A4 b Learning and Self-management: Keep records of work activities.
A5 b Working With Others: Show or explain something so someone else can do it.

A The proposal establishes the need for the new duct. It shows evidence of some initial research into ideas for completing the project, and establishes a criterion for judging the success of the design.

B This working document demonstrates some of the students’ planning for the project. It identifies some of the problems they needed to solve in the design and production of the bike trailer.

C D E These sketches represent early steps in the design process, and suggest some initial ideas (such as an umbrella to shade the trailer) that were rather more ambitious than the final design.
Designing and Building a Bike Trailer

Planning

My partner and I are going to do a project to build a bicycle trailer.

Materials:

- $10 on board, because we need money
- $50 for parts
- $5 for spray wheels (manners)

Call - Interview carpenter. Interview carpenter. Interview carpenter. Interview carpenter. Interview carpenter.

Questions:
- How much is it?
- How big is it?
- How much will it take to build it?
- How much cost?
- How many trailer(s) can be built?
- How do you want to sell it for?
- How much to sell it for?
- How much time do I have?
- What kinds of tools do I need?
- Where do we get the money?

Problems:

- We need $50
- We need spray wheels
- We need to make sure the trailer is strong
- We need to make sure it is stable
- We need to make sure it is safe

Diagram

- Outside wood beam to hitch
- Inside wood beam to hitch
- Chain for braking system
- Bumper
- Wheel
- Wheel
- Wheel
- Wheel
- Wheel
The students produced scale drawings of the final design, including drawings from several different perspectives. Their carpenter mentor helped them to learn how to produce scale drawings. The results do not have the polish of professional quality but show a clear grasp of the nature and requirements of scale drawings. No paper trail remains to show the decisions the students made during the process of design, though some of the questions they considered are evident in their correspondence with their mentor.

This extract from the student’s log demonstrates development of a schedule for the work.

The students’ guide to making a bike trailer includes a photo of their finished product on the cover and contains detailed instructions for building a bike trailer.
Designing and Building a Bike Trailer

The Student - Pleasant Project
"Bike's Best Friend"

Introduction
This project is one that is created by two students at _______ Elementary. With the help of John, a professional carpenter, to assist them in their project, they have created a bike trailer. Step by step, they worked very hard to complete and construct their product.

This product is helpful to students and bike riders. This product will help students move projects such as backboards and inventions for the invention convention to school. This will also help you carry stuff such as a suit case, and other equipment when you go to a friend's house or a nearby relative's house to spend the night.

Procedure
After you have all your materials you are ready to build the trailer. Once you have finished these steps, you will have a perfectly built trailer for your bike.

Step 1
Smoothing Wood
A. First, use your Power Planer to smoothen out all the pieces of wood.

B. Then, use 1 sheet of your coarse sand paper to sand the ends of all the pieces of wood.

Step 2
Body
A. Next, on your outside trim, use your Router to make a 1/2" wide and 1/2" thick hole. The hole should be no farther than 1/3" away from one of the sides. No closer than 1/2" away from the same side. You should do this on all four outside trim pieces.

B. Use your Jigsaw to make sure that all of the pieces are the correct length.

C. Next, lay down 8 2x4's on a level surface. Then put one 2x4 across the 8 bottom pieces of wood about 1" away from the side. Do the same with the other side of the bottom pieces.

D. Then take another 2x4 and lay it down about 5" away from one 2x4 that you have already laid down. Nail them with you staple gun, twice on each side.

E. Then, lay a 4x6 from one end of one to the other end of the one that is on the other side of the trailer.

F. Put the outside trim around the sides according to size.

G. Use your drill bit to drill a whole(line) about 3/4" into the wood. Use your pre-sinker bit and pre-sink the wood about 1/4" into the wood.

H. Put three screws in each corner.

Step 3
Fence Work
A. Then you will start working on the fences. You will need your nail gun, gun nails , 4 1x8's , and 5 pieces of 2x4's.

B. Push the 2x4's together real tight. Then place one 1x8 on the pieces of wood with one end at the top and the other side past the last piece of wood.

Tools And Materials
The following is the Tools and the Materials you will need to build this product.

1. Router
2. Wood-2x4's
3. Wood-4x6's
4. Wood-1x8's
5. Power Planer
6. Nail Gun
7. Gun Nails
8. Sheets of Coarse Sand Paper
9. Power Saw
10. Power Drill
11. Electric Sander
12. Giant Table Saw
13. Work Mate Work Bench
14. 1" Screws
15. 1" Nuts
16. 1" Bolts
17. Pre-Drilling Bit
18. Pre-Sinker Bit
19. Paint of The Paint of Your Choice
20. Cup Of Black Paint to write an inscription (optional)
21. Rubber Wheels with axle and cotter pins
Designing and Building a Bike Trailer

C. Then, hold down the 1x8 and take your staple gun and put two staples at the top on the first piece of wood.

D. Then, on the third piece of wood (2x4) put two more staples at the middle of the 1x8. Then, remove the second piece of wood (2x4) from the five that are there.

E. Then, on the fifth piece of wood (2x4) put two staples in the bottom about a half inch away from the edge.

F. Then take out the fourth piece of wood (2x4) and then you will have one side completed of the front fence. Then do that with the other side of the fence. You now have the front fence finished. Repeat the steps 10 through 15 and you will have both the front and back fences completed.

G. Then, for the two side fences, it is the same procedure as the front and back fences, but instead of using 2x4’s, you will use 4x6’s and put another 1x8 in the middle of the fence on the side of the fence that has the 1x8’s on it.

Step 4
Assembling The Wheels

A. To be able to put on the front wheels, you need to cut two 4”x4” square pieces of wood. You also need to cut two more and put two 6x1” pieces of wood. Form a box-like figure, and

H. nail it to the bottom of the wagon in the front. You now put on your front wheels. Screw the wheels onto the box-like figure. The screws should be bigger than regular screws. You should now put on the rear wheels.

B. You should put on the rear wheels very carefully. Bend and assemble 1” angle aluminum with rivets.

C. Attach rear wheel assembly to trailer with screws.

D. Drill 3/4” hole in assembly for the axle.

E. Run axle through assembly.

F. Attach wheels on axle in secure with cotter pins. Now, you should start working on your hitch.

Step 5
Hooking On The Hitch

A. First, drill 3/8” hole into the lower, back of the bicycle frame, and both ends of 24” x 1/2” x 18” steel rod.

B. Place hitch plate to trailer with 3/8”x1” machine screws, lock washers, and nuts on tightly.

C. Attach steel rod to bike and trailer with 3/8” x 1” screws, lock washers, and nuts on tightly.

Now, you can use any colors of paint to do any design you want on your now built bike trailer.

Dear John,

Hi, it’s me again and my partner __________. We are writing this letter to you with a range draft procedure in side. Please read it and make any corrections and a good explanation that you found would make a difference in this project. So if you think it would build and send it back. Also send a same that you think would be a good name. If you think that our name is a good name please say that in the letter that you will hopefully send. Please send it to

Sincerely,

P.S. Send a recommendation for the final usage of the trailer. Thank you for the time that you have given up to help us with our project.

John is our rientor he helped our brochure together and put

A2b Communication Tools and Techniques: The student composes and sends correspondence, such as thank-you letters and memoranda providing information; that is, the student:
• expresses the information or request clearly;
• writes in a style appropriate to the purpose of the correspondence.

This is an example of the letters the students wrote seeking help with their project. The letter states the students’ request clearly and is written in an appropriate style.

A2c Communication Tools and Techniques: The student writes and formats information for short publications, such as brochures or posters; that is, the student:
• organizes the information into an appropriate form for use in the publication;
• checks the information for accuracy;
• formats the publication so that it achieves its purpose.

The guide is organized into an appropriate form to provide a step by step guide and is formatted effectively for its purpose. Close inspection reveals that it omits some of the steps in the sequence of making the bike trailer, refers to components that are not listed at the beginning, and does not provide full information about dimensions of the building materials. Nevertheless, it is an effective piece of communication based on the information the students collected and their direct experience.
Designing and Building a Bike Trailer

**A3 a** Information Tools and Techniques: The student gathers information to assist in completing project work; that is, the student:

- identifies potential sources of information to assist in completing the project;
- uses appropriate techniques to collect the information, e.g., considers sampling issues in conducting a survey;
- distinguishes relevant from irrelevant information;
- shows evidence of research in the completed project.

**B J** The planning record and a journal entry provide evidence of identifying potential sources of information for the project.

**K L** The questions the students prepared for the initial discussions with their carpenter mentor and with the handyman show evidence of their preparatory research.
Designing and Building a Bike Trailer

Learning and Self-management Tools and Techniques: The student learns from models; that is, the student:
- consults with or observes other students and adults at work, and identifies the main features of what they do and the way they go about their work;
- examines models for the results of project work, such as professionally produced publications, and analyzes their qualities;
- uses what he or she learns from models to assist in planning and conducting project activities.

The project documentation provides evidence of learning from models. There are several references to things the students learned from their carpenter mentor. The preparations the students made for interviewing the carpenter included questions about the nature of his work.

The students used a commercially produced guide to caring for wounds as a model for their guide. This project log extract demonstrates analysis of the qualities of this model. In other evidence the student also referred to using a picture of a motorcycle and its trailer with the parts labeled as a model for the design of the bike trailer and a blueprint for a playground as a model for the scale drawing for the bike trailer. There is ample evidence that the students used these models of results of project work to assist them to do their work.

Learning and Self-management Tools and Techniques: The student keeps records of work activities in an orderly manner; that is, the student:
- sets up a system for storing records of work activities;
- maintains records of work activities in a way that makes it possible to find specific materials quickly and easily.

The student used a small composition book to keep his records of work on the project. He used dates to identify his records. The book contains a comprehensive record of the project and is easily referenced, especially with regard to the sequence of events involved in completing the project.

Tools and Techniques for Working With Others: The student shows or explains something clearly enough for someone else to be able to do it.

The guide the students developed on the basis of their experience provides a step by step guide to building a bike trailer. It is explained clearly enough for someone else to be able to do it. The omission of some details (as noted above) does not detract from the accomplishment at the elementary level of a clear and logical explanation of a complicated set of procedures.

The written work included with this project contains some errors. For the main part the errors are confined to journal entries and other planning documents which were produced for personal use only and were not intended for publication. The three pieces of finished writing are the proposal, the letter to the mentor, and the guide. These contain almost error free writing.
Work Sample & Commentary: Educating People About Tuberculosis

The task
Students were asked to identify something in their community on which they wanted to work to bring about change. They could work individually or in small groups. This project was undertaken by one student. The student identified the increasing incidence of tuberculosis (TB) in the community as the issue on which he wished to work.

Circumstances of performance
The project was completed over a period of about eight weeks, mainly outside class time. The class worked together initially to develop organizing questions to help structure their project plans. They kept their teacher informed of progress on the projects and sought advice on resolving problems they encountered. Otherwise they worked independently.

This work sample illustrates a standard-setting performance for the following parts of the standards:

| A1 | Problem Solving: Design a product, service, or system. |
| A2 | Communication: Make an oral presentation. |
| A3 | Communication: Publish information. |
| A3b | Information: Gather information. |
| S4c | Scientific Connections and Applications: Personal health, personal and environmental safety. |
| S5c | Scientific Thinking: Use evidence from reliable sources to construct explanations. |
| S6c | Scientific Tools and Technologies: Acquire information from multiple sources. |
| S7a | Scientific Communication: Represent data and results in multiple ways. |
| S7c | Scientific Communication: Communicate in a form suited to the purpose and the audience. |

What the work shows
A1 a Problem Solving: The student designs and creates a product, service, or system to meet an identified need; that is, the student:
• develops ideas for the design of the product, service, or system;
• chooses among the design ideas and justifies the choice;
• establishes criteria for judging the success of the design;
• uses an appropriate format to represent the design;
• plans and carries out the steps needed to turn the design into a reality;
• evaluates the design in terms of the criteria established for success.
Educating People About Tuberculosis

This student set out to design a service for his community: to educate people about the dangers of tuberculosis. The records of the project do not fit neatly with the features of a “Design” project as set out above; in particular, it suffers for lack of an overall plan and does not include evidence of the way the project was brought to closure. This is, in part, due to the difficulties the student encountered in seeing through his plan to make a presentation to patients at his doctor’s office. The particular strength of the project is the research on which the student based his work and its relationship to science content.

A The student’s description of the project identifies the problem he identified, his initial plans for the project, and the criteria he intended to use to judge his success.

B Here, the student explained his reasons for choosing to work on this problem.

C D These documents explain the student’s plan to design a model of the lungs to show people the effects of TB, to rehearse his explanation with his doctor, and then give a presentation to an audience.
Educating People About Tuberculosis

(Figures and diagrams related to tuberculosis education are shown.)

1. Felt it gathered up materials, such as water, pieces of bamboo, and some sticks, and placed it horizontally on the ground to dry.

2. I then looked at one of my medical books and found a diagram showing the placement of the lungs and ribs.

3. I picked up my scissors and cut a piece of rectangular paper. I am a little thinner than the rest.

4. I placed on each end of each strip the paper you trace over one side of the body.

5. I then made some paper that will look for better detail of the ribs.

6. I then cut it all with scissors.

7. I placed the lungs by drawing them on each side and traced them out again.

8. My final step was to print them an energy-net.
“The Lung Model,” sets out the design for the model of the lungs and the materials the student used to make it. The accompanying drawings show how the model was made.

This document sets out a series of criteria for judging success. The criteria are achievable and relate directly to the parts of the service the student designed.

As noted above, the records of evaluation are incomplete. One problem the student encountered was in his efforts to inform people by putting up posters in the local area warning of the dangers of TB. When he went back, the posters had been torn down. However, the student’s comments on the survey demonstrate reflection on the information he gathered through surveys.

This journal entry suggests the student’s commitment to continue to work to reduce the incidence of TB.
## Educating People About Tuberculosis

| S | At my library, they have a computer set up connected to the Internet. It's fairly simple. You use the mouse to click on different pages, then that leads you to another directory. Then you type in phrases or words like tuberculosis and click on search. I entered tuberculosis, some listings came up, and the one that worked best was 'Ask MD about tuberculosis.'
| P | My gun is like this because it makes holes in your lungs, and it is still growing long after you have died. It's like an arrow. It goes in and out, and it is still growing long after you have died. It's like an arrow. It goes in and out, and it is still growing long after you have died.
| I | My gun is like this because it makes holes in your lungs, and it is still growing long after you have died. It's like an arrow. It goes in and out, and it is still growing long after you have died.
| O | My gun is like this because it makes holes in your lungs, and it is still growing long after you have died. It's like an arrow. It goes in and out, and it is still growing long after you have died.
| J | Community Board

Recently, I have called the American Lung Association to find out how I can raise money to find their new research and research to treat TB. I think one that they had special programs which would specifically work which I need to find. I must put more money away and I must do my site. Communication can help with these activities, that's why I need to properly make time for everything else, get to do.

### A2a Communication Tools and Techniques
- The student makes an oral presentation of project plans or findings to an appropriate audience; that is, the student:
  - organizes the presentation in a logical way appropriate to its purpose;
  - speaks clearly and presents confidently;
  - responds to questions from the audience;
  - evaluates the effectiveness of the presentation.

### K
- The student evaluated his presentation to the class, and identified both strengths and aspects of the presentation that could have been improved.

### L
- This evaluation of the student's performance, prepared by another student, relates some of the content of the presentation.
Educating People About Tuberculosis

A2 c Communication Tools and Techniques: The student writes and formats information for short publications, such as brochures or posters; that is, the student:

• organizes the information into an appropriate form for use in the publication;
• checks the information for accuracy;
• formats the information so that it achieves its purpose.

M The poster is eye catching and informative.

The student...
Educating People About Tuberculosis

A3.1 Information Tools and Techniques: The student gathers information to assist in completing project work; that is, the student:

- identifies potential sources of information to assist in completing the project;
- uses appropriate techniques to collect the information, e.g., considers sampling issues in conducting a survey;
- distinguishes relevant from irrelevant information;
- shows evidence of research in the completed project.

The student contacted numerous organizations for information to support his project and used the Internet to search for relevant information.

N The project log provides a record of the student's research.

O P These are notes the student made from the materials he collected and notes he made to explain parts of his presentation.

Q In these records, the student explained how he sorted the information he had collected and determined which materials to retain and which to discard.

The research is evident in the design of the model, the survey, and in the poster.

R The student developed and administered a survey to collect information on people's knowledge about TB before giving his presentation. His notes on the survey reflect some attention to sampling issues, his reasons for selecting older students to survey, and ways to structure the survey to achieve its purpose.

The questions in the survey itself are limited in that they do not actually probe the respondents' knowledge.
**Educating People About Tuberculosis**

**AS** Information Tools and Techniques: The student uses information technology to assist in gathering, organizing, and presenting information; that is, the student:

- acquires information for specific purposes from on-line sources, such as the Internet, and other electronic data bases, such as an electronic encyclopedia;
- uses word processing, drawing, and painting programs to produce project reports and related materials.

**S** The student made extensive use of the Internet and demonstrated his knowledge of how to gain access.

**R** The survey and poster demonstrate use of word processing and drawing programs.

**SA** Scientific Connections and Applications: The student produces evidence that demonstrates understanding of personal health..., personal and environmental safety.

The project is a study of a public health problem in the student's neighborhood that could pose a threat to the student's personal health.

**P** As the student learned, with a healthy immune system, the likelihood of illness is low.

**SA** Scientific Thinking: The student uses evidence from reliable sources to construct explanations.

**SA** Scientific Tools and Technologies: The student acquires information from multiple sources such as experimentation and print and non-print sources.

**AS** The student used a wide range of sources for the research in this project, including print materials, a survey, and searching on the Internet.

**O** The information is summarized in the student's own words.

---

*Tuberculosis*
- caused by *Mycobacterium tuberculosis*
- attacks any part of body, but usually lungs
- TB disease once leading cause of death in U.S.
- any person, rich or poor, black or white, young or old may get TB.
- TB is spread through air
- TB may travel through to lungs, thyroid, kidney, spine or brain.
- spreads by talking, coughing, or sneezing.
- TB disease, people may spread to family members, friends, or co-workers.
- most cause immune system controls TB, then becomes TB infection.
- TB bacillus multiplies like white blood cells.

**March 24th National T.B. Day**
- School - Branches, Branches, Bronchus, Alveolus, Left Lung: Right Lung
- Lung contains thousands of branches.
- One way:
  - Bronchus (leading to air sacs)
  - Bronchus (leading to air sacs)
  - Bronchus (leading to air sacs)
  - Alveolus

- Lung contains openings in tissue layers of air chambers.
  - Pharynx (back of nose and mouth) → Esophagus → lungs (voice box) → trachea → bronchus → bronchi → alveolus → pulmonary capillaries

---
Educatng People About Tuberculosis

**TUBERCULOSIS**

**SURVEY**

DO YOU KNOW.............

What is tuberculosis?

YES SOMETHAT NO

What It does to the lungs, brain or genital organs?

YES SOMETHAT NO

How It Spreads?

YES SOMETHAT NO

That TB is one of the top killer diseases in the U.S.

YES SOMETHAT NO

What is MDR tuberculosis?

YES SOMETHAT NO

The name of the test most commonly used to treat TB patients?

YES SOMETHAT NO

The name of the drugs used to treat TB patients?

YES SOMETHAT NO

The symptoms of TB?

YES SOMETHAT NO

Anyone with TB?

YES SOMETHAT NO

Thank you for taking this survey. For more info on TB read my pamphlet!

---

**S7 a** Scientific Communication: The student represents data and results in multiple ways, such as diagrams, and artwork; and technical...writing.

The student used a poster, a model of the lungs, a pamphlet, and speaking to get his ideas across.

**S7 c** Scientific Communication: The student communicates in a form suited to the purpose and the audience....

The student used a variety of communication forms, increasing the likelihood of getting the message to different audiences.

The written work included with this project contains some errors. For the main part the errors are confined to journal entries and other records which were produced for personal use only and were not intended for publication. The only pieces of finished writing are the poster and the survey. These contain almost error free writing.
Work Sample & Commentary: Bike Helmet Ordinance

The task
As part of their social studies program, students undertook a project to research the development of a new ordinance in their city. The ordinance would require children to wear bicycle helmets. The students became interested in this project after a local middle school student was hit by a car while riding his bicycle and sustained serious head injuries. Reports of the accident suggested that the boy’s injuries would have been reduced had he been wearing a helmet. The project involved learning about the respective responsibilities of federal, state, and local government, learning how an ordinance is prepared, learning the process by which an ordinance passes through local government, and researching other local government laws regarding bicycle helmets. The project resulted in the City Council passing a new ordinance based closely on the one the students drafted.

Circumstances of performance
The project was completed over a period of about six months. It involved a combination of class time and work outside class. The project involved the whole class in the initial stages of planning and in preparation for presentation of the ordinance to the City Council. Groups of students took responsibility for specific aspects of the project, such as drafting the ordinance. The work shown here was drawn from several students’ portfolios.

What the work shows
A1 b Problem Solving: The student troubleshoots problems in the operation of a system in need of repair or devises and tests ways of improving the effectiveness of a system in operation; that is, the student:
• identifies the parts of the system and the way the parts connect with each other;
• identifies parts or connections in the system that have broken down or that could be made to work better;
• devises ways of making the system work again or making it work better;
• evaluates the effectiveness of the strategies for improving the system and supports the evaluation with evidence.

The students investigated the system by which local government passes new laws, including the process of petitioning for a new law, and how laws are drafted. They researched information about the need for a new ordinance covering the use of bicycle helmets to support their petition and drafted their own ordinance for presentation to the City Council. (See A4 a below for details of the students’ research.)

The students’ records of the project do not fit neatly with the features of an “Improving a System” project as set out above; nevertheless, the project provides an example of a successful effort aimed at helping to make a system work more effectively.

A The students worked together to create a plan for the project.
Bike Helmet Ordinance

B This is an extract from the near-to-final draft of the proposed ordinance and an extract from the final draft of the ordinance that the students presented to the City Council. These demonstrate the process of editing and revision the students followed as they researched and polished their proposed ordinance.

D This cover letter accompanied the agenda for the City Council meeting at which the students presented the ordinance.

C WHEREAS, People are being injured or killed on bicycles each year, in the United States, 8,000 children are killed and 50,000 more are permanently disabled; 75% of all bicycle related injuries include trauma to the head; and

WHEREAS, our environment is becoming a risk to bicycle riders, streets are being widened which will increase traffic flow, the speed limit has increased from 55 to 65 mph south of ______ and 820, most families in have two or more cars in use, which increases the risk to children being hit by a car coming in and out of their driveways and or neighborhoods; and

WHEREAS, a bicycle helmet ordinance would increase the safety of the minors in , which will attract homeowners and businesses, this means a wider tax base for ______

NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ______, TEXAS.

D This cover letter accompanied the agenda for the City Council meeting at which the students presented the ordinance.
E The Journal reports the students’ presentation to the City Council. A subsequent edition reported the Council’s decision to pass the ordinance.

A Communication Tools and Techniques: The student makes an oral presentation of project plans or findings to an appropriate audience; that is, the student:
• organizes the presentation in a logical way appropriate to its purpose;
• speaks clearly and presents confidently;
• responds to questions from the audience;
• evaluates the effectiveness of the presentation.

F This is a working document prepared early in the process of preparing to present the proposed bicycle helmet ordinance to the City Council. It shows evidence of considering the interests of the audience in planning the presentation.

G This is an extract of the script students prepared for their presentation to the City Council. The students used cue cards when making the actual presentation.

H Each student prepared a rubric for assessment of his or her part of the presentation to the Council. This example reflects the students earlier work on the features of an effective presentation to a City Council.
# Bike Helmet Ordinance

<table>
<thead>
<tr>
<th><strong>H</strong></th>
<th><strong>4321</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Breaks attention</td>
</tr>
<tr>
<td>States purpose</td>
<td>Addressing Council meeting</td>
</tr>
<tr>
<td>States desired outcome</td>
<td>Strong topic statement</td>
</tr>
<tr>
<td>Rational</td>
<td>Plenty information given</td>
</tr>
<tr>
<td>3 reasons stated</td>
<td>3 examples stated</td>
</tr>
<tr>
<td>Access match council values</td>
<td>Elaborate reasons</td>
</tr>
<tr>
<td>Reasons needed by importance</td>
<td></td>
</tr>
</tbody>
</table>

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**Notes:**

- I could improve on my eye contact. I need to slow down.

---

<table>
<thead>
<tr>
<th><strong>J</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>I worked pretty hard, but not as hard as I used to. It's still going to work out properly.</td>
</tr>
</tbody>
</table>

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**K**

- **Name:** [blank]
- **Please rank 1, 2, 3, 4.**
- **1 = outstanding, 2 = satisfactory.**

**Introduction:**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction is clear and concise</td>
<td>Yes, open stance</td>
<td>Source purpose A</td>
<td>Yes, states clearly what we were doing and why</td>
</tr>
<tr>
<td>Assumes Council will approve proposal</td>
<td>Yes, standing behind me, approaching effectively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assumes common property will be used</td>
<td>Yes, organization is well-organized, clearly written</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assumes clear outline of what will be discussed</td>
<td>Yes, appropriate speaking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assumes clear statement of what is needed</td>
<td>Yes, clear, short, easy to understand</td>
<td></td>
<td></td>
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</tbody>
</table>

**Rationale:**

<table>
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<tr>
<th>1</th>
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<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale is clear and concise</td>
<td>Yes, open stance</td>
<td>Source purpose A</td>
<td>Yes, states clearly what we were doing and why</td>
</tr>
<tr>
<td>Assumes Council will approve proposal</td>
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<td>Yes, clear, short, easy to understand</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conclusions:**

<table>
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<th>1</th>
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<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusions is clear and concise</td>
<td>Yes, open stance</td>
<td>Source purpose A</td>
<td>Yes, states clearly what we were doing and why</td>
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<td>Yes, clear, short, easy to understand</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

- We worked really hard on this ordinance and I believe the ordinance should be passed.
The students conducted self-evaluations of their individual parts of the presentation during rehearsal and evaluated the final presentation. The examples of the self-evaluations reveal a willingness to identify strengths and weaknesses, and to work for improvement: “...I gave myself a U because I didn’t even give the audience a glimpse (sic)...I spoke slowly but a tad to (sic) fast...I was more nervous than I usually am...” and “I need to speak up and slow down.” The evaluation of the overall presentation is supported with reasons and observations.

Communication Tools and Techniques: The student composes and sends correspondence, such as thank-you letters and memoranda providing information; that is, the student:

- expresses the information or request clearly;
- writes in a style appropriate to the purpose of the correspondence.

These are examples of correspondence the students prepared to request information to assist in their research. The letters state their purpose clearly and are written in an appropriate style.
Bike Helmet Ordinance

This document provides evidence of the students' work on establishing the features of correspondence designed to suit their purpose.

A3a. Information Tools and Techniques: The student gathers information to assist in completing project work; that is, the student:
• identifies potential sources of information to assist in completing the project;
• uses appropriate techniques to collect the information, e.g., considers sampling issues in conducting a survey;
• distinguishes relevant from irrelevant information;
• shows evidence of research in the completed project.

P. This is an example of the lists of questions the students developed to guide their research. The lists were prepared by students working in groups.

Q. This list of potential sources of information was produced by the students through class discussion. Individual students took responsibility for working on specific parts of the research.

1. Can a citizen pass a law?
2. If they can't, why?
3. What would be the first step?
4. What would we do after that?
5. Who will put it into action and why?
6. How long will it take to get it on the ballot?
7. Would someone have to save the citizens' votes?
8. What do you think the punishment should be?
9. Do we really need a punishment?
**Bike Helmet Ordinance**

The students made telephone calls seeking information to assist their research and conducted interviews. This is an example of the texts they prepared for making telephone calls.

To develop material to support their case for the new ordinance, the students conducted a survey of visitors to the local fair. This is an example of the record sheets they used to record responses.
Bike Helmet Ordinance

This working document on penalties for inclusion in the new ordinance illustrates efforts to develop an appropriate sequence of penalties to encourage adherence to the new law. Figuring out how to shape a law so as to encourage adherence was one of the issues the students researched in preparing the ordinance. These notes reflect the student’s study of other similar ordinances.

This list of reasons for passing the proposed ordinance was produced by the class during the process of their research.

Learning and Self-management Tools and Techniques: The student learns from models; that is, the student:
• consults with or observes other students and adults at work, and identifies the main features of what they do and the way they go about their work;
• examines models for the results of project work, such as professionally produced publications, and analyzes their qualities;
• uses what he or she learns from models to assist in planning and conducting project activities.

The students researched a variety of models, including models of ordinances passed by other city councils and state governments and models of presentations.
Bike Helmet Ordinance

This document demonstrates an analysis of a model ordinance (an ordinance relating to teen curfew) that a group of students prepared on an overhead transparency for presentation to the class. The acronym “CAP” refers to “Competent Adult Model,” the term used by the class to refer to models to guide their work.

Learning and Self-management Tools and Techniques: The student identifies strengths and weaknesses in his or her own work; that is, the student:

• understands and establishes criteria for judging the quality of work processes and products;
• assesses his or her own work processes and products.

These documents demonstrate the criteria the students developed for judging the quality of their work and assessing the strengths and weaknesses of their performances. The students’ self-assessments go beyond general comments and demonstrate a willingness and capacity to critique their performances and to identify areas for improvement.

In these final comments on the project, the students described their contributions to the overall work and assessed their strengths and weaknesses. Though some of the comments tend to be wordy and repetitive, the students showed a capacity to analyze their work in some depth and to cite both their perceived strengths and the weaknesses they needed to work on. These reflections contain some spelling errors. The reflections were intended only for personal use and were not edited.

The written work included with this project contains some errors. For the main part the errors are confined to journal entries and other planning documents which were produced for personal use only and were not intended for publication. The pieces of finished writing are the final draft of the ordinance, the script for presentation to the Council, and the letters seeking information. These contain almost error free writing.
Work Sample & Commentary: Improving the Bathrooms

The task

Students were asked to identify something in their community on which they wanted to work to bring about change. They could work individually or in small groups. This project was undertaken by three students: the work shown here is drawn from the portfolio prepared by one of the students. The students identified the cleanliness of the boys’ bathrooms in the school as the issue on which they wished to work.

Circumstances of performance

The project was completed over a period of about eight weeks, mainly outside class time. The class worked together initially to develop organizing questions to help structure their project plans, and kept their teacher informed of progress on the project and problems as they arose. Otherwise they worked independently.

What the work shows

A1b Problem Solving: The student troubleshootes problems in the operation of a system in need of repair or devises and tests ways of improving the effectiveness of a system in operation; that is, the student:
- identifies the parts of the system and the way the parts connect with each other;
- identifies parts or connections in the system that have broken down or that could be made to work better;
- devises ways of making the system work again or making it work better;
- evaluates the effectiveness of the strategies for improving the system and supports the evaluation with evidence.

The student’s records of the project do not fit neatly with the features of an “Improving a System” project as set out above; nevertheless, the project provides an example of a tenacious effort at working to make a system more effective. A particular strength of the project is the student’s effort to make sense of the parts of the system and the way they connect with one another.

This work sample illustrates a standard-setting performance for the following parts of the standards:

A1b Problem Solving: Improve a system.
A2a Communication: Make an oral presentation.
A2c Communication: Publish information.
A3a Information: Gather information.

A The student’s description of the project identifies the problem he planned to tackle and his initial efforts to address the task.
Improving the Bathrooms

B This working document shows the student’s efforts to identify the people who influence the state of the bathrooms and how the parts of the system connect with one another.

C This extract from the student’s project log reveals a sequence of project activity and some of the strategies he adopted: making systematic observations of the bathrooms; interviewing key people affecting the condition of the bathrooms; and creating fliers to appeal to students to keep the bathrooms clean.
Several documents provide evidence of evaluation of the effectiveness of the strategies adopted to improve the system. The “Update” includes an evaluation of the effects of the project supported by evidence.

A further record prepared on the same day indicates recognition of the need to influence key people in the system to bring about change. This issue is picked up again in the piece on problems encountered in the project.
The student’s “Self-Assessment” provides further evidence of evaluation of the effects of the project and indicates further work needed to improve the system.

This reflection on the project shows the student's attempt to generalize from his experience and extrapolate to other contexts.

The interview with the head custodian finally took place the day after the reflection was written. The record of interview reveals new information about the factors affecting the system, especially factors operating beyond the school and beyond the students' capacity to make an impact. Unfortunately, this new information came too late to be incorporated into the student’s reflections on the system and his efforts to improve it.
Improving the Bathrooms

A2c Communication Tools and Techniques: The student makes an oral presentation of project plans or findings to an appropriate audience; that is, the student:
• organizes the presentation in a logical way appropriate to its purpose;
• speaks clearly and presents confidently;
• responds to questions from the audience;
• evaluates the effectiveness of the presentation.

J The students made oral presentations of their findings of their project's findings to the class. This in an evaluation of this student's presentation provided by another student.

A2e Communication Tools and Techniques: The student writes and formats information for short publications, such as brochures or posters; that is, the student:
• organizes the information into an appropriate form for use in the publication;
• checks the information for accuracy;
• formats the publication so that it achieves its purpose.

K This flier was prepared to inform fellow students of the project. Despite the missing question mark, it is an effective piece of communication that addresses its audience directly and makes an appeal for a change in behavior.

L This is the text for a PA announcement to appeal to students to help with the task of keeping the bathrooms clean. It also demonstrates effective communication: it is informative; addresses its audience directly; and makes a strong appeal for a change in behavior.
Information Tools and Techniques: The student gathers information to assist in completing project work; that is, the student:
• identifies potential sources of information to assist in completing the project;
• uses appropriate techniques to collect the information, e.g., considers sampling issues in conducting a survey;
• distinguishes relevant from irrelevant information;
• shows evidence of research in the completed project.

The students conducted systematic observations of the bathrooms over a period of weeks. This is an extract from the record. The record is detailed and specific.

They collected information from interviews with key people. This is a record of interview with one of the custodians.

This research is evident in the student’s evaluations of the project.

The written work included with this project contains some errors. For the main part the errors are confined to journal entries and other records which were produced for personal use only and were not intended for publication. The only piece of finished writing is the flier. It contains almost error free writing.
Work Sample & Commentary: Sock Hop/Zoo Field Trip

The task
Students were asked to devise a project that would advance their study of a school subject and involve obtaining the assistance of experts from outside the school. The project proposal had to be approved by the teacher and the building principal. Students could work individually or in groups of two or three. This project was undertaken by three students: the work shown here is drawn from the portfolios prepared by two of the students. The students decided to organize a field trip to the zoo to study animals. To raise funds for the overnight camping trip at the zoo they sold popcorn and held a sock hop dance for the school.

Circumstances of performance
The project was completed both in and out of school time. It occupied about one hour each day for two days each week for most of the year. The students sought assistance from parents and other adult experts as they needed it. They received peer and teacher feedback on most of their finished work prior to publication.

What the work shows
A1c Problem Solving: The student plans and organizes an event or an activity; that is, the student:
  • develops a plan for the event or activity that:
    – includes all the factors and variables that need to be considered;
    – shows the order in which things need to be done;
    – takes into account the resources available to put the plan into action, including people and time;
    – implements the plan;
    – evaluates the success of the event or activity by identifying the parts of the plan that worked best and the parts that could have been improved by better planning and organization;
  • makes recommendations to others who might consider planning and organizing a similar event or activity.

This work sample illustrates a standard-setting performance for the following parts of the standards:

A1c Problem Solving: Plan and organize an event or an activity.
A2b Communication: Compose correspondence.
A2c Communication: Publish information.
A3a Information: Gather information.
A3b Information: Use information technology.
A4a Learning and Self-management: Learn from models.
A4b Learning and Self-management: Keep records of work activities.

The proposal establishes the need for the field trip and its connection to the students’ science studies. It demonstrates consideration of the factors and variables to be taken into account, including the need to raise funds to finance the trip. It also includes reference to the use of a model to assist in planning the trip.
This list of questions extracted from one of the student's logs shows attention to the factors that needed to be taken into account in planning the zoo field trip.

These are extracts from one of the students' project logs showing evidence of planning, including putting together a budget for the sock hop. The students sold pop corn to raise funds for the sock hop.
This interim report on the project contains evidence of the students' evaluation of their planning and organization.

The students made recommendations to others who might consider planning a similar activity in the form of a guide entitled, "Hosting A Sock Hop." They also produced a guide called "How To Plan your Class Trip." This is the handwritten draft of the table of contents.

These manuals provide evidence that the students understood the process they had developed and the order in which things needed to be done, and that they were aware of possible pitfalls and had developed solutions for them.
Sock Hop/Zoo Field Trip

Music/Disc Jockeys

Finding the right disc jockey is crucial. Allow plenty of time to research disc jockeys. Decide what your budget is for this part of the dance. Come up with a list of questions that include: Do they do school dances? How much do they charge? Do they have their own music? Do they have their own equipment? And are they available on the night you need them. Go through the phone book and call several disc jockeys.

Here is a list of disc jockeys I called:

<table>
<thead>
<tr>
<th>Name</th>
<th>Hours</th>
<th>Cost</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>3-5</td>
<td>$200</td>
<td>Yes</td>
</tr>
<tr>
<td>A2</td>
<td>4-6</td>
<td>$300</td>
<td>Yes</td>
</tr>
<tr>
<td>A3</td>
<td>6-8</td>
<td>$305</td>
<td>Yes</td>
</tr>
<tr>
<td>A4</td>
<td>8-10</td>
<td>$310</td>
<td>Yes</td>
</tr>
</tbody>
</table>

We have our own music and equipment.

S A4

Our sock hop was a big success. The disc jockey I chose did a great job. The 50s music had everyone dancing all night long. Everyone had a good time.

Written by

$60.00

He does not own equipment or music.

If you choose a disc jockey that provides their own music and equipment, make all the necessary arrangements with them and you’re ready for your dance.

If you choose a disc jockey that does not have their own music and equipment (as I did) you will need to make arrangements to get these.

Music is a very important part of the sock hop. Without the right music your sock hop will not be a success.

I sent home a note to all the students in my school asking them to send in 50s music. This method proved to be very successful. I collected numerous tapes, cassettes, and records. I made sure that they all had their names on them.

I listened to all the music and selected a collection of songs that I thought would be appropriate for our sock hop. I made a list of these songs. In the order I wanted them played, I gave to the disc jockey. I then transferred the music to cassette tapes. Make sure you have more than enough music to last throughout the dance. Don’t forget to return what you borrowed!

You will also have to make arrangements to get the proper equipment. Look through the phone book or for companies that rent equipment. You can also check with local schools to see if you can borrow their equipment. I was able to borrow equipment from our local high school.
Sock Hop/Zoo Field Trip

I bought music notes in a xerox, and copied them on a paper, and then cut them out. We used an old motorcycle as a prop. We used the cardboard jukebox as a prop. I bought a roll of pink paper from the warehouse to cover the tables. I glued black construction paper records to make the table cover more attractive. You can make jukeboxes, and 50's car cutouts out of white poster board. I threw streamers around some things. I had balloons to the decorated table. All 50's memorabilia is fun to hang. I hope you liked the tips and just think back and you won't believe what you will come up with!!!

Here are some places you can go to find these things:

a place that sells paper

By:

DECORATING

To start on decorating, you should begin three to five weeks ahead. This is a list of things I used.

Plastic records
Floral records and there covers
Music notes
Old motorcycle
Life size cardboard jukebox
A roll of pink paper
Black poster board
White poster board
Streamers
Balloons

Most of the items were donated by a parent. I spent $8.00 total. You can get decoration at most party places. Plastic records cost the most. Floral records can be normally found around the house. Hanging them looks great.

CONTEST/GAMES

At our Sock Hop we had a hula-hoop contest, limbo take alike contest, Dance contest, and a Costume contest.

For the hula-hoop contest we borrowed the hula-hoops from the P.E. teacher. When it came time for the contest there was not enough hula-hoops for everybody. When the kids hula-hoop dropped they would either leave the game, or they would pick it up and continue. If I had to do it over, I would have grouped the participants by grades X-1, 2-3, and 4-5.

For the limbo contest the kids came up on stage. While Elvis music was playing they tried to do the moves of Fifties. If I had to change something it would be that only students who dressed like Elvis could participate.

During the dance contest it was hard to choose because people had all different ways of dancing. When we would tell somebody they were out, some of them would cry or get mad. If I had to do this over I would do it by age or if you had an adult dancing with you.

The costume contest, kids were running up on the stage with no costumes on. So what we did was take all the kids who did not have costumes on out of the contest. We had separate boy and girl contests. We lined the girls up and went through the line trying to find the people who got the loudest applause. Then we did the same thing through the boys line. Then finally got a winner for both. If I had to do it over, I would have passed out coupons to people who wanted to be in the contest and were dressed in 50's style. The coupons would have been little slips of paper that say I'm part of the costume contest K-2 or 3-5 you would circle which grade level you are in.

When we judged all the contest we did it by applause, but that did not seem to work because people would pick their friends as the winner. If I had to change that mistake I would of had four volunteer to help contribute for the judge.

Besides all the mistakes we made the Sock Hop went really smooth and it was great family fun.

A3b Communication Tools and Techniques: The student composes and sends correspondence, such as thank-you letters and memoranda providing information; that is, the student:

• expresses the information or request clearly;
• writes in a style appropriate to the purpose of the correspondence.
H This is an example of correspondence the students composed. The letter expresses the students’ request clearly and is written in an appropriate style. Two words are missing which suggests that the work would have been improved by further attention to accuracy. But the errors do not interfere with the communication.

The guide to planning a sock hop includes a memorandum asking parents to lend music for the sock hop.

B2 Communication Tools and Techniques: The student writes and formats information for short publications, such as brochures or posters; that is, the student:
• organizes the information into an appropriate form for use in the publication;
• checks the information for accuracy;
• formats the publication so that it achieves its purpose.

I This is an extract of a brochure the students produced to provide information to parents and students about the arrangements and schedule for the zoo field trip. The brochure was based on information collected from interviews with zoo staff.

**Sock Hop/Zoo Field Trip**

Dear Mr. and the PTA Board,

For our __________ Applied Learning Project, we are planning an overnight class trip to the ________ Zoo. We are planning to raise the money to this ourselves.

We would like to borrow the PTA popcorn machine so that we can sell popcorn after school on the following dates: Nov. 17, Nov. 21, Dec. 1, and Dec. 8.

We will have two adult volunteers working the popcorn machine. 2 students begging the popcorn, 1 taking money, and 1 calling out orders. In this project we will be doing a large combination of skills such as counting money, estimating the amount of popcorn needed, scheduling volunteers, creating advertisements and making deposits.

We plan to use the popcorn money made to get us started on our major fund raisers, a sock hop.

We need to know your decision as soon as possible because we need to make arrangements to buy popcorn and get volunteers. The popcorn machine would be greatly appreciated by our class, not mention all the popcorn lovers of __________ Elementary.

Sincerely,

[Signature]

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**Come Spend the Night at the Zoo**

"Rust, Scare, and Animal Lore" is a program that allows our class to spend the night at the ________ Zoo. Our Class will enjoy the zoo after hours, guided by zoo counselors.

On our overnight expedition, we will discover who is roasting, who is moving, and who is just hanging around! The program includes evening and morning zoo tours, a live-evening snack, a continental breakfast, and plenty of excitement! Sleeping quarters are in the education Center. The emphasis will be on oats.

**Staff**

During the trip our class will have 20 counselors and 20 keepers from the Zoo to tour with, and we will have 18 adults.

**Health and Safety**

Your child will be supervised by an adult at all times. If your child becomes ill you will be contacted. Any medication will be given by the classroom teacher. Please bring a note if your child has a health problem, and please fill out the attached medical forms.
**Sock Hop/Zoo Field Trip**

This is an example of the posters the students prepared to advertise the fund-raising activity.

This text for a PA announcement to publicize the sock hop demonstrates effective communication skills.

A3 a Information Tools and Techniques: The student gathers information to assist in completing project work; that is, the student:

- identifies potential sources of information to assist in completing the project;
- uses appropriate techniques to collect the information, e.g., considers sampling issues in conducting a survey;
- distinguishes relevant from irrelevant information;
- shows evidence of research in the completed project.

The students conducted research, both in organizing the sock hop to raise funds for the zoo field trip and in arranging the field trip itself.

This is an extract from one of the student’s project logs showing her initial thoughts about possible sources of information to assist in planning the field trip. The students abandoned their initial plan to go to Fossil Rim. Instead, they chose the zoo.
This is a partial record of an interview with the principal of another school that had recently held a school-wide dance.

This is an example of the scripts the students prepared to make telephone calls seeking help to organize the sock hop.

This extract from one of the students’ project logs describes the research she undertook to arrange the music for the sock hop.
The brochure setting out the arrangements for the zoo field trip was produced after telephone interviews with zoo staff. This is a partial record of one such interview.

**Information Tools and Techniques:** The student uses information technology to assist in gathering, organizing, and presenting information; that is, the student:

- acquires information for specific purposes from online sources, such as the Internet, and other electronic data bases, such as an electronic encyclopedia;
- uses word-processing, drawing, and painting programs to produce project reports and related materials.

The students accessed information from a central data base. Not included here, in the interests of space, are records of the requests they made to the district media center (e.g., for information about the 1950's).

Many of the materials produced by the students demonstrate use of a word processing program and several show the capacity to import graphics.

**Learning and Self-management Tools and Techniques:** The student learns from models; that is, the student:

- consults with or observes other students and adults at work, and identifies the main features of what they do and the way they go about their work;
- examines models for the results of project work, such as professionally produced publications, and analyzes their qualities;
- uses what he or she learns from models to assist in planning and conducting project activities.

The students consulted with a person who had experience in organizing an event similar to the sock hop, in this case the principal of another school who had recently organized a school dance.

In their proposal the students refer to their intention to use the “Unofficial Guide To Walt Disney World and Epcot” as a model to guide their planning of the zoo field trip. This extract from one of the student's project logs shows her analysis of the qualities of the guide as a model for her own work.
Sock Hop/Zoo Field Trip

Learning and Self-management Tools and Techniques: The student keeps records of work activities in an orderly manner; that is, the student:

- sets up a system for storing records of work activities;
- maintains records of work activities in a way that makes it possible to find specific materials quickly and easily.

The students used composition books to store their project records. This student annotated her records by means of tabs to provide easy access to specific information.

The written work included with this project contains some errors. For the main part the errors are confined to journal entries and other planning documents which were produced for personal use only and were not intended for publication. The pieces of finished writing are the proposal, progress evaluation, guide, letter, poster, and brochure. Some of these contain minor errors that could have been corrected with further editing; however, the errors do not interfere with the communication.
Work Sample & Commentary: Young Authors’ Conference

The task
Students who frequently engage in reading and writing workshops sit “in the author’s chair” and present their writing to the class. This experience influenced, in part, the genesis of an annual event in which students sponsor a one-day authors’ conference for other elementary students in their school district.

Each year the conference reflects the interests and ideas of the current group. For example, this group set up a pre-conference hot line, arranged for two professional writers to give the conference participants advice on producing effective writing, and for four accomplished storytellers to entertain them. In addition, there were small group “learning sessions” that provided in-depth exploration of successful writing strategies and “sharing sessions” that provided occasion for students to read their original stories and exchange extra copies of their books with other young authors.

Circumstances of performance
This was a class project. The teacher served when necessary as advisor and facilitator, in order to ensure that content objectives were met.

The students had a budget which they supplemented by selling books by the two authors as well as t-shirts the students had designed, which displayed the conference logo. The profits from the conference funded a field trip related to another class project.

What the work shows
A1c Problem solving: The student plans and organizes an event or an activity; that is, the student:
- develops a plan for the event or activity that:
  - includes all the factors and variables that need to be considered;
  - shows the order in which things need to be done;
  - takes into account the resources available to put the plan into action, including people and time;
- implements the plan;
- evaluates the success of the event or activity by identifying the parts of the plan that worked best and the parts that could have been improved by better planning and organization;
- makes recommendations to others who might consider planning and organizing a similar event or activity.

A2b Communication: Compose correspondence.
A2c Communication: Publish information.
A3a Information: Use information technology.
A4c Learning and Self-management: Identify strengths and weaknesses in own work.
A5a Working With Others: Work with others to complete a task.

This work sample illustrates a standard-setting performance for the following parts of the standards:

A1c Problem Solving: Plan and organize an event or an activity.
A2b Communication: Compose correspondence.
A2c Communication: Publish information.
A3a Information: Use information technology.
A4c Learning and Self-management: Identify strengths and weaknesses in own work.
A5a Working With Others: Work with others to complete a task.
The students arranged publicity for the event. As the article from the Fort Worth Star Telegram reports, the conference attracted more than 2,000 students, parents, and teachers.

These documents are excerpts from the program the students designed for conference participants. They include evidence of scheduling activities for the conference.

This account of the preparations for the conference demonstrates awareness of the range of factors that had to be taken into account. The student closes with an offer of advice for any class interested in taking responsibility for planning the event for the following year. See page 28 for commentary on this piece as a narrative procedure within the requirements of the English Language Arts standards.

Communication Tools and Techniques: The student composes and sends correspondence, such as thank-you letters and memoranda providing information; that is, the student:

• expresses the information or request clearly;
• writes in a style appropriate to the purpose of the correspondence.

These are examples of letters the students wrote seeking assistance with the conference. Each is expressed clearly and written in a style appropriate to the purpose of the correspondence. There are some errors, such as, “can not” should be spelled “cannot,” but these do not detract from the effectiveness of the communication.
This handwritten letter of thanks to one of the presenters also contains an error (“the” instead of “that”); nevertheless, it serves its purpose well.

The account of the preparations for conference refers to a range of other forms of correspondence the students produced.

Communication Tools and Techniques: The student writes and formats information for short publications, such as brochures or posters; that is, the student:
- organizes the information into an appropriate form for use in the publication;
- checks the information for accuracy;
- formats the publication so that it achieves its purpose.

The students produced posters advertising the conference. This example is eye catching and provides the necessary information.

The conference program, from which excerpts are shown here, presents information in a clear and direct manner, while at the same time adopting a welcoming tone.
Dear Mary, I would like to thank you for all of your help and support during the conference. I heard that the presentations were excellent and fun. We all think you did a very good job as a presenter.

Thank You,
Melanie

A3b Information Tools and Techniques: The student uses information technology to assist in gathering, organizing, and presenting information; that is, the student:
• acquires information for specific purposes from online sources, such as the Internet, and other electronic data bases, such as an electronic encyclopedia;
• uses word-processing, drawing, and painting programs to produce project reports and related materials.

The students used word processing programs to produce their letters and the conference program. The poster includes work produced on a drawing program.

G This account of preparations for the conference includes a reference to “making a database on our computer,” though no evidence is provided.

A3c Learning and Self-management Tools and Techniques: The student identifies strengths and weaknesses in his or her own work; that is, the student:
• understands and establishes criteria for judging the quality of work processes and products;
• assesses his or her own work processes and products.

G This provides one student’s account of preparations for the conference. The account focuses on the task as a whole rather than the student’s singular role, and it evaluates the activities in terms of their difficulty (for example, “One of the hardest parts was keeping organized and being responsible”) rather than in terms of the students’ more or less effective management of various elements of the task. Nevertheless, the account does provide evidence for a beginning analysis and review of the work.

A5e Tools and Techniques for Working With Others: The student works with others to complete a task; that is, the student:
• reaches agreement with group members on what work needs to be done to complete the task and how the work will be tackled;
• takes a share of the responsibility for the work;
• consults with group members regularly during the task to check on progress in completing the task, to decide on any changes that are required, and to check that all parts have been completed at the end of the task.

G The account of preparations for the conference describes some of the organizational issues the students needed to resolve in working together to complete the task. It indicates an awareness of the importance in an activity of this kind of everyone taking their share of responsibility for getting the work done.