Technology in Education

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What Is Technology?

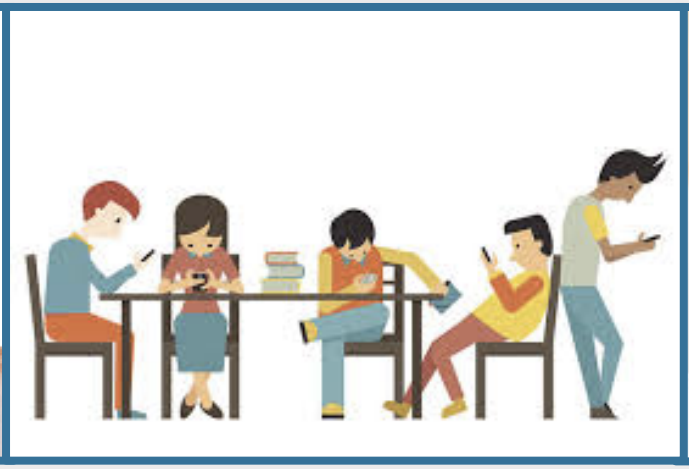
- Comes from 2 Greek words: techne and logos
  - Techne: art, skill, craft, or the way, manner, or means by which a thing is gained.
  - Logos: word, the utterance by which inward thought is expressed, a saying, or an expression.
- 5 Different Definitions:
  - Technological process
  - Technological objects
  - Technological knowledge
  - A technology
  - The technological system

What Is Technology?

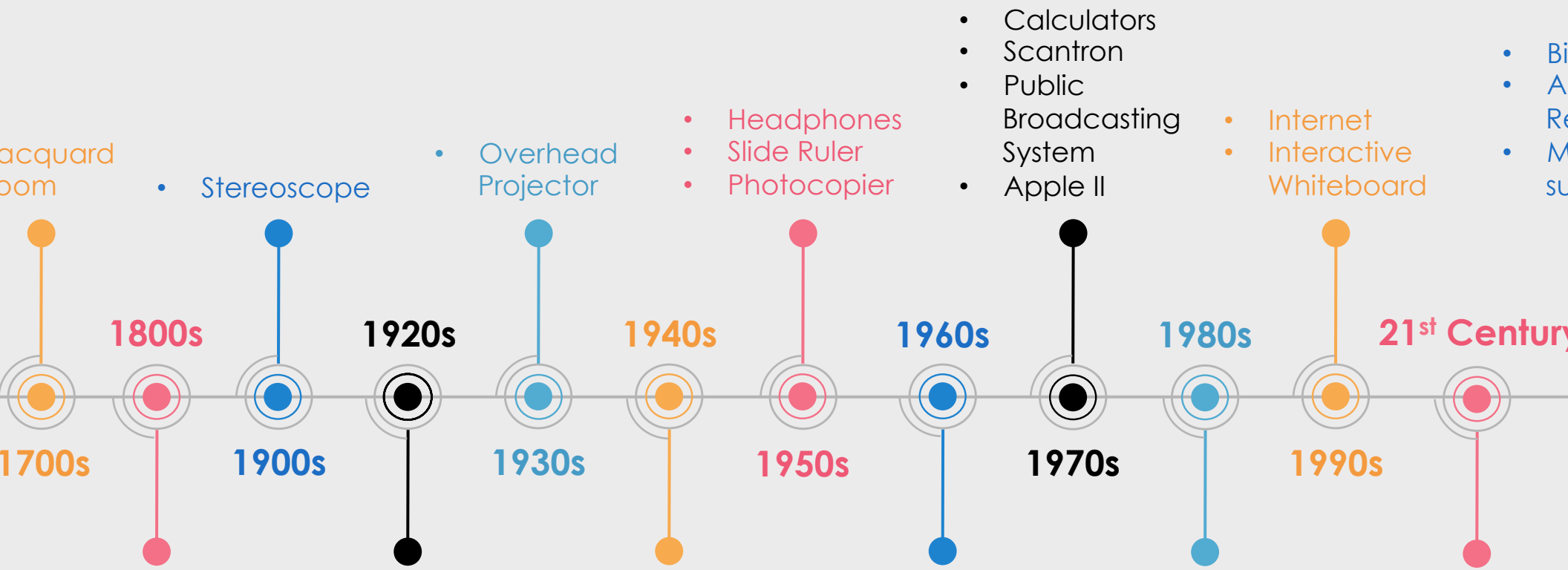
- 5 Different Definitions:
  - Technological process
  - **Technological objects – the set of means (tools, devices, etc) created by the technological process**
    - Ex. Smartboards
  - Technological knowledge
  - **A technology – a subset of related technological objects and knowledge**
    - Ex. Computer technology
  - The technological system

What Are Digital Natives?

- Today's students now think and process information differently from their parents and grandparents.
- Students today are all "native speakers" of the digital language of computers, video games and the Internet.



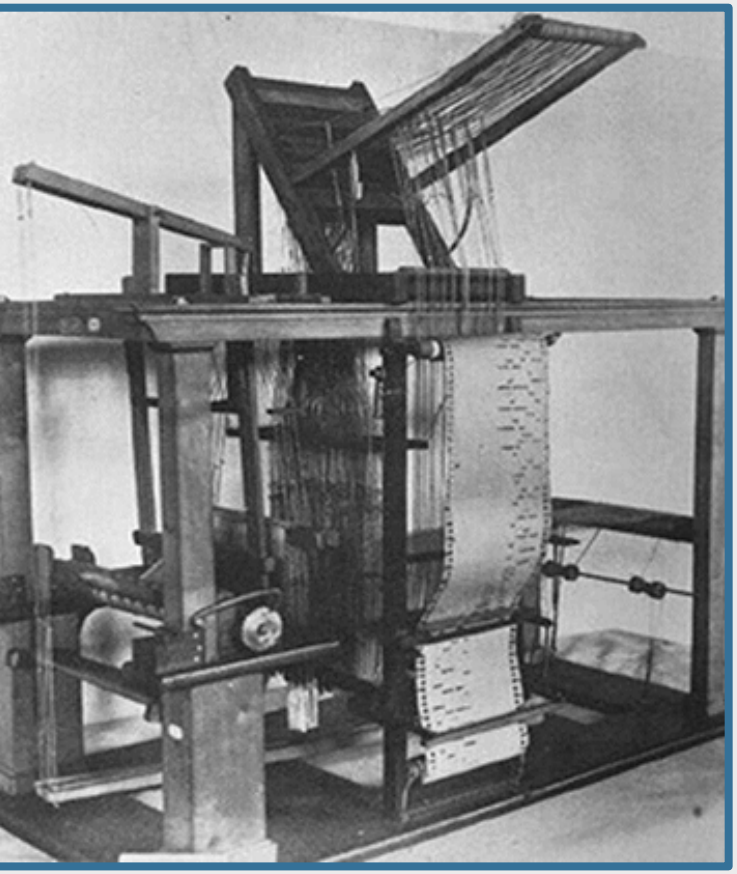
History of Technology



The 1600s

- The Hornbook
  - Taught basics such as vowels and consonants
  - Lesson material had a protective cover made from sheep and oxen horns
- The Magic Lantern
  - Enhanced learning and student engagement
  - Photographic slides were inserted one at a time to view specific subject matter

The 1700s

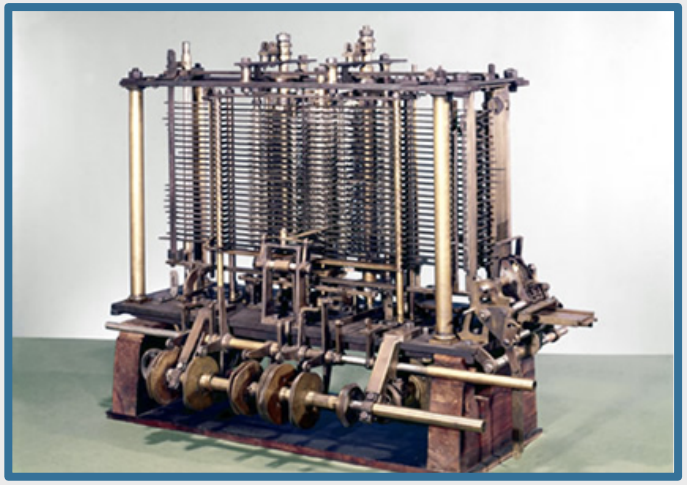


- The Jacquard Loom
  - Marked the beginning of modern day computer programming
  - Designed to weave silk using punch cards that controlled the actions of the device
    - Punch cards were used as controls in the very first computers which led to the advanced programming capabilities used in today's classrooms

The 1800s

- Slates & Chalk
  - Not convenient for longer assignments because they were used to solve short equations
  - They were erased so they could be used to solve a new equation
- Blackboards
  - Made of slate surrounded by a wood border to prevent the slate from breaking
- The Calculating Engine
  - Led to modern day digital computing
  - Created with the realization that a computing device must have input, memory, a central processing unit, and an output device
- Typewriters
  - First introduced the QWERTY keyboard which is still used in modern keyboards
  - Limited to capital letters but both uppercase and lowercase letters were used in the later in the 1800s

The 1800s



The 1900s

- The Stereoscope
  - Provided a way to view images in 3D
  - Classrooms which were equipped with stereoscopes were used to view three dimensional images that emphasized points

The 1920s

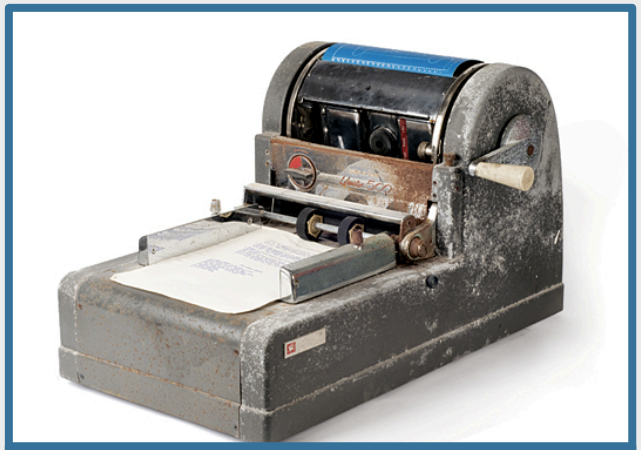
- Film Projector
  - Displayed still images from a film strip accompanied by an audio recording.
  - Had to be manually changed as you advanced through the film strip
  - Remained in the classroom until the early 1980s and was used to study a particular topic or timeline of events.
- Radio
  - Some schools used the radio to broadcast lessons to other schools using a specific radio station.
  - The first lesson was sent over the radio by the Board of Education in New York City in 1925.

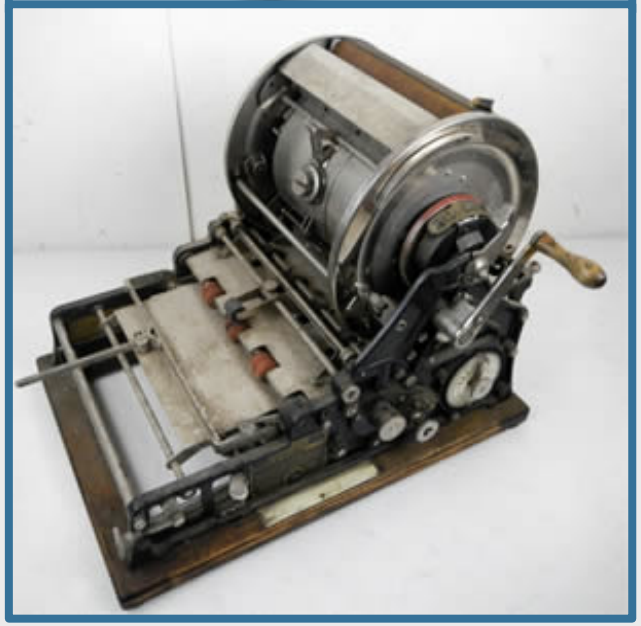
The 1930s

- The Overhead Projector
  - The first overhead projector was introduced to the classroom prior to being widely used by the military during World War II
  - Provided teachers with a more convenient alternative to the blackboard
  - Used transparent sheets which could be written on with an erasable marker

The 1940s

- The Mimeograph
  - Used by teachers to print classroom materials
  - School office staff used them to print out various documents used for daily operations within the school
  - Copies were created by manually cranking the ink filled drum which forced the ink through a stencil and onto the paper

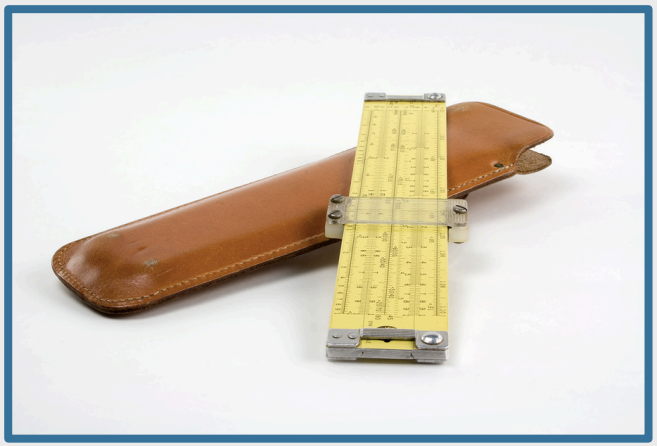




The 1950s

- Headphones
  - Installed in listening stations, AKA language labs
  - Students could easily review lessons and reinforce concepts by listening to audio tapes
- The Slide Ruler
  - Precursor to the calculator and was commonly used to make scientific calculations
- The Photocopier
  - Helped teachers to create copies of classroom materials easier and faster than the mimeograph

The 1950s



The 1960s

- Microfilm Viewer
  - An individual filmstrip viewer that was introduced to libraries and schools
  - Provided a way for students to view filmstrips at their own pace
  - Also used in libraries to search through publication archives for research
- Liquid Paper
  - Students who used typewriters dipped the brush into liquid and applied it to the paper to correct a typing error

The 1970s

- Calculators
  - Originally, concern over the loss of basic learning skills, such as long division
  - Handheld calculators became widely used and were the precursors to modern calculators
- The Scantron
  - Introduced for grading multiple choice exams, and saved time for grading multiple exams
  - Used imaging technology to read answer sheets that had dots filled in with a pencil
- The Public Broadcasting System (PBS)
  - Allowed educational programming to be viewed on a television in the classroom
- The Apple II
  - Apple released the Apple II desktop, students could learn by playing compute games

The 1970s


SCANTRON 8808+
OMR TEST SCORER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apple II
apple II
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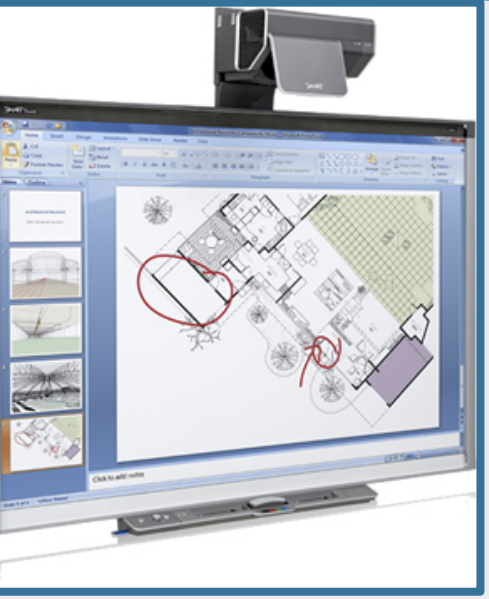
The 1980s

- Personal Computers
  - Personal computers were used for a variety of learning purposes
    - Schools did not have an Internet connection
  - An eventual replacement for the typewriter when completing assignments
- CD-ROM
  - Students were able to store video and audio on a single compact disk

The 1990s



- The Internet
  - First introduced as a dial-up connection on telephone lines and was slow
  - As it became popular, it was incorporated into education
    - The connection was limited to certain areas of the building with an Ethernet cable
- Interactive Whiteboards
  - Consisted of a white screen, computer, and projectors
    - Replaced the old chalk blackboards

The 21st Century

- YouTube
  - Allowed teachers to share instructional videos and videos that would aid with classroom projects
- iClicker
  - Allowed teachers to quiz students during a lesson and receive real-time results
- iPad
  - Brought Wi-Fi enabled mobile devices as a learning tool in classrooms
  - More learning apps and games were introduced for phones and the iPads
- Google Cardboard VR
  - Allows students to study locations and objects in 3D
    - Students could also explore current events using the Google Cardboard

The 21st Century

2018 and Beyond

- Biometrics
  - Will be used to recognize the physical and emotional disposition of students in the classroom
    - Enables teachers to alter course material for each students' needs
- Augmented Reality (AR)
  - AR glasses will layer data over what we naturally see and allow for a real-world learning experience
- Multi-Touch Surfaces
  - Would allow students to collaborate with other students, even around the world
  - Videos and other virtual tools could be streamed directly to the surface

Technology Changing The Role of Teachers

- 20 Years Ago:
  - Limited to providing information with a limited variety of tools to make learning fun.
  - Expected to reach multiple learning styles simultaneously without proper tools
- Today:
  - Role has changed to facilitator and supporter as students collaborate
    - Enables the teacher to be more proactive without worrying about other students being left behind in the learning process.

s Technology In Education Good or Bad?

Pros

- Allows more active learning
- Helps ensure full participation
- Countless resources for enhancing education and making learning fun and effective
- Students have instant access to fresh information

Cons

- Can be a distraction
  - Ex. Using laptops during a lecture distract from learning
- Can disconnect students from social interaction
- Can foster cheating
- Students do not have equal access to technology resources

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