

Papyrus to PDA



Unit Summary

High School graphic arts students determine which invention in the history of visual communication has had the greatest impact on social, political, and economic life. After teacher lecture, reading, and discussion, students brainstorm a list of inventions related to print communication that have had great impact on human action or thought. After narrowing the list to four, students engage in independent and then group study of one invention or development. Student teams organize and synthesize their thinking and research efforts using the [Seeing Reason](#) mapping tool, and then develop an oral presentation supported by media (pamphlet, slides or Web page). Presentations inform and persuade the audience that a technological breakthrough has had the greatest human impact through time, and lead to juried debate, where the merits of each argument is weighed.

Curriculum Framing Questions

- **Essential Question**
Are we changed by new technology in superficial or fundamental ways?
- **Unit Questions**
What invention in the history of visual communication has had the greatest impact on social, political, and economic life?
What cause and effect relationships are in play whenever a new or changed technology is introduced?
- **Sample Content Questions**
How did printing multiple copies of text affect communication?
How has electronic communication changed the world?

Instructional Procedures

Introduce the project and focus efforts

1. Through a lecture and selected readings, introduce students to the history of graphic and written communication. Introduce the curriculum-framing questions.
2. After a discussion about the lecture, readings, and curriculum-framing questions, guide a brainstorming session about inventions relating to graphic and written communication that have had great impact. Generate a list, then reach consensus on four inventions that students consider the most significant. Outline the scope of the project using the [project procedures guidelines](#).

Engage in initial research

3. Have each student study one of the four inventions, and try to have the same number of students studying each invention. Guide student efforts as they use Internet and selected print and electronic resources to collect information.
4. When independent research is complete, group students by common invention and have them compare and share their information. Their job is to synthesize their individual research results, and find and fill gaps by using the causal

At A Glance

Grade Level:

9-12

Subjects:

Social Studies
Language Arts
Math
Speech and Debate

Topics:

Industrial Technology
Inventions and Technology

Key Learnings:

Progress of Print Technology
Impact of Different Print
Inventions
Cause and Effect
Relationships in Complex
Systems

Time Needed:

12 hours

Background:

[From the Classroom in Texas,
United States](#)

Things You Need

[Standards](#)**[Resources](#)****[Print This Unit](#)**

(PDF; 23 pages)

mapping tool (below). The [research and presentation plan scoring guide](#) can be given to students to direct their efforts. Use the Multistate Academic and Vocational Curriculum Consortium ([MAVCC standards](#)*) to assess group effort.

Guide research synthesis with the Seeing Reason mapping tool

5. Instruct students on use of the Seeing Reason mapping tool, and make a sample causal 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. Set students to work, and have teams make one relationship between two factors, and save this first map to the team portfolio for you to review before they go on.
6. As students continue researching their topic and [building causal maps](#), check in frequently both in person and asynchronously during prep time to guide work. Use the Comments feature to give feedback, redirect effort, supply resources, suggest new avenues of study, or ask for clarification about a team's thinking.
7. As students complete research and synthesis, have them continue to follow Project Procedures guidelines (preceding) as they develop a presentation plan. Here is one [student example](#) of an acceptable plan. Review the plan for the presentation before having students develop a brochure, Web page or slideshow presentation to support their argument. Here is one [student presentation](#). To illustrate their reasoning, students may want to include a causal map screen shot or a link in the supporting media. Encourage students to use props, reenactments, and other dramatic methods to strengthen their presentation.
8. Encourage students to practice, using the [presentation scoring guide](#) as their standard.
9. Presentation Day! Have groups practice in advance, and arrange the sequence of presentations based on which peripheral devices are needed. Have students in the audience take notes on presentations, from which they will build an argument for the upcoming debate.
10. Give students time to organize their arguments and counterarguments for an informal class debate. You may want a member from each team to serve on a panel of judges to rate the quality of debate. Hold a final discussion, and discuss the merits and weaknesses of arguments that were presented. Seek consensus on which invention did indeed have the greatest impact on social, political, and economic change.

Prerequisite Skills

1. Interactive communication skills and cooperative work skills
2. Reading and writing in expository mode
3. Oral communication
4. Basic research skills, including note taking and citing references
5. Basic computer skills including
 - Saving information to various drives or servers
 - Basic desktop publishing and multimedia application skills
 - Basic use of search engines (such as AltaVista*, Ask Jeeves*, Google*)
 - Basic use of electronic resources (such as a CD ROM encyclopedia)
 - Basic use of peripherals, including printers, digital camera, and scanner

Differentiated Instruction

- **Resource Student**
Special needs students will have the benefit of working in a cooperative situation for most of the project. Grade level peers may be assigned within the groups to assist special needs students. Guidelines for the research component may be adjusted based on individual modifications for special needs students.
- **Gifted Student**
Gifted students may contribute to their group project by enhancing the presentations with additional information that targets objectives that go beyond project guidelines. For example, they could explore the moral issues associated with the social and political changes brought about by each invention or add technical expertise in the development of the multimedia, newsletter, and web designs for their groups.
- **English Language Learners**
Support from the ESOL staff will be helpful. Locally, a Spanish and English technical dictionary would be useful for

translating terms. Pair English language learners with more advanced bilingual students who share a common language.

Assessment

Use the [research and presentation Plan scoring guide](#) to grade individual research effort, group effort, and presentation plans.

Use the [presentation scoring guide](#) to grade final presentations.

Credits

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

Sarah Little
Papyrus to PDA

Expert Planning

Sarah Little put her expertise in photography, printing, and industrial arts to good use when she developed a history of graphic arts unit plan for her students at Splendora High School, in Splendora, Texas. With twenty years of teaching experience and certification in science, math, business, vocational education, and distance learning under her belt, Little was certainly equipped to create a cross-curricular teaching plan. The Intel® Teach to the Future course afforded her the opportunity to develop a unit that applied new technologies and teaching techniques and put students in charge of their own learning. "Papyrus to PDA" is the result.

Little recently taught her history of graphic arts unit, and reflects on its success. "Students enjoyed the learning process throughout the unit, because it was not delivered in the traditional lecture format, she says. "They took ownership of their projects, and liked working together. There was a spirit of healthy competition when they checked out their classmates' work. It was also nice for me, as the teacher, to assume the role of facilitator."

Using Seeing Reason, the Causal Mapping Tool

The Seeing Reason mapping tool plays a pivotal role in this unit. Little learned about *Seeing Reason* around the time she started planning her unit. Causation is at the heart of the question her students were charged with answering, and she could see how the tool would aid students as they made a case for which print technology had the greatest impact on civilization. As she imagined, the Seeing Reason mapping tool was instrumental in helping students form, organize and support their ideas. "The mapping tool pushed students to apply higher-order thinking skills, and helped them make a visual model of their deductions. This definitely helped them defend their reasoning in the final debate."

Having used the tool in class, Little can recommend how to introduce *Seeing Reason*. "I suggest setting up a mock set of data the first time the tool is introduced so students get a feel for the program and how the factors and relationships work. One time was all it took for my students to pick up the basics of using the tool."

Learning with Projects

Little takes a project-based approach to all her courses. "I do mostly projects with my students. The content of industrial arts demands it, and projects mirror the real world." Little infuses technology into all of her projects. "Technology resources help me put responsibility for learning in the hands of the students," Little says. "I believe most people retain knowledge better with a kinesthetic approach, which technology provides. Interest is really high when students are in command of their processes (which technology encourages), and they learn more."

Little finds technology and a realistic scenario can yield powerful results. "In desktop publishing, my students create an imaginary company. They poll the community to gauge interest in potential new businesses, and translate their results into visual displays of data. They analyze their poll results as they decide which business to develop. Each group meets with a banker to discuss the financing of a small business loan. They consider the needs of their business and clientele, and scout out a physical address for their company within our community. Graphic arts skills are put to the test as each team designs a logo for its business, and creates business cards, stationery, brochures, and even a 'grand opening' flyer."

Little believes authentic, technology-rich projects and tools like *Seeing Reason* are essential for meeting the needs of a changing learning environment. "As technology infiltrates our schools and our world, I foresee the entire structure of education changing. Educators need to keep up. If you have been teaching the same way for an entire teaching career, it's time to change your methods!"

[Return to Papyrus to PDA](#)

Content Standards & Objectives

Student Objectives

Students will be able to:

- Recognize that their 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
- Learn to think about systems and cause and effect relationships
- Learn to make a supported argument

Targeted Texas Content Standards & Benchmarks

Texas Essential Skills (TEKS): Graphic Communications

- Demonstrate knowledge of the basic principles of offset and other printing processes.
- Demonstrate knowledge of new and emerging technologies which may affect the field of graphic communication technologies.
- Apply the competencies related to resources, information, interpersonal systems, and technology in appropriate settings and situations.
- Compose type and related images using computerized or other equipment and processes in art and copy preparation as directed.
- Demonstrate the principles of group participation and leadership related to citizenship and career preparation.
- Demonstrate effective oral and written communication skills with individuals from varied cultures, including fellow workers, management, and customers.
- Create communication materials utilizing color, text, and graphics.

[Return to Papyrus to PDA](#)

Printed Materials

- *Offset Lithographic Technology*, Hird, Kenneth F., Goodheart-Willcox, publishers, 1995.

Technology – Hardware

- Cameras
- Computer(s)
- Digital Camera
- DVD Player
- Internet Connection
- Laser Disk

Technology – Software

- Database/Spreadsheet
- Desktop Publishing
- Encyclopedia on CD-ROM
- Internet Web Browser
- Multimedia

[Return to Papyrus to PDA](#)

* [Legal Information](#) and [Privacy Policy](#) © 2003 Intel Corporation

**Papyrus to PDA:
Visual Communication Through the Ages**

**Scoring Guide
Research and Presentation Plan**

Group Invention _____ Date _____

	TOTAL VALUE	YOUR SCORE	COMMENTS
Individual Research			
Utilizes variety of resources effectively: Internet, textbook, encyclopedia	10		
Uses research time effectively	5		
Information follows guidelines, is complete, and accurate	10		
Typed or written notes are produced	5		
All works properly are cited	5		
Group Research			
Uses causal tool to represent ideas, synthesize research results	5		
Group Share and Compare (MAVCC Standards)			
Student follows instructions	5		
Applies active listening skills	5		
Demonstrates principles of group participation and leadership	10		
Presentation Plan			
Shows comprehension of main ideas	5		
Makes a justified case, supported by evidence from research	15		
Ideas stated clearly, organized into appropriate format	15		
All works properly cited	5		
TOTAL POINTS	100		
Final Grade:			

**Papyrus to PDA:
Visual Communication Through the Ages**

Presentation Scoring Guide

Group Invention _____ Date _____

	TOTAL VALUE	YOUR SCORE	COMMENTS
Ideas and Content			
Demonstrates understanding of purpose (MD: persuade and justify)	15		
Conveys clear, focused main ideas	15		
Uses accurate, relevant supporting details	10		
Organization			
Presentation has clear beginning, middle, and end	5		
Presentation has clear sequencing of ideas and transitions	5		
Transitions between speakers are smooth and natural	5		
Language			
Speaker uses a variety of descriptive and accurate words appropriate to audience and purpose	10		
Speaker uses vocabulary of the discipline	5		
Delivery			
Speaker uses eye contact, speaking rate, volume, enunciation, oral fluency, vocal energy, and gestures to communicate ideas effectively when speaking	10		
Practice is evident	5		
Delivery is supported by effective visual media, including slides, props, or handouts	15		
TOTAL POINTS	100		
Final Grade:			

Papyrus to PDA: Visual Communication through the Ages Project Procedures

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 the four we can agree are most significant. You have selected or been assigned 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 will 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 of the four inventions is most important of all.

2. Individual Research Procedures:

Note: Use the [Research and Project Plan 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 causal mapping tool to guide and organize research. Organize cumulative data into a single report format. For this part of the project, each person in the group will be graded on their group participation based on the Multistate Academic and Vocational Curriculum Consortium ([MAVCC STANDARDS*](#)). 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 and Presentation Plan 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!

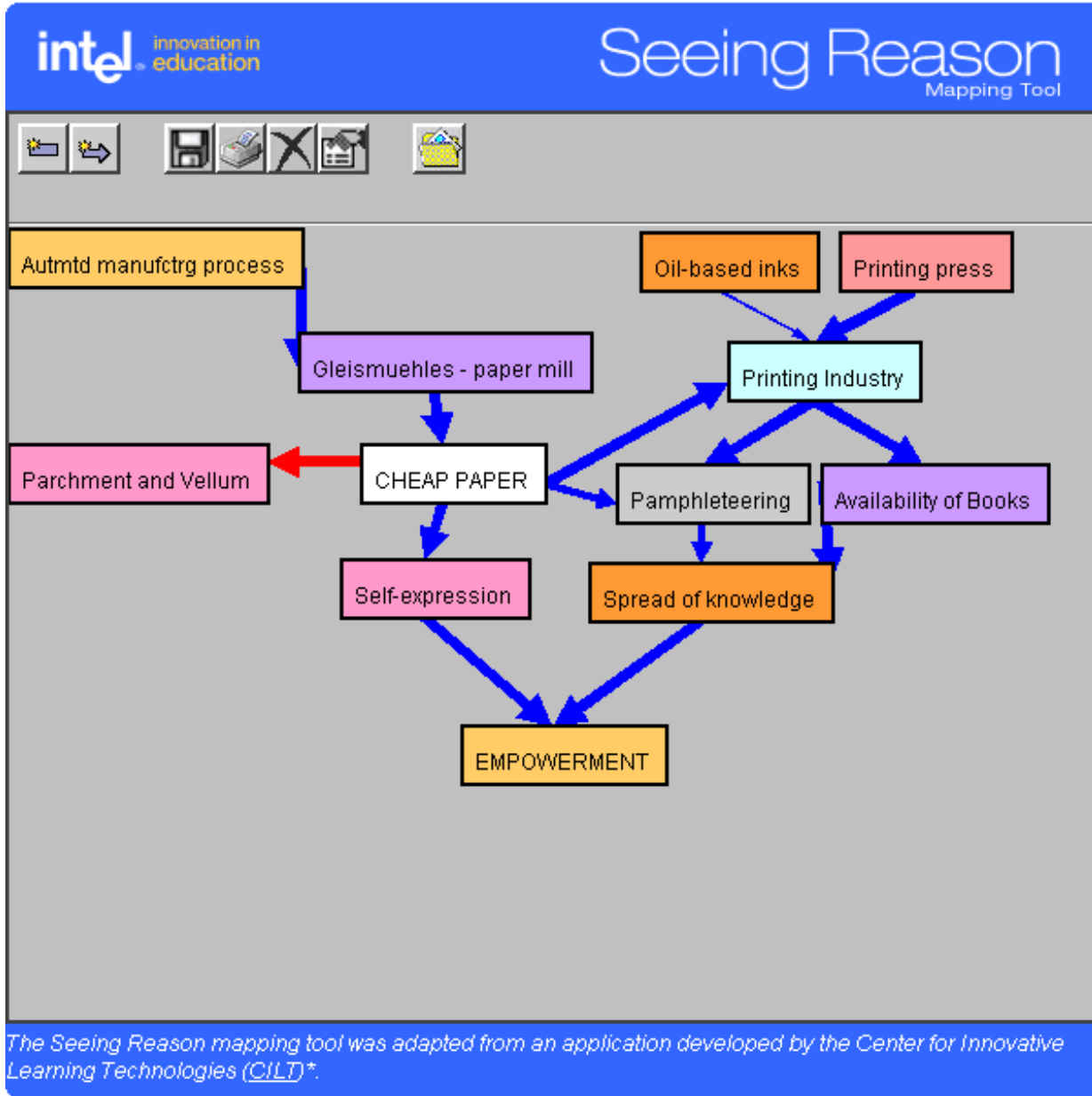
An informal, juried debate will be held, with one member of each team serving on a panel of judges, and one or more team members acting as debaters. You will not be graded for participation in the debate, but will receive extra credit if you do so!

7. Grading

You will be graded for individual research, group work and your presentation plan using the [Research and Presentation Plan 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 you are graded on. Copies are posted on the bulletin board as well for your reference. Good luck and have fun with this project!

Sample Student Map

Building Casual Maps



[View as PDF document](#) | [View as Word* document](#)

[Return to Papyrus to PDA](#)

Course: Graphic Arts
Group: Paper Pushers
Papyrus to PDA: Visual Communication Through the Ages
Summary of Notes for Oral Presentation

Here is an outline of our presentation. We will be using a slideshow to support our presentation.

Introduction

The debate is about the history of visual communication, and deciding which invention had the greatest social, political, and economical impact.

Taking a Stand for Paper (our choice)

After research and investigation, we think paper had the greatest impact on social, political, and economic change, because even today, it is the medium on which most text is conveyed, whether it's stamped, impressed with hot lead, handwritten or laser printed.

History of Paper

Who invented: Ts'ai Lun, an official in the Chinese Royal Court

Where invented: in the Chinese Royal Court

When invented: in A.D. 105

Before there was "paper," Egyptians made papyrus from pounded reeds around 4000 B.C. Greeks developed heavier-duty parchment from dried animal skin (especially sheep) later on.

Background Info

How it was made and distributed: Ts'ai Lun's paper was made from rags, used fishing nets, hemp, and China grass. Paper makers mixed mulberry bark, hemp, and rags with water, mashed it to a pulp, pressed out the liquid, and hung the thin mat to dry in the sun. BONUS: MB is working on "paper through the ages" and will have samples of papers made of linen, wood pulp, parchment, and synthetic materials.

Introduce and Walk through Causal Map

Our map shows:

Social Impact

- Lower cost and increased availability stimulated foundation of new schools and universities
- Led to increase in levels of literacy and education
- Cheap paper production made written word available to new classes in society
- Changed fundamental process of thinking; changed from an oral to a literate culture when started to think in a more linear fashion, because one can work out on paper more complicated thought processes, and memorization no longer required

Economic Impact

- Paper industry started: mills founded: jobs produced
- Wood pulp process perfected
- When paper became cheaper, newspaper industry was founded (first with block print, then moveable type, now digital silk-screening)

- Drop in newsprint prices due to papermaking technology changed price from 28 cents per pound in 1864 to two cents a pound in 1897

Political Impact

- Words on paper helped governments with organization and control (example: tax bills and edicts)
- Early practices (and even laws passed) to control exchange of ideas, example: disallowing “rags” or treatises to be taken out of the country
- Until the printing press was developed, written word was in the hands of educated elite, religious groups (monks were often scribes)
- Newspapers spread news and political information much faster than oral transmission

Conclusion

Our conclusion is that paper had the greatest impact on political, economical, and social change, because it allowed all printing-related industry to develop. Without paper, words would not have become portable. Without paper, a person’s words could not have been distributed as far and wide.

Work Cited

History of Paper by Mead: www.mead.com/ml/docs/facts/history.html*

History of Paper by Conservatree:

www.conservatree.com/learn/Papermaking/History.shtm!*

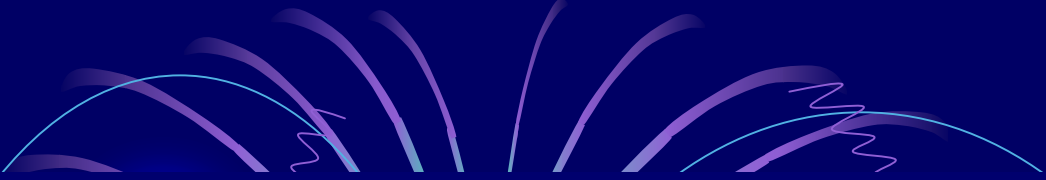
Paper Through the Ages: www.hqpapermaker.com/paper.htm*

The Peculiar History of Paper: www.ibfsrp.com/paper_history.html*

Wisconsin Paper Council: www.wipapercouncil.org/invention.htm*

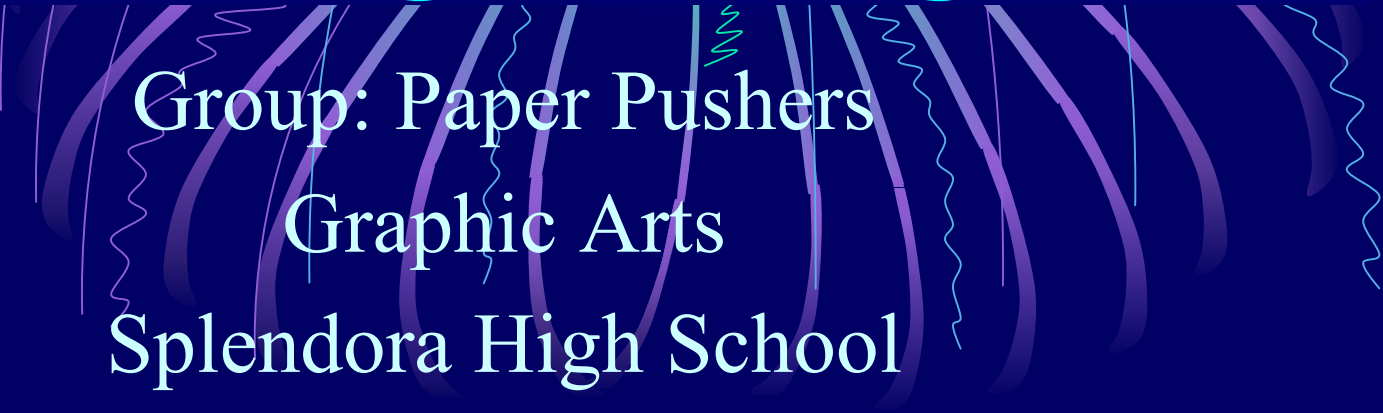
Paper University: www.tappi.org/paperu/all_about_paper/paperHistory.htm*

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

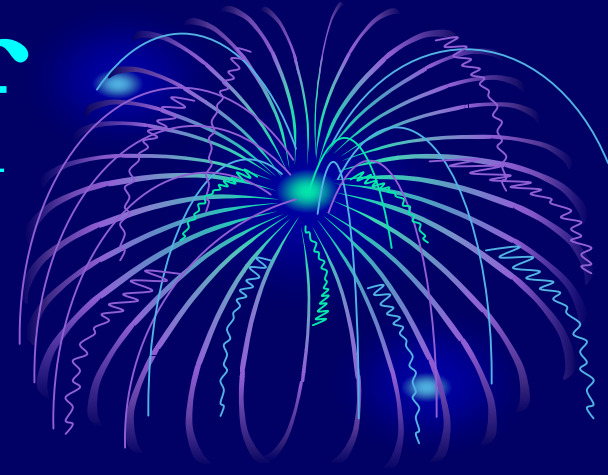


Papyrus to PDA: Visual Communication Through the Ages

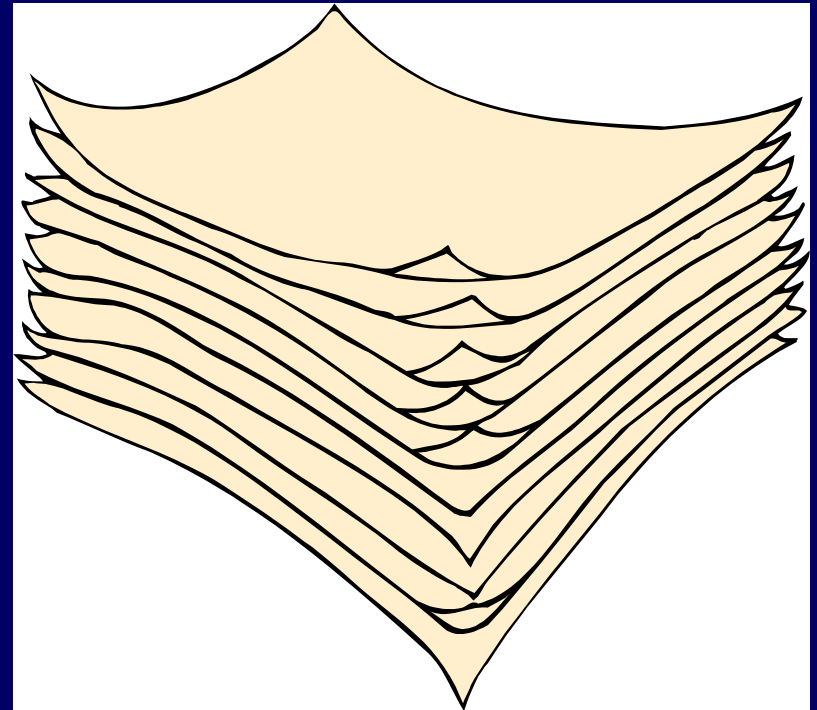
Group: Paper Pushers
Graphic Arts
Splendor High School



Introduction of Paper



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



History of Paper



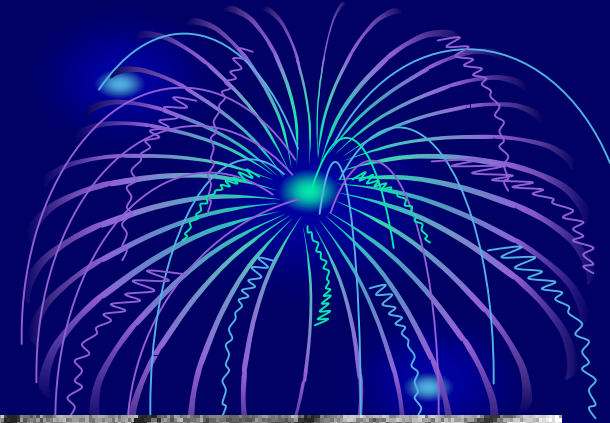
Prior inventions: Egyptian
papyrus 4000 B.C, ancient
Greek parchment by 100 B.C.

Paper invented in China

Ts'ai Lun, official in Chinese
royal court, A.D. 105



Chinese Paper

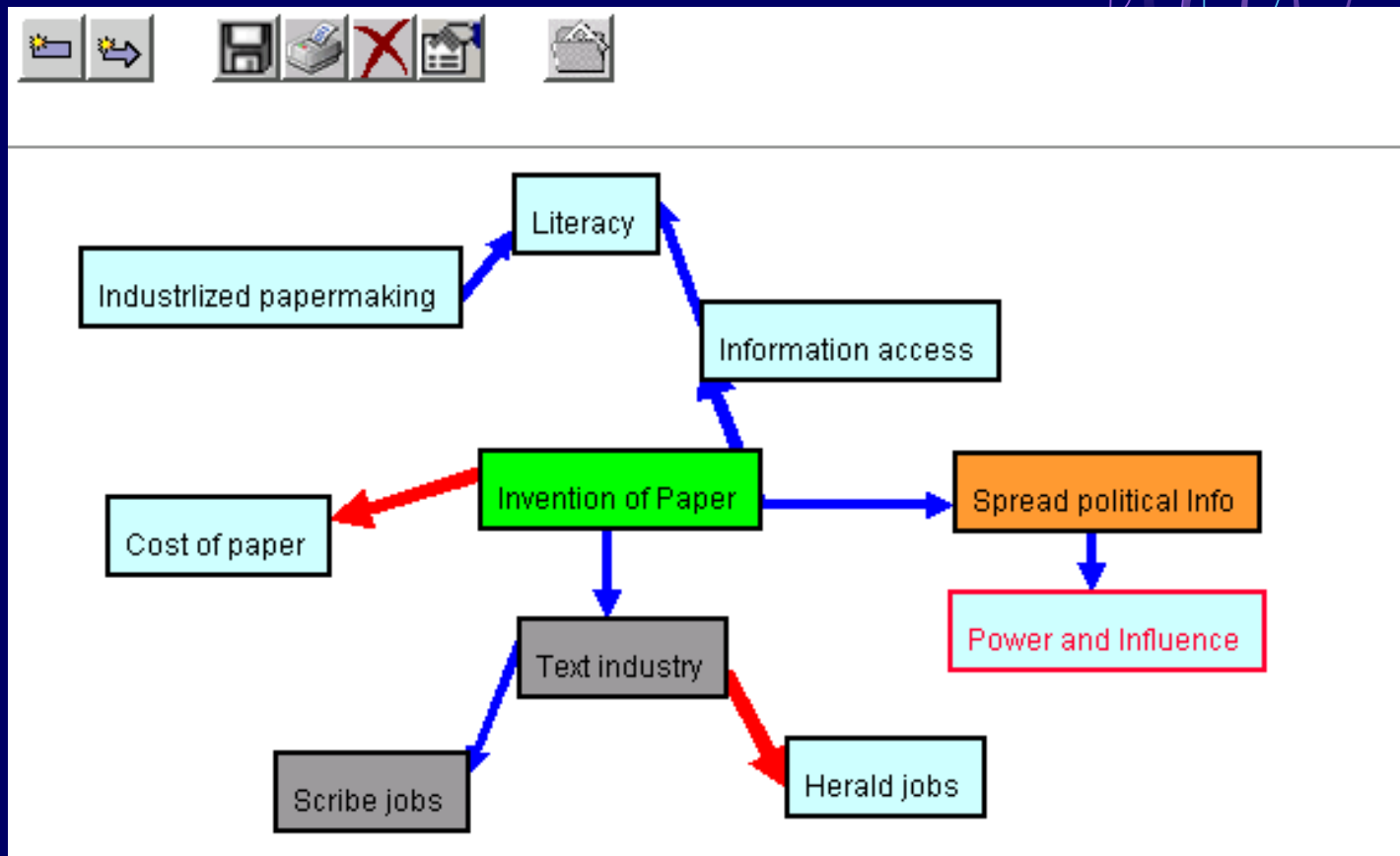


- Early Chinese paper made from rags, old fishing nets, hemp, china grass
- Improved with mulberry bark, hemp, and rags mixed with water, mashed to pulp, liquid pressed out, hung to dry in sun



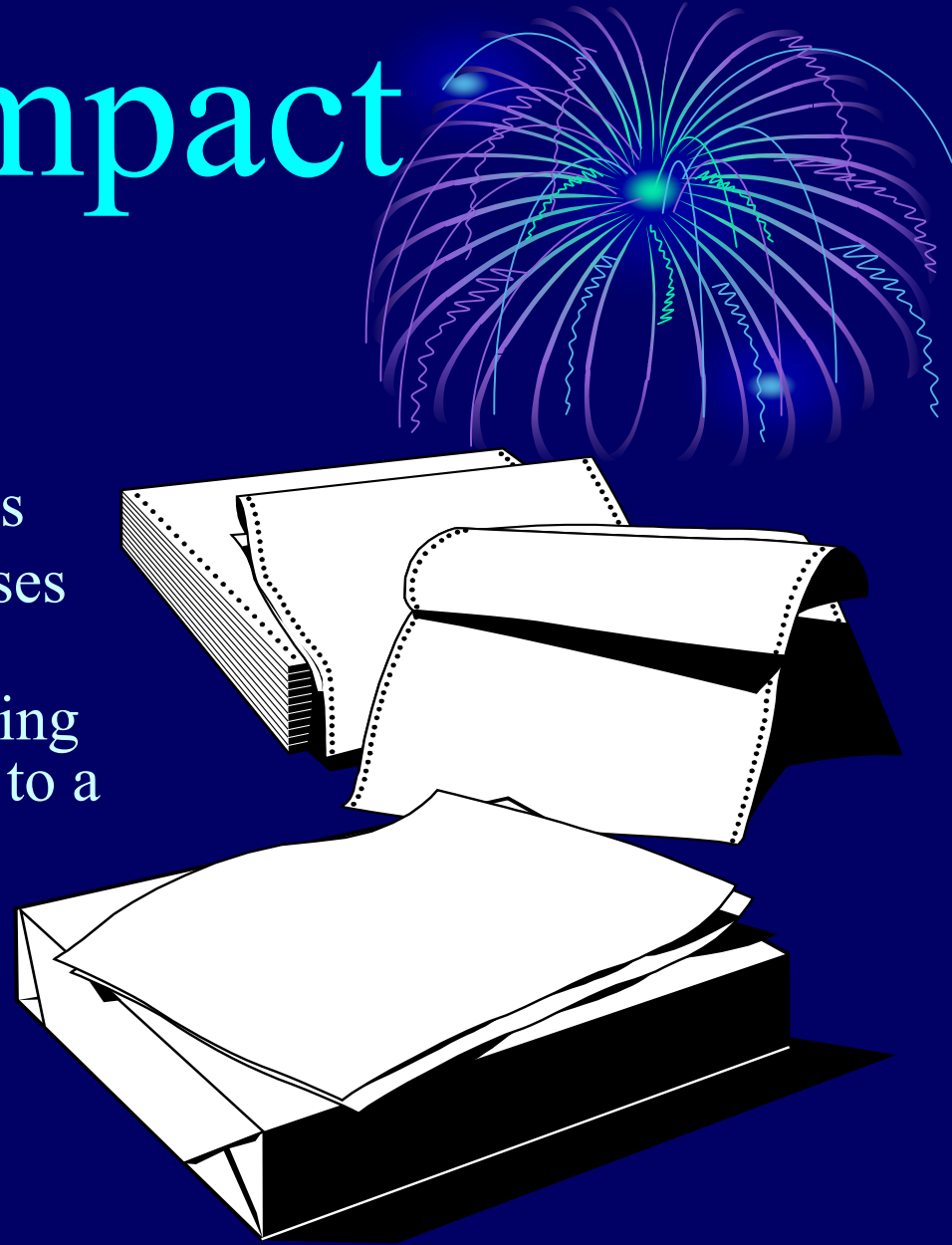
Institute of Paper Science and Technology
www.ipst.edu/amp/img/chinapm3.gif*

The Influence of Paper on All Things: Our Causal Map

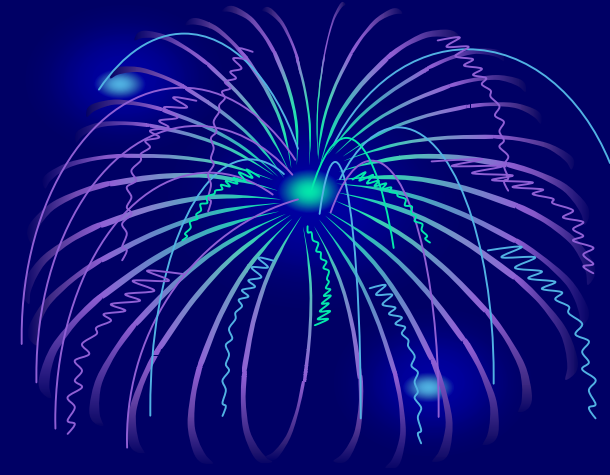


Social Impact

- 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



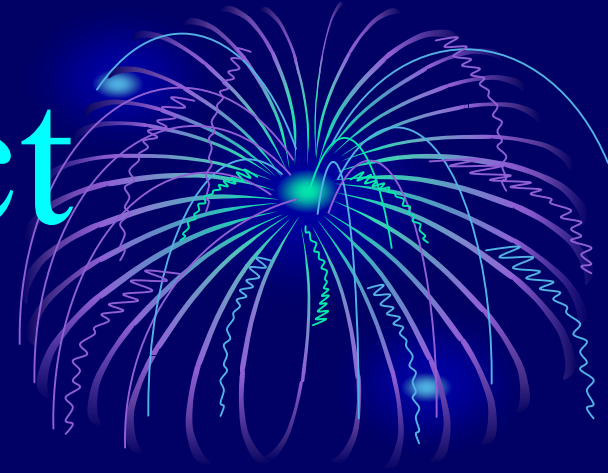
Economic Impact



- 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



Political Impact

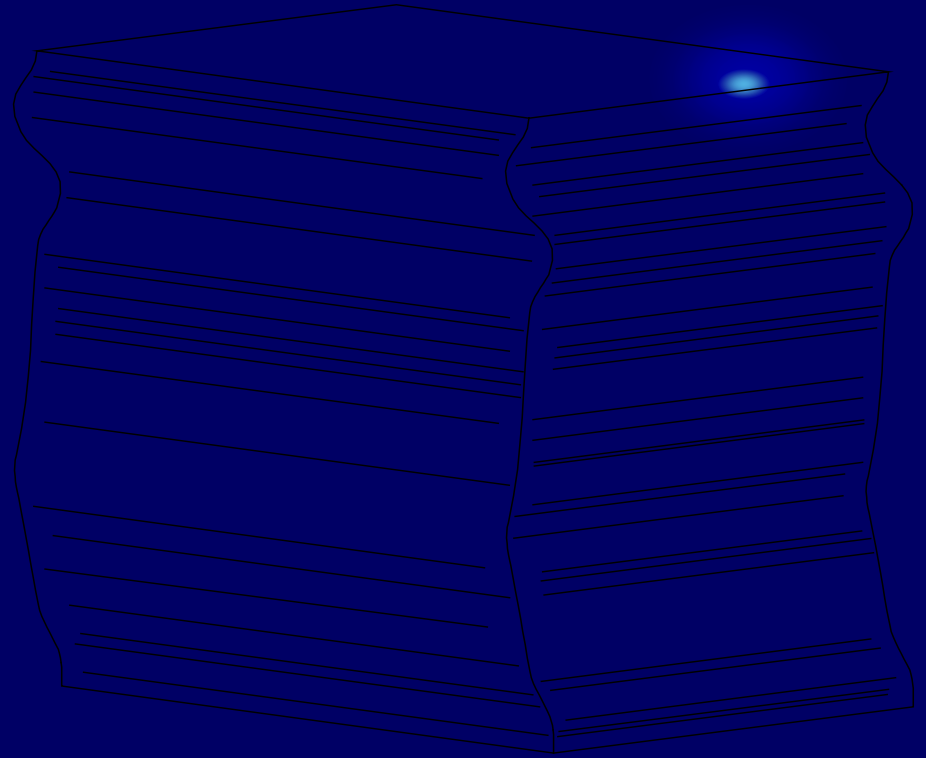
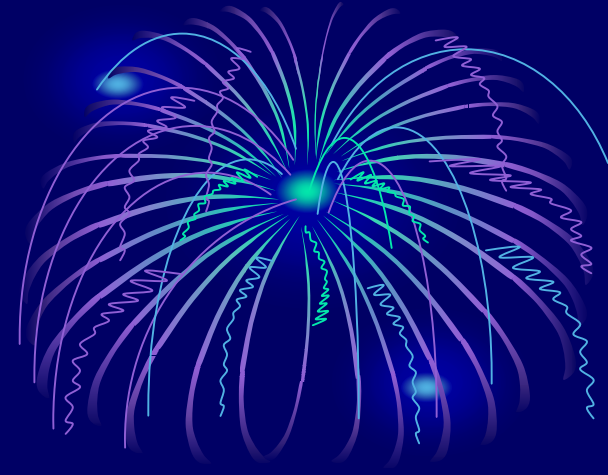


- Control of ideas: laws to keep “rags” from leaving country
- Newspapers spread political information, serve as “bully pulpit”
- Laws at turn of 20th century spur paper industry : tax credits granted for resource development, industries granted favorable freight rates

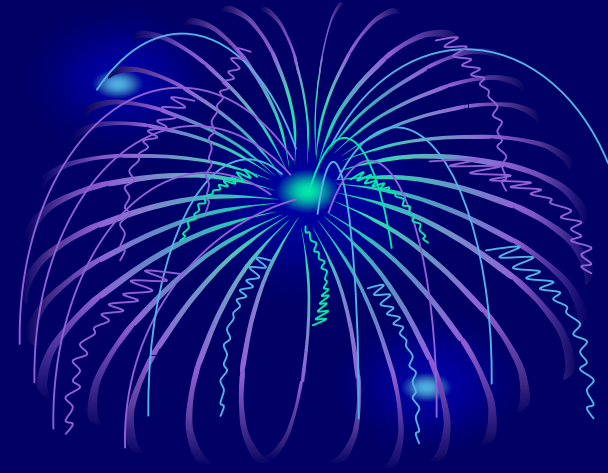


Conclusion

- 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*