

Best Practices of Technology Integration

Title: A “Capital” Idea

Subject(s): Geography, history, math, and computer technology

Intended Grade Level: 8th

Description:

This lesson is an extension of, or preparation for, the annual field trip to Washington, DC taken by the 8th grade class. In order to make connections of what they see and experience while in Washington, DC with what they should know and appreciate of American history, students will research a landmark, monument or building located in the city. Research should be in as much detail as possible, making each student a “resident expert” for that structure. As a computer teacher, I developed this lesson to teach technology skills (see “Benchmarks” below), however, it could be a part of an American history course instead (See “Benchmarks” below).

In small groups students will create a multimedia presentation (“HyperStudio®” or “PowerPoint®”) to demonstrate their knowledge and understanding of their investigated landmark, monument or building. They will work to convince their audience that every American citizen should travel to Washington, DC at least once. They will include portions of a spreadsheet and/or chart to provide convincing evidence that the school field trip is an economical opportunity for students to visit the nation’s capital, especially when subsequent trips may be unrealistic. (See next paragraph for spreadsheet information.)

Working in partnerships, students will investigate round trip airfare from “*your town*” to the capital, expenses for lodging, meals, and admission charges to sites of interest. With this gathered information, students will construct a spreadsheet itemizing all the expenses for such a trip. The spreadsheet will include functions and formulas to calculate averages, total expenses per day, as well as the grand total for the entire trip. Students will create a chart to present a graphical representation of their calculated data.

In small groups students will design a new landmark or monument of an event/individual in American history not represented in Washington, DC. (This portion of the lesson could easily be adapted to a “home connection” or outside activity.)

Narrative:

Our Nation’s capital is a proud place filled with historical reminders of our heritage.

1. How and why do Americans take pride in Washington, DC?
2. Why do people from around the United States visit Washington, DC?
3. Why do people from other countries visit Washington, DC?
4. How do the landmarks and monument in this city reflect our rich heritage?

5. What are the characteristics that hold true for landmarks and monuments wherever they are found?
6. What expenses need to be considered when planning a trip to the capital?
7. Are there significant events/personalities in American history for which there are no known landmarks or monuments?

In order for students to be truly successful with this lesson, they will be required to use *higher order thinking* to: 1.) draw conclusions and make generalizations about their research in light of its historical significance and the nature/characteristics of landmarks and monuments; 2.) synthesize their information into a new whole; 3.) test their ideas for new monuments using established criteria. *Deep knowledge* of specific historical events and personalities will be constructed on prior knowledge of family, local and state monuments and landmarks, as well as of the concepts of county and state “seat of government.” Opportunities to develop terminology, facts, and concepts will continue throughout the research phase, but most assuredly in the construction of both the multimedia presentation and the monument prototype.

Since students will be engaged in interactive investigation and planning, there will be many opportunities for *substantive conversation* with peers. The teacher, acting as facilitator, will meet with individuals, partnerships and small groups to clarify, probe, support and encourage on-going dialog related to Washington, DC, the “gold mine” of historical treasures. A *connection to the world beyond the classroom* is the basis for this lesson. Students are encouraged to participate in the field trip to Washington, DC. Unfortunately, even with financial assistance and scholarships, some students do not get the opportunity to visit Washington, DC. Through this set of lesson activities, all students have the opportunity to visit the capital, if only vicariously. As students discuss their assignment requirements and ideas for completing them, parents are drawn into the lesson. For those students who participate in this learning during the first semester, enthusiasm for the expected trip grows and parents even volunteer to chaperone. For those who participate in the lesson after the Washington trip, their experiences add color and real life reactions to the presentations. Although no actual data collection has been made on former students, there is a suspicion that family trips to the capital city are more seriously considered as a result of the field trip and these activities.

This lesson is rich with technology integration. For example: a.) gathering of information (CD-ROM encyclopedia and the Internet) for the landmark/monument information, b.) creation of an electronic spreadsheet and related charts (graphs) and the Internet and/or telephone for gathering the required data, c.) the multimedia presentation workup where students who are more comfortable in a linear approach can use “Power Point®.” Others who are more non-linear in their thinking can do well with “HyperStudio®”. Enhancing these presentations with graphics, scanned or digitized photos (some of which are taken by the students themselves), and the addition of appropriate sound and animation are all techniques that can be incorporated into this phase of the lesson.

Building a model of a landmark/monument provides students with the opportunity to synthesize American history as recorded through landmarks and their understanding of them. It provides a setting for teamwork in planning and implementing that plan through their construction. Authentic conflicts of personality and ideas bring about the need for resolution and problem solving skills. Also, there are

countless opportunities for creative expression and tapping multiple intelligences. Students with weaker verbal skills have an opportunity to shine through hands-on model building.

Curriculum Benchmarks:

MI.SOC.I.2.MS.1

Use narratives and graphic data to describe the settings of significant events that shaped the development of Michigan as a state and the United States as a nation during the eras prior to Reconstruction.

MI.SOC.I.2.MS.2

Identify and explain how individuals in history demonstrated good character and personal virtue.

MI.SOC.I.3.MS.1

Use primary and secondary records to analyze significant events that shaped the development of Michigan as a state and the United States as a nation prior to the end of the era of Reconstruction.

MI.SOC.II.1.MS.1

Locate and describe the diverse places, cultures, and communities of major world regions.

MI.SOC.IV.1.MS.1

Use economic reasoning when comparing price, quality and features of goods and services.

MI.SOC.IV.1.MS.3

Analyze the reliability of information when making economic decisions.

MI.SOC.IV.3.MS.1

Distinguish between public and private goods using contemporary examples.

MI.SOC.IV.4.MS.4

Analyze how purchasers obtain information about goods and services from advertising and other sources.

MI.SOC.V.1.MS.1

Locate and interpret information about the natural environments and cultures of countries using a variety of primary and secondary sources and electronic technologies, including computers and telecommunications where appropriate.

MI.SOC.V.1.MS.2

Use traditional and electronic means to organize social science information and to make maps, graphs, and tables.

MI.SOC.V.2.MS.2

Gather and analyze information using appropriate information technologies to answer the question posed.

MI.SOC.V.2.MS.3

Construct an answer to the question posed and support their answer with evidence.

MI.SOC.V.2.MS.4

Report the results of their investigation including procedures followed and possible alternative conclusions.

TECHNOLOGY Curriculum Benchmarks:

I. Using and transferring: Content Standard 1: All students will use and transfer technological knowledge and skills for life roles.

Benchmark 2: Use technology to create a message that promotes a product/service.

II. Using information technologies: Content Standard 2:

Benchmark 1: Demonstrate skill using technologies to prepare, evaluate and synthesize information collected and stored.

Benchmark 3: Retrieve, communicate and input information using a technological system.

III. Apply appropriate technologies: Content Standard 3: All students will apply appropriate technologies to critical thinking, creative expression, and decision making skills.

Benchmark 2: Use technologies as tools for creative expressions and communication of ideas.

Benchmark 3: Use several technological methods to perform a given task and analyze advantages and disadvantages of each.

Benchmark 4: Use technologies to organize thoughts in a logical process.

IV. Employing systematic approach: Content Standard 4: All students will employ a systematic approach to technological solutions by using resources and processes to create, maintain and improve products, systems and environments.

Benchmark 3: Use measurements of dimensions and capacity as criteria to produce and analyze technological solutions to problems.

Benchmark 7: Apply a systematic approach to identify a current societal need that requires technologies, determine and assess solutions, select the best solutions, develop the product, process or service that meets the need, and evaluate.

V. Applying Standards: Content Standard 5: All students will apply ethical and legal standards in planning, using and evaluating technologies.

Benchmark 3: Follow established guidelines and laws of privacy and ownership related to technology.

Benchmark 4: Understand and practice ethical and legal standards for technologies.

Materials/Hardware/Software:

- Computer capable of running software, logging onto the Internet, storing and retrieving data and presentations.
- LCD panel or projection device for designing spreadsheet, teaching/reviewing the application program structures and commands, as well as “sharing” presentations. (This is a “nice to have”, but not an absolute necessity for success with this lesson.)
- Application programs such as: Microsoft™ Word® and Excel®, Roger Wagner’s HyperStudio®, and/or Microsoft™ Power Point®.
- Internet Access with Microsoft™ Internet Explorer®, or Netscape™ Navigator®.
- A “Hot List” of sites that have been pre-screened for appropriateness and relevant information for landmarks, monuments and buildings in Washington, DC. (Classroom Connect has a unit called CyberTrips: Washington, DC, with many links to sites that are appropriate. The notebook resource can be purchased for \$50.00. Registration and user identification is needed. (See “Management Folder” for some sites to consider.)
- A source of pictures, photographs and/or clipart related to the specific monument, landmark, building. (It is important that copyright laws be strictly upheld for graphics as well as text.)

Detailed Timeline:

Teacher preparation time: approximately three to four hours. It takes time to locate safe and appropriate web sites for student research. (It is suggested that a “hot list” be created to maximize student efficiency while using the Internet.) Other teacher preparations would include procuring data storage devices for student work – floppy disks, Zip™ disks, hard drive folders, sources of appropriate pictures/graphics. Familiarity with application programs such as Word®, Excel®, PowerPoint®, and HyperStudio® will vary from teacher to teacher. (Assistance from a knowledgeable colleague would be a time saver.) Gathering materials to facilitate construction of new monument/landmark will depend on whether this becomes an in-class or out-of-class project component.

Class time for students: approximately two weeks – fifty minute class periods, if students do some work outside of class. Time can be shortened if students work in teams for the entire project. Additional time will be needed for presentation to other groups (audiences). With students who have no background in spreadsheet application programs and/or multimedia applications, additional time will be needed to present (or have students “discover”) the characteristics and procedures of these programs.

Teacher Preparation:

1. The teacher should be familiar with the World Wide Web and be comfortable in saving sites to a “Hot List.” S/he should test search engines to see which ones offer the most accurate and to the point results in the event that some required data cannot be found elsewhere. (Ask Jeeves, Google, Northern Light, allow for greater specificity than does Yahoo for example.)
2. The teacher must know how to use the multimedia program(s), including inserting graphics and charts (from the spreadsheet). The teacher should have created a multimedia presentation in order to anticipate problems, provide hints for success and determine required data. It is also readily available as a model for students. (S/he should create a file for both presentation programs if the option on which one to use is left to the students. In order to avoid the

- “copycat-the-teacher’s model” syndrome, use a different topic – the object is for students to understand that graphics and animation can enhance an otherwise “boring” report, and for students to be creative in their own way.) Know how to save word processing files as **text** files if using HyperStudio® and expecting students to copy and paste from notes created during research.
3. The creation of a “Hot List” for use with Internet searching will save lots of time and keep students focused on their targets. Just turning students loose in search engines can be disastrous if they are not familiar with the conventions of at least a few main search engines.
 4. Decide on requirements for note taking – using a word processing program such as Microsoft™ Word®, on paper, or on note cards.
 5. Check your high school English department head to see whether to use Modern Language Association (MLA) or The American Psychological Association (APA). Both have web sites with the correct format for each type of electronic citation.
 6. If all students are to use a single computer in the classroom, the teacher should determine ahead of time how students will save their spreadsheets and their presentations. Spreadsheets can easily be stored on floppy disks, but HyperStudio® stacks can get very large with graphics and animation. The same can be true with PowerPoint® slides. In these cases it is advisable to use the hard drive or a zip drive to store these larger files. Security may be an issue that should be planned for ahead of time. (This is a great opportunity to address the issues of privacy and ethics. However, the integrity of students’ work needs to be preserved in the event that there are students whose philosophy is: “It’s only wrong if one gets caught.” One way to deal with this potential problem is to provide a different disk for each group. Group and partnership files can be stored on each disk. If using the hard drive or a zip disk, creating folders for groups and/or partnerships and individuals can be helpful.
 7. The teacher should be very familiar with the district *Technology Use Policy*. If s/he will be taking the students to a computer center, policies and procedures for use of equipment should be reviewed and understood by all involved in the project.
 8. Prepare a list of landmarks, monuments and government buildings in Washington, DC. (See “Management Folder” for a proposed list.)
 9. Make management decisions related to individual, partnership and teamwork components – designated structures, random selection, students’ choices. Decide also whether a landmark/monument/building is to be assigned, randomly selected or chosen by students. If more than one class will be working on this project at the same time, consider whether each student must select a different landmark, etc. or whether there can be duplications. If other classes will be acting as “audience,” the teacher might want to weigh the pros and cons of having similar/different landmarks overall. (See “Management Folder” for some ideas.)
 10. Create any management tools you want to help students keep track of responsibilities. (See files in “Management Tools” folder.
 11. Rubrics should be created by the teacher (or by the students if they are accustomed to this assessment approach) that target the main goals and objectives of the lesson. (See “Management Folder” for one.)
 12. The teacher must know how to enter formulas and functions into a spreadsheet such as Excel, as well as to create the actual design to show the expenses incurred on a trip to Washington,

DC. S/he must be comfortable with manipulating the data – rearranging, formatting, copying, deleting, and creating charts (graphs) from the spreadsheet data. The teacher should actually construct a spreadsheet prior to assigning one to students for similar reasons as mentioned above (#2). (This is a great opportunity for calling on the expertise of an advanced computer student from either the middle school or the high school, to act as “tutor” if the teacher needs to learn this program in short order.)

13. Make decisions on size, materials and requirements for students’ monument construction. Decide whether this work will be done in class or as homework.

Prerequisite Student Skills:

1. Students should have research skills – note taking, bibliographic citations for texts and electronic media, validated sources.
2. Ideally, students should have keyboard familiarity sufficient to enter data and type text seamlessly. (If more time is being spent hunting for desired keys, rather than on the deep thinking of the content, perhaps designated “typists” could be given this task.)
3. Students might have prior skill in spreadsheet construction and multimedia presentations. It would be nice if they already knew how about the power of these application programs. However, it can be learned quickly. Although these skills would certainly facilitate the main goal of learning about the capital of the US, it is possible to move along with the technology learning “as needed” for each leg of the project.

Activities/Procedures:

INTRODUCTION:

1. Discuss the anticipation of the class trip to Washington, DC, (or the reactions of those who have just returned from the trip).
2. Elicit the characteristics of county seats, state capitals and capitals of countries. What similarities exist?
3. Reflect on the characteristics of familiar landmarks, monuments and famous buildings within the local community, as well as within the state. What do they tell the citizenry about the history of these places? Test these characteristics against a few known structures within Washington, DC. Make a list of these generalized characteristics. (This list will need to be available for later use. Some characteristics may be missing while others may not be as universal as first imagined so changes can be made along the way.)
4. If students have already been to Washington, DC have them brainstorm as many landmarks, monuments and government buildings they visited. (Several cooperative-learning strategies can be used for these types of activities – “Think, Pair, Share” and “Pair of Pairs” are two.) Provide the students with the prepared list created by the teacher and compare it with their results. If students have not yet been to the capital, their knowledge of sites will be a little sparse and the teacher’s list can be presented immediately.

FIRST ACTIVITY:

1. Students select, or are assigned, a structure to research. Parameters are set for due dates, use of the Internet, required information and the format for recording the data. (Time will depend on

whether this is an outside of class assignment or in class; whether there is one computer available or many.) Students will be using the data to construct their multimedia presentations. Cutting and pasting into PowerPoint® is seamless if using Word® to record notes. In HyperStudio®, notes should be saved as **text** files rather than Word® documents for ease of transfer. (Here is an opportunity to reinforce the skill of paraphrasing and the zero tolerance for plagiarizing, especially when copy and paste are so easily accomplished.)

2. As students complete the research, they should be creating a “credits list” (bibliography) for the sources of information. Students should cite these sources properly.
3. When research has been completed, review the list of characteristics common to landmarks. Edit the list based on the discoveries students made through their research. (This edited list will be used again for the final product – a proposed design for a new landmark or monument.)
4. Students will view a sample multimedia presentation previously prepared by the teacher. (If it was decided that students would have the option of using either program, they should view sample presentations created through both applications. Use the same topic so students can see the differences in the two applications.)
5. Students plan their own presentation. Use of “story-boarding” or mind mapping can help with generating the components and arrangement of the presentation of student information. The plan should be created on paper before using the computer, especially if the number of computers is limited. File cards are an effective way to plan, as each card represents a single slide (PowerPoint®) or card (HyperStudio®) of the presentation. Students will be working in teams so that each presentation will contain information on four or so landmarks. (Some of this preliminary planning can be done outside of class to speed things along.) This is also an opportunity to integrate written expression benchmarks from the language arts content area.
6. Although not prepared until the next activity, students should keep in mind that they will need to insert data and/or a chart of expenses incurred when planning a trip to Washington, DC. They will need to decide where this new information should appear. (Shifts can always be made during the edit stage.)
7. After presenting the set of rubrics to be used in assessing the presentation, students use the computer to create their multimedia presentation. (Students may also have access to either or both of these programs outside of the classroom, which would also facilitate the need to schedule computer time during class.)
8. It is important that the notion of saving files frequently is very a safe and sensible thing to do. Additionally, students should understand that graphics, animation and sound are added to a multimedia presentation to enhance the viewer’s understanding of the message, not to impress someone on how “cool” this program can be.

SECOND ACTIVITY:

1. At this point, there is shift in the focus. Students will gain understanding of the time and effort it takes to plan a trip to Washington, DC. (How and why do people from around the United States visit Washington, DC? What expenses need to be considered when planning a trip to the capital?) Students need hands-on experience in building and using a spreadsheet. Therefore, it would be best if they could work in partnerships, rather than their team. Brainstorm the

considerations that go into a two-day trip out of state – time, transportation, lodging, food, tips, souvenirs, and fees for tourist attractions.

2. Students go on line to find information for the above considerations. They need to find three quotes for each expense area in order to get “averages”: 1.) airfares, (different airlines and/or different consecutive days of the week), 2.) hotels, 3.) restaurants for meals, 4.) admission fees. The use of the MapQuest web site may provide some of this information. When searching for airfare, hotel and restaurant facilities, make sure your students understand that they are NOT to make a reservation or purchase tickets by giving their own or fake credit card information!
3. When all the data is collected, students (with the help of the teacher as needed) will construct a spreadsheet to display and calculate the data collected: 1.) enter appropriate field names and labels into cells; 2.) enter prices into adjacent cells; 3.) enter functions and formulas for calculations. Save the spreadsheet file. Example:

TRAVEL EXPENSES FOR WASHINGTON, DC				
EXPENSES:	FIRST TRY	SECOND TRY	THIRD TRY	AVERAGE
Airfare				=AVERAGE(C4:G4)
Restaurant				
Breakfast				=AVERAGE(C6:G6)
Lunch				=AVERAGE(C7:G7)
Dinner				=AVERAGE(C8:G8)
Hotel				=AVERAGE(C9:G9)
Admission				=AVERAGE(C10:G10)
Miscellaneous				=AVERAGE(C11:G11)
TOTAL	=SUM(C4:C11)	=SUM(E4:E11)	=SUM(G4:G11)	=AVERAGE(C13:G13)

1. Create a logical chart (graph) to graphically show expenses. Save the file again so charts are included.

THIRD ACTIVITY:

1. Import the chart and/or appropriate sections of the spreadsheet into the multimedia presentation as planned.
2. Self-edit the presentation, using the rubric. (Peer-editing could also be initiated if desired.)
3. When the presentations are ready, share them with others. For example: the other teams within the class, other classes, seventh graders who will be looking forward to the trip to Washington, DC the following year, the School Board and/or parent group who support the trip, senior citizen group, or other community organizations. (Here is an opportunity to integrate language arts benchmarks related to oral speaking.)

FOURTH ACTIVITY:

1. Once again the list of characteristics is reviewed and final editing takes place. Students will now use those criteria to design and construct a new landmark or monument for Washington, DC.
2. Another brainstorming session takes place within the team. It makes sense to reconstruct the teams at this point so that students have the opportunity to work with others whose landmarks they are not as familiar with. (If there have been problems with the makeup of the team, this restructuring is a non-accusatory way of relieving that tension.)
3. Students plan and construct their invented monument that portrays an event or honors a person for which no recognition has been established. (Depending on the situation, students can work on all of this activity outside of class. If it is difficult for students to get together on their own, this could be an individual rather than a group project.) Remember that it can be considered an extension of the lesson if time, materials and logistics are too problematic.

Assessment / Evaluation:

Creation and application of the rubrics established at the start of this lesson should be applied at the end of each activity section. Whether the teacher or the students and teacher together create the set of rubrics, certain criteria need to be included. The rating scale can be flexible – four to six point scale, words, letters or numbers.

FIRST ACTIVITY:

1. Using the requirements for information, students will review their data and evaluate their use of time, the completeness of information, their paraphrasing techniques and their citations for the “credits” slide/card of their multimedia presentation.
 - a. Checklists, observations and students’ written communication in the form of journal entries or responses to sentence starters are effective means of assessment for these types of activities. (Use the actual benchmarks to help formulate the contents for these tools.)
 - b. Teachers should review student notes from web sites to verify that requirements and procedures were followed.
1. Students should assess their own performance as a team player and analyze problems and resolutions. Add a question of “what would YOU do differently faced with the same or similar situation?” (This provides students with an opportunity to be problem solvers and to act in a responsible way when confronted with discord.)
2. The teacher should meet with each group before they actually begin the creation of the multimedia file. Asking clarifying questions can be most helpful, as students have to articulate those fuzzy areas. Suggestions from the teacher are best made by means of this method rather than making direct demands or suggestions. It is through these interactive sessions that the teacher and the students get a clear picture of their deep knowledge and their higher order thinking. In these sessions it is important that everyone has equal time. (There are some excellent cooperative learning structures that can be used to guarantee that it takes place – “Round Robin” and “Chips in the Middle” are examples.)

3. Since each individual needs to demonstrate understanding, the idea of a “group grade” for activities involving teams and partners needs to be carefully thought through by the teacher. It makes little sense that a student be “rewarded” or “punished” due to the makeup of the group. Unless you are prepared to defend your rationale to parents and students themselves, avoid this predicament. Give individuals grades based on their contributions and understanding.
4. In their journals, or elsewhere, students should be required to answer the questions, “How and why do Americans take pride in Washington, DC?” “Why do people from other countries visit Washington, DC?” “How do the landmarks and monuments in this city reflect our rich heritage?”

SECOND ACTIVITY:

1. Similar assessment tools can be applied for the work related to the spreadsheet also. Use checklists, journal entries, and group/individual interviews to determine the level of understanding of the purpose and commands employed in the spreadsheet construction. (See technology benchmarks.)
2. Make sure that each student can explain the functions and formulas employed in the calculations. This can be accomplished by one partnership giving the explanation to another partnership. A prepared set of questions could help guide these mini sessions. Students who have difficulty answering them can be “tutored” to bring them up to speed.
3. It’s at this time that a comparison should be made between the expenses from the spreadsheet, with the actual expenses from the school-sponsored trip. Students should be able to create a “pros and cons” list giving the advantages and disadvantages for each type of trip. Supporting their opinion of which is “best” for them personally, students can address the question of “What expenses need to be considered when planning a trip to Washington, DC?”

THIRD ACTIVITY:

1. Students can construct a feedback form for audiences. (If presented to more than one group, the initial feedback can be used to polish the presentation prior to the next time.)
2. Checklists based on language arts benchmarks, as well as the other checklists previously used will help focus students and reviewers’ attention on the underlying purposes of this multimedia presentation, rather than on the “whistles and bells” included.

FOURTH ACTIVITY:

1. Using the list of criteria needed to identify a structure as “landmark” or “monument,” students will self assess and peer assess the created structures.
2. Use the list of requirements for size and materials to evaluate compliance.
3. Students should now discuss their views by addressing the questions: “What are the characteristics that hold true for landmarks and monuments wherever they are found?” “How do landmarks and monuments in Washington, DC reflect our rich heritage?”

Follow-up Activities:

Besides the ideas imbedded within this lesson for integration and home connection, another idea for follow-up would be to contact state and federal congress persons and senators, making a proposal for the establishment of their created landmark. Letters describing the structure, its historical significance

and the reason for its establishment could be presented. Students could include pictures with their letters. Actually sending the letters would hopefully bring at least a few responses.

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