



Communication Tech: Papyrus to PDA

Unit Summary

High School students determine which invention in the history of visual communication has had the most profound impact on social, political, and economic life. Through research, activities, and discussions, students agree on inventions in print communication that have had great impact on human action and thought. Students then study one invention and use the *Seeing Reason Tool* to analyze and evaluate the impact of the invention. Students share their findings by developing a class presentation.

Curriculum-Framing Questions

- **Essential Question**
Why change the way things are?
- **Unit Questions**
How are we changed by new technology?
How have inventions in visual communication impacted our life?
- **Content Questions**
How did the ability to print multiple copies of text affect communication? What are some of the changes that electronic communication has had on the world?

Assessment Processes

View how a variety of student-centered [assessments](#) are used in the Papyrus to PDA Unit Plan. These assessments help students and teachers set goals; monitor student progress; provide feedback; assess thinking, processes, performances, products; and reflect on learning throughout the learning cycle.

Instructional Procedures

Prior to Instruction

This unit makes use of the [Seeing Reason Tool](#). Familiarize yourself with the tool and its related materials, such as Walk through an Example, Classroom Strategies, Project Examples and Benefits.

Introduce the Project and Focus Efforts

Pose the Essential and Unit Questions, *Why change the way things are? and How are we changed by new technology?* Ask students to think individually about how technology has affected their lives. Have each student make a t-chart of relevant technologies and their effects. Then ask the students to share their ideas in small groups. In a class discussion, bring out differing opinions and encourage students to offer evidence to support their claims. Let students know that during this project they will be studying inventions that have had a great impact on people's lives.

Through lecture and selected readings, introduce students to the history of graphic and written communication. Guide a brainstorming session and have the class generate a list of great inventions in visual communication. Then, debate the relative merit for including each invention before reaching a consensus regarding which inventions are the most significant and should be included on the final list. Ask the Unit Question, *How have inventions in visual communication impacted our life?*

At a Glance

Grade Level: 9-12

Subjects: Art, Science

Topics: Graphic Arts, Inventions and Technology

Targeted Higher-Order

Thinking Skills: Evaluation, Cause and Effect

Key Learnings: Progress of Print Technology, Impact of Print Inventions, Cause and Effect Relationships in Complex Systems

Time Needed: 12 1-hour class sessions

Things You Need

[Assessment](#)

[Standards](#)

[Resources](#)

Outline the scope of the project by reviewing the project directions with the students.

Engage in Initial Research

Give the [research scoring guide](#) to direct students' efforts. Students select an invention to research from the class approved list. Have students research and gather evidence to further support the position that the invention truly had the greatest impact on social, political, and economic life. Guide students, with probing and clarifying questions, as they use the Internet and selected print and electronic resources to collect information.

After independent research is complete, group the students by common invention. Then, have students compare and share their information with other students in their group. Their goal is to synthesize individual research results, and find and fill gaps by using the *Seeing Reason Tool* presented in the next section.

Guide Research Synthesis with the Seeing Reason Tool

Before proceeding with the next activity, click [here](#) to set up the Papyrus to PDA project in your workspace. Instruct students on the use of *Seeing Reason*, and make a sample map together. Show students how the Factor and Relationship functions work, and set standards for how these are described. (In these descriptions, you may want students to include definitions, quotes, citations, or data.) Show how the Comments communication feature works as well, and come to agreement on how it will be used in this project. Have the teams make one relationship between two factors, and then save their first map to the team portfolio.

As students create their maps, pose the following questions (and similar questions) to help facilitate students' higher-order thinking and to articulate their reasoning between factors and relationships within the map:

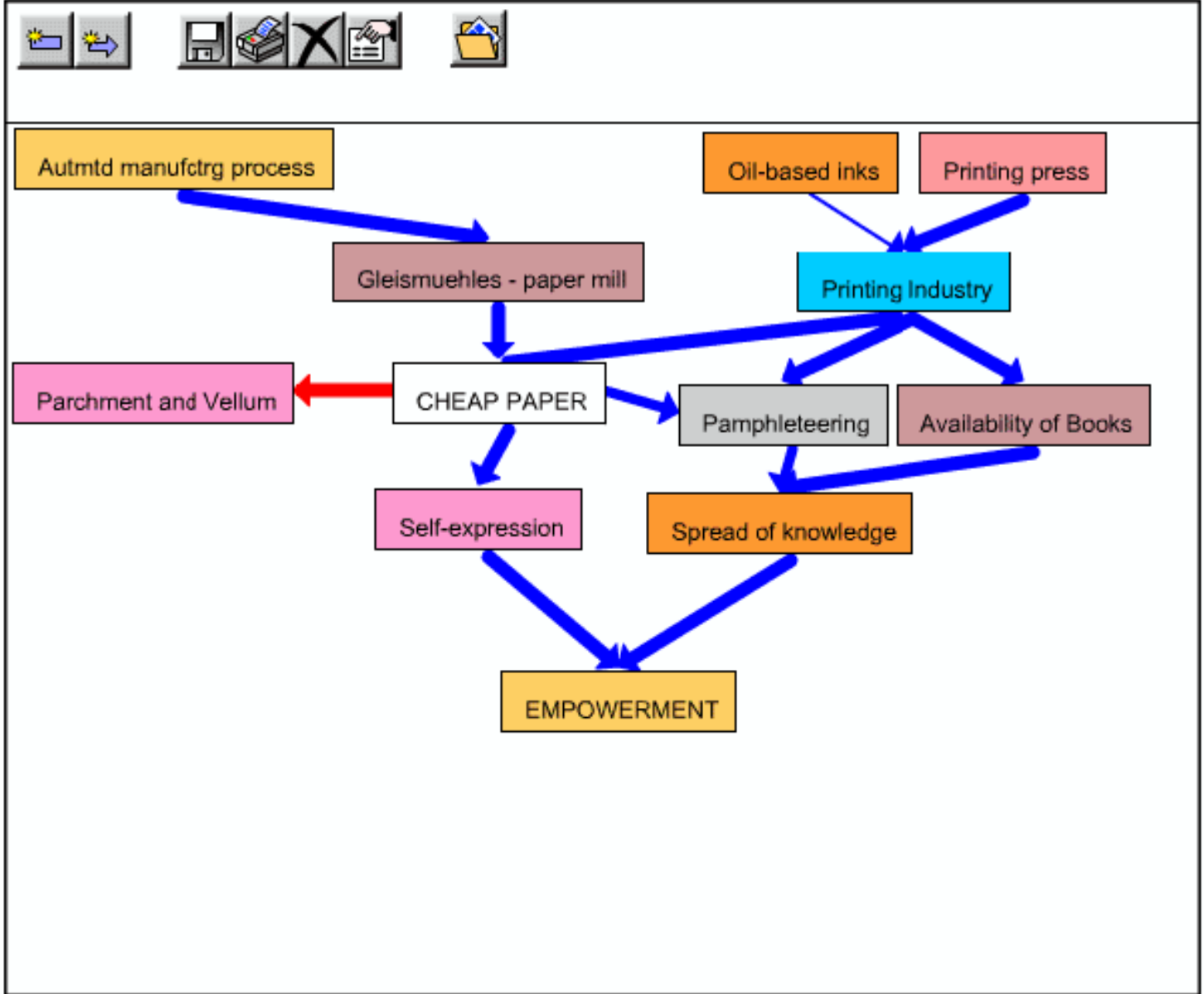
- *How have you described this factor?*
- *How does this factor affect other factors?*
- *Would you please explain this relationship to me?*
- *Have you examined the question from different perspectives?*

Examine the Seeing Reason Activity

The *Seeing Reason* space below represents one team's investigation in this project. The map you see is functional. You can roll over the arrows to read relationships between factors, and double-click on factors and arrows to read the team's descriptions.

Project Name: Papyrus to PDA ([Click here to set up this project in your workspace](#))

Question: How has one of the great inventions in visual communication impacted social, political, and economic life?



Develop Presentations and Debate

As students complete research and synthesis, encourage them to revisit their *Seeing Reason* map and add additional factors or relationships. Use the Comments feature to give feedback, redirect effort, supply resources, suggest new avenues of study, and ask for clarification about the team's thinking. Students will continue to follow the [project directions](#) as they develop a presentation plan. Review the plan before students develop brochures, Web pages, or slideshow presentations to support their arguments. If desired, show students a sample [student presentation](#). To illustrate their reasoning, students might want to include map screen shots or links in the supporting media.

Provide time for students to students to practice, using the [presentation scoring guide](#) as their standard. Encourage students to use props, reenactments, and other dramatic methods to strengthen their presentations.

On presentation day, instruct students in the audience to take notes as the other students present. The notes will help students to build their arguments for the upcoming debate. After the group presentations, have students complete a peer reflection on how well they worked as a group.

Prepare to debate the question: *What invention had the greatest impact on visual communication?* Give students time to organize, practice, and then present their arguments and counterarguments using a debate format. One member of the team will serve on a panel of judges while another member debates the issues. You might want a member from each team to serve on a panel of judges. Following the debate, hold a debriefing session, and ask students to weigh the merits and weaknesses of each argument that was presented. Seek consensus on which invention did indeed have the greatest impact on social, political, and economic change.

To wrap up the unit and to help students reflect on what they learned, have students compare their initial thoughts with their current thoughts. Use the following versions of the Curriculum-Framing Questions as guides:

- *What invention in the history of visual communication do you now feel has had the greatest impact on social,*

political, and economic life? What are the factors that affirmed your point view or influenced your change of opinion?

- *How are we changed by new technology? Why?*
- *Why change the way things are?*

Additionally, you might want to assess student learning by asking students to respond in writing to the prompt, *What will be the next greatest innovation to change the world?*

Prerequisite Skills

- Basic understanding of design
- Cooperative work skills
- Basic research skills, including note taking and citing references
- Basic computer skills

Differentiated Instruction

Resource Student

- Use cooperative groups with grade-level peers to assist the student.
- Adjust the guidelines for the research component based on individual modifications for special needs students.

Gifted Student

- Instruct the student to enhance the presentation by exploring the moral issues associated with the social and political changes brought about by each invention.
- Encourage the student to provide technical expertise in the development of the multimedia presentation, newsletter, or Web designs for the group.

English Language Learner

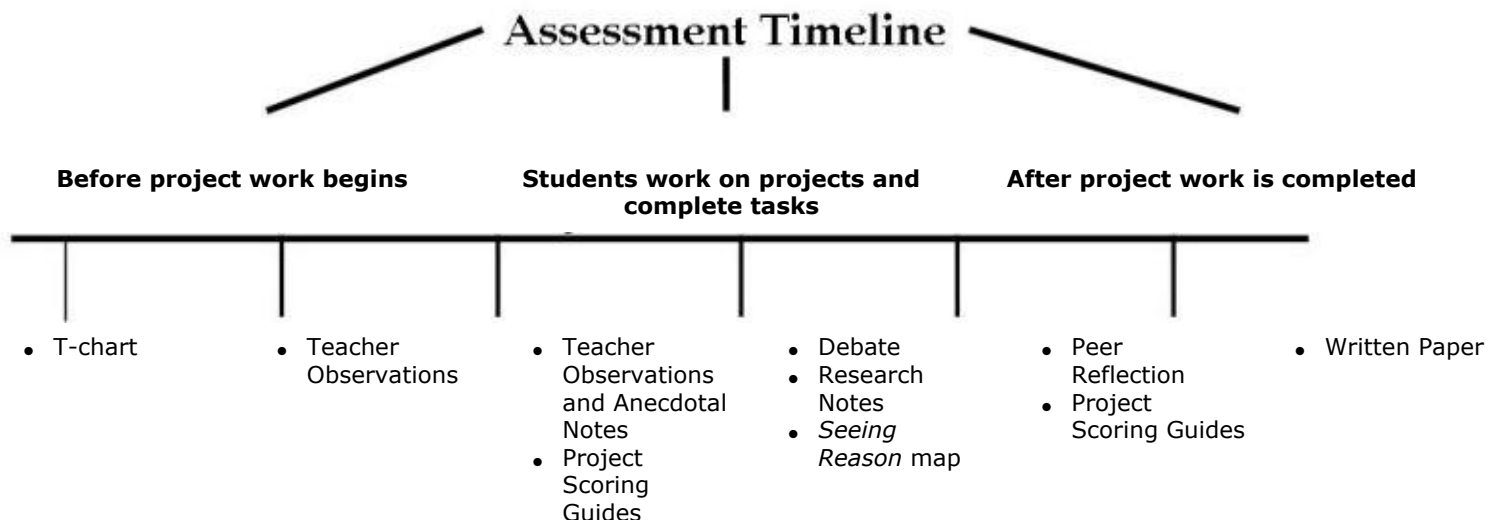
- Support the student with ESOL staff.
- Provide a first language and English technical dictionary for translating terms.
- Pair an English language learner with a more advanced bilingual student who shares a common first language.

Credits

Sarah Little participated in the Intel® Teach Program, which resulted in this idea for a classroom project. A team of teachers expanded the plan into the example you see here.

Seeing Reason Tool: Communication Tech Assessment Plan

Assessment Plan



Throughout this unit the teacher makes observations and anecdotal notes to monitor and adjust student outcomes and progress. The teacher presents the [research scoring guide](#) to guide student work and grade individual research effort, group effort, and presentation plans. The [presentation scoring guide](#) is used to help students create their presentation and for the teacher to assess final presentations. The *Seeing Reason* map shows how the students are thinking about their invention and informs the teacher if additional research is necessary. Upon completion of the project the students complete a peer reflection. If students write a paper about the next greatest invention, assess their written work.

Seeing Reason Tool: Communication Tech Content Standards and Objectives

Targeted Content Standards and Benchmarks

National Science Education Standards (NSES)

Science in Personal and Social Perspectives

- Individuals and society must decide on proposals involving new research and the introduction of new technologies into society. Decisions involve assessment of alternatives, risks, costs, and benefits and consideration of who benefits and who suffers, who pays and gains, and what the risks are and who bears them. Students should understand the appropriateness and value of basic questions — "What can happen?" — "What are the odds?" — and "How do scientists and engineers know what will happen?"
- History and Nature of Science
In history, diverse cultures have contributed scientific knowledge and technologic inventions. Modern science began to evolve rapidly in Europe several hundred years ago. During the past two centuries, it has contributed significantly to the industrialization of Western and non-Western cultures. However, other, non-European cultures have developed scientific ideas and solved human problems through technology.

Texas Essential Skills (TEKS): Graphic Communications

- Demonstrate knowledge of new and emerging technologies which may affect the field of graphic communication technologies.
- Demonstrate the principles of group participation and leadership related to citizenship and career preparation.
- Create communication materials utilizing color, text, and graphics.

Student Objectives

Students will be able to:

- Recognize that the modern world is the result of vast and ongoing technological change.
- Learn that today's graphic media are the result of a long progression of innovation and represent one moment in time from which even more innovations will spring.
- Think about systems and cause-and-effect relationships.
- Identify the advances in science and technology and the long-lasting effects on science and society.
- Make a supported argument.

Seeing Reason Tool: Communication Tech Resources

Printed Materials

Hird, K. F. (1995). *Offset lithographic technology*. Tinley Park, IL: Goodheart-Willcox Publishers.

Technology - Hardware

- Digital cameras to take pictures for presentations
- Computer(s) for research and presentations
- Internet connection for research

Technology - Software

- Database/spreadsheet for presentations
- Desktop publishing for presentations
- Encyclopedia on CD-ROM for research Internet
- Web browser for research
- Multimedia software for presentations

**Papyrus to PDA:
Visual Communication Through the Ages
Research and Presentation Scoring Guide**

Group Invention _____ Date _____

	4	3	2	1
Plan	<p>I use a number of techniques to develop a workable research strategy:</p> <p>I brainstorm ideas and organize them visually in lists, outlines, webs, concept maps.</p> <p>I list key words and ideas.</p> <p>I identify sources of information (library card catalog and databases, Web resources, experts, community agencies).</p>	<p>I use some techniques to develop a workable research strategy.</p>	<p>My research strategy is not yet adequate to allow me to do a quality job.</p>	<p>I have not yet developed a research strategy.</p>
	4	3	2	1
Gather and Compare	<p>I gather the most significant information from an extensive variety of sources.</p> <p>I effectively connect complex information from various sources.</p> <p>I sort and classify my information effectively.</p>	<p>I choose relevant information from a variety of sources.</p> <p>I effectively connect information from various sources.</p> <p>I sort and classify my information.</p>	<p>I choose general information from a variety of sources.</p> <p>I partially connect the information from my sources</p> <p>I sort and classify my information with some consistency.</p>	<p>I choose insufficient information from a few sources.</p> <p>I neglect to connect the information from my various sources.</p> <p>I don't know how to sort or classify my information in a useful way.</p>
	4	3	2	1
Analyze	<p>I examine the topic from multiple perspectives. I evaluate the reasoning, assumptions and evidence supporting each perspective.</p> <p>I assess the reliability of all my sources</p>	<p>I examine the topic from multiple perspectives. I recognize logical errors and omissions, cause and effect, and points of agreement and disagreement.</p> <p>I consider the</p>	<p>I present a few perspectives. I may consider points of agreement and disagreement.</p> <p>I do not consistently look at the reliability of my sources.</p>	<p>I present my own perspective.</p> <p>I assume my sources are reliable.</p>

	(primary or secondary; fact or opinion; point of view; timeliness).	reliability of my sources.		
	4	3	2	1
Synthesize	<p>I present a breadth and depth of relevant, accurate information and concepts. The information focuses on problems or themes as opposed to facts and details only.</p> <p>I provide a conclusion with clear convincing reasoning and evidence to support it.</p>	<p>I present relevant and accurate information and concepts. The information is based on fact and opinion.</p> <p>I provide a conclusion with sufficient evidence to support it.</p>	<p>I present some information. The information is a combination of fact and opinion, but is narrow in focus.</p> <p>I provide a conclusion with some evidence to support it.</p>	<p>I present limited, simplistic information. It is based on my own personal knowledge.</p> <p>My conclusion is muddled and I don't support it with evidence.</p>
	4	3	2	1
Presentation Pre-Planning scaffold or storyboard	Pre-planning demonstrates material has been planned in a logical and sequential order. Place holders for appropriate graphics are in place.	Pre-planning has been done. The material is planned in a logical order. Some place holders for graphics are in place.	Some pre-planning was done but information was not organized in a logical manner. Difficult to transfer between planning and required material.	No pre-planning for presentation was completed.
Total Points:				

**Papyrus to PDA
Product and Presentation Scoring Guide**

Group Invention _____

Date _____

	4	3	2	1
Content	<p>I demonstrate in-depth understanding of relevant concepts.</p> <p>I offer unique interpretations or extensions (generalizations, applications, analogies).</p> <p>I am an expert who can answer questions with certainty and cite or direct the audience to a specific source.</p>	<p>I demonstrate understanding of major concepts,</p> <p>I have some supporting ideas/details may be overlooked or misunderstood.</p> <p>I offer expected interpretations or extensions.</p> <p>I answer a majority of questions, and direct audience to a source.</p>	<p>I demonstrate that there are gaps in conceptual understanding.</p> <p>I do not offer few or no interpretations or extensions.</p> <p>I am able to answer some questions.</p>	<p>I have gaps in conceptual understanding.</p> <p>I do not have interpretations or extensions.</p> <p>I am unable to answer questions presented by the audience.</p>
	4	3	2	1
Addresses Curriculum-Framing Questions	<p>My presentation effectively addresses the specified Curriculum-Framing Questions.</p>	<p>My presentation addresses Curriculum-Framing Questions.</p>	<p>My presentation attempts to address some of the Curriculum-Framing Questions.</p>	<p>My presentation does not address any of the Curriculum-Framing Questions.</p>
	4	3	2	1
Presentation Preparation	<p>My presentation preparation is highly evident.</p> <p>There are smooth transitions between parts of the talk.</p> <p>There are no delays in the use of props or visual aids.</p>	<p>My presentation preparation is evident.</p> <p>Most transitions between parts of the talk are smooth.</p> <p>There may be a small pause or two in the talk or in the use of props or visual aids.</p>	<p>My presentation preparation may or may not be evident.</p> <p>Unnecessary delays or pauses exist in the talk or in the use of props or visual aids.</p>	<p>There is no evidence of preparation.</p> <p>Talk seems to be unorganized.</p> <p>Unnecessary pauses may occur OR there are awkward delays when using props or visual aids.</p>
	4	3	2	1
Eye Contact	<p>I look at the audience almost</p>	<p>I look up for most of the talk.</p>	<p>I look at the audience part of</p>	<p>Most of the time, I am not looking</p>

	<p>all of the time.</p> <p>I make direct eye-to eye contact with most of the members of the audience at some point in the talk.</p>	<p>My direct eye contact with members of the audience is sporadic.</p>	<p>the time.</p> <p>When looking up, there is little direct eye-to eye contact with members of the audience.</p>	<p>at the audience.</p>
	4	3	2	1
Voice	<p>Every spoken word can be heard and understood clearly with no difficulty by each person in the audience.</p> <p>I speak in standard English, using correct vocabulary for the subject area and language appropriate for the audience.</p>	<p>A very brief portion of the talk may be unclear or inaudible to some members of the audience, OR the audience has to make an effort to hear and understand.</p> <p>I speak in standard English using correct vocabulary for the subject area.</p>	<p>Several parts of the talk are unclear or inaudible to some members of the audience OR one portion is unclear or inaudible to most of the audience.</p> <p>I occasionally speak in nonstandard English and uses some terms incorrectly.</p>	<p>Several portions of the talk are unclear or inaudible to most of the audiences.</p> <p>I frequently speak in nonstandard English and uses terms incorrectly.</p>
	4	3	2	1
Visual Display	<p>My visual display is highly relevant to oral presentation.</p> <p>My visual material enhances the purpose and meaning of the presentation.</p>	<p>My visual display is relevant to the oral presentation concept.</p> <p>My visual material aids to the understanding of the concept.</p>	<p>My visual display does not add to the understanding of the oral presentation being given.</p>	<p>My visual display is not relevant to the oral presentation topic, or no visual material supports the oral presentation.</p>
Total Points:				

Papyrus to PDA: Visual Communication through the Ages Project Directions

1. Introduction and Overview

We have discussed the power of visual communication, both in graphic and written forms. We considered inventions or developments that have occurred across time and reduced the list to those we agree are most significant. You will now select one invention to study and make a case for its significance. You will conduct independent research using electronic and print resources, then combine your work with the ideas of others who studied the same invention. Together you should synthesize your research into an effective, well-reasoned oral presentation for the class. You can use your choice of supporting media during the presentation. The audience will take notes during the presentations and use them as they develop an argument and counterarguments for the subsequent juried debate. Finally, we'll see if we can agree on which invention is the most important of all.

2. Individual Research Procedures:

Note: Use the [Research scoring guide](#) to guide your efforts through Parts 2-4. Your research is the persuasive evidence that your invention had the greatest impact on social, economic and political change. You may type or handwrite your notes, but either way, organize your information into a readable format. Keep track of all print and electronic citations. Turn in a copy to the teacher before group work begins.

You must include, but are not limited to, the following information in your research:

- Who invented it
- Where and when it was invented
- What earlier innovations or inventions it sprang from
- How it was made and distributed
- How it affected social change (examine the following criteria):
 - What social impact it produced and how
 - What political impact it produced and how
 - What economic or job impact it has produced (statistics and numbers)
- Bonus! Track the innovations in this device, method, material, or product since its origin. Compare our most modern version to the original.

3. Group Research Procedures

After individual research is completed, join into groups by invention topic. Compare and share answers and strategies for finding the information. This is the point where we will use the *Seeing Reason Tool* to guide and organize research. Organize cumulative data into a single report format. Bonus! You may want to conduct a school survey to gauge which of the four inventions students believe had the greatest impact on social and political change.

4. Presentation Plan

Work in your invention groups to produce an oral presentation with supporting media. Your presentation has two major purposes, to INFORM and PERSUADE. Use the bottom portion of the [research scoring guide](#) to focus your efforts.

5. Practice and Present

Once you have planned your oral presentation, decide which supporting media serves you best, either a slideshow, pamphlet, or Web page. Develop these media and determine how they will be used during the presentation. Refer to your [presentation scoring guide](#) as you practice. Think ahead to questions the audience may ask. You will field five questions from the audience. When you are in the audience, take notes. Notes will help you plan your debate argument and counterargument.

6. Debate!

An informal, juried debate will be held, with one member of each team serving on a panel of judges, and one or more team members acting as debaters. You will not be graded for participation in the debate, but will receive extra credit if you do so!

7. Assessment

You will be assessed for individual research, group work and your presentation plan using the [research scoring guide](#). You will be graded for the presentation using the [presentation scoring guide](#). The applicable scoring guides are handed out at each new phase of the project, so you will be aware of the objectives. Copies are posted on the bulletin board as well for your reference. Good luck and have fun with this project!

The background of the slide features a close-up, slightly blurred photograph of a hand holding a pen, poised to write on a document. A semi-transparent blue rectangular overlay is positioned in the center, containing the main title and subtitle. The overall aesthetic is professional and educational.

Papyrus to PDA:

Visual Communication Through the Ages

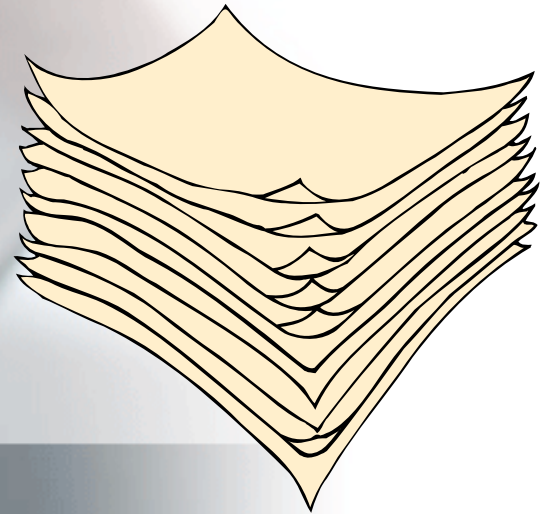
Group: Paper Pushers

Graphic Arts

Splendora High School

Introduction of Paper

- Which invention had the greatest social, political, and economical impact?
- We make the case for **PAPER.**



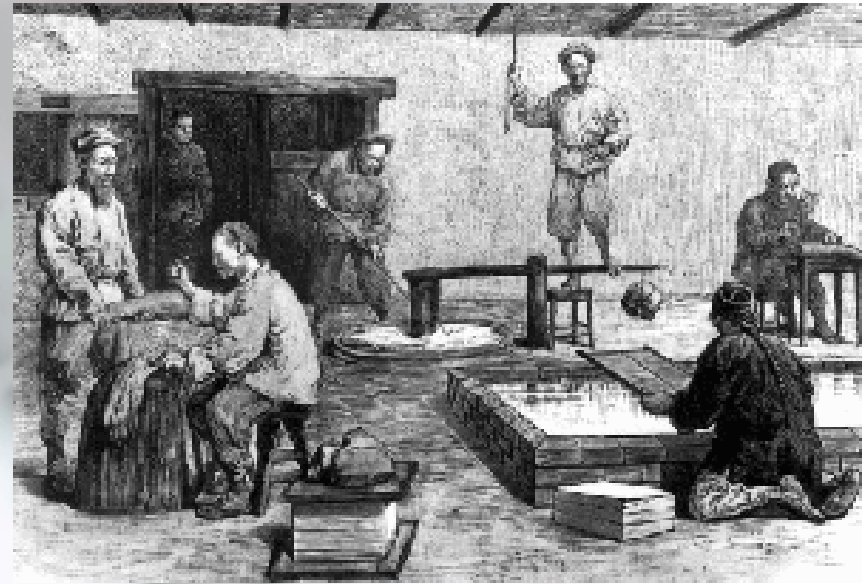
History of Paper

- Prior inventions: Egyptian papyrus 4000 B.C, ancient Greek parchment by 100 B.C.
- Paper invented in China
Ts'ai Lun, official in Chinese royal court, A.D. 105



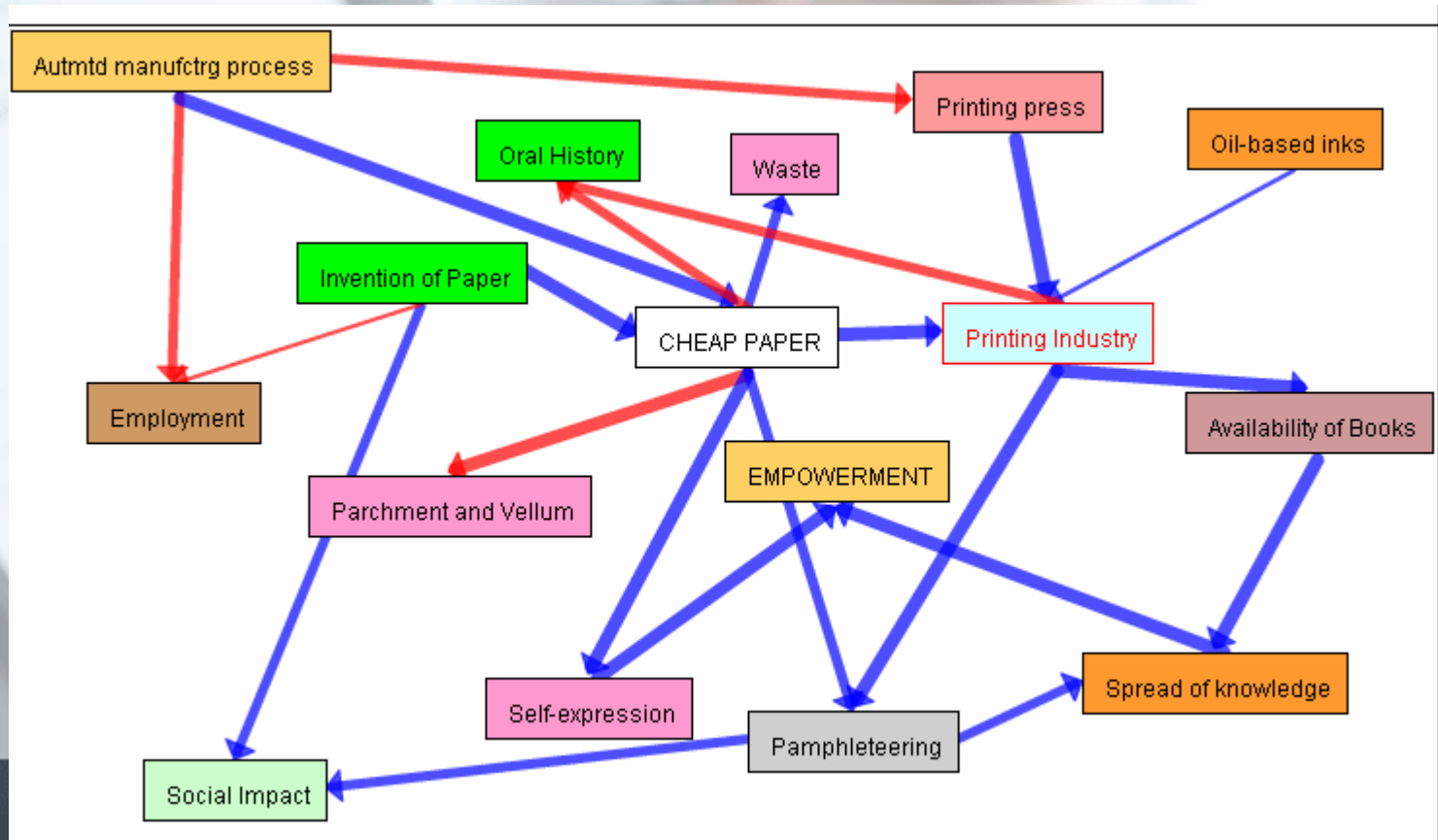
Chinese Paper

- Early Chinese paper made from rags, old fishing nets, hemp, china grass
- Improved with mulberry bark, hemp, and rags mixed with water, mashed to pulp, liquid pressed out, hung to dry in sun



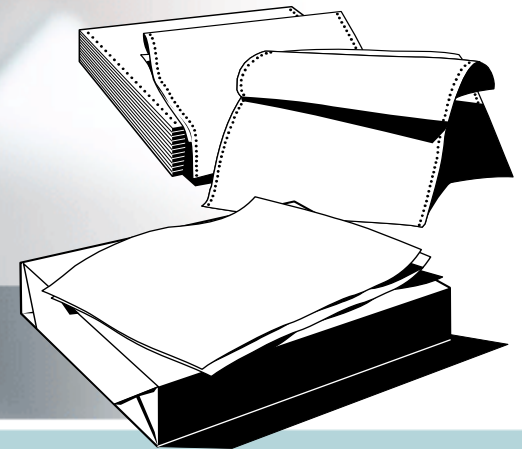
Institute of Paper Science and Technology
www.ipst.edu/amp/img/chinapm3.gif*

The Influence of Paper on All Things: Our Causal Map



Making the Case for Paper: Social Impact

- Low cost, leads to increased availability
- Increased availability leads to greater literacy, stimulates growth of schools, universities
- Writing available to new classes in society
- Fundamental process of thinking changes, change from an oral to a literate culture
- Thinking 'captured,' made portable



Making the Case for Paper: Economic Impact

- Paper: more scribes, fewer heralds!
- Writing/reading still elite until moveable type and mechanized paper manufacturing
- With both, jobs produced
- Wood pulp process perfected, papermaking drops in price:
 - 1864 - 28 cents/pound
 - 1897 - 2 cents/pound



Making the Case for Paper: Political Impact

- Control of ideas: laws to keep “rags” from leaving country
- Newspapers spread political information, serve as “bully pulpit”
- Laws at turn of 20th century spur paper industry : tax credits granted for resource development, industries granted favorable freight rates



Conclusion

Paper had the **greatest impact** on political, economical, and social change, as it **allowed all printing-related activity to develop**.

Without inexpensive, easy to produce paper, words could not have **wide distribution**.

Works Cited

History of Paper by Conservatree:

www.conservatree.com/learn/Papermaking/History.shtml*

History of Paper by Mead:

www.mead.com/ml/docs/facts/history.html*

Institute of Paper Science and Technology: www.ipst.edu*

Paper through the ages:

www.hqpapermaker.com/paper.htm*

Paper University:

www.tappi.org/paperu/all_about_paper/paperHistory.htm*

The Peculiar History of Paper:

www.ibfsrp.com/paper_history.html*

Wisconsin Paper Council:

www.wipapercouncil.org/invention.htm*