

## Mind Map

### Math Department

Branch	Computer Connection
Geometry	Visualization of complex geometric figures like platonic solids
	Automatic translation, reflection, and rotation
	3D and 2D scenes in games with lighting from different angles
	Drawing lines in computer graphics
	CAD/CAM
	Geometer's Sketchpad
Algebra	Scientific, graphing, and programmable calculators
	Calculator emulation on general purpose computers
	Gaussian elimination
Trigonometry	Law of Sines and Cosines
	Surface modeling with triangles
	Conversion of polar to rectangular coordinates
Number theory	Base 2 conversions, binary to decimal and back
	Cryptography
	Experimental mathematics, A New Kind of Science
Calculus	Newton's method for finding zeros
	Integration with rectangles, trapezoids, Runge-Kutta
	Programs like Mathematica that work symbolically, or Matlab, Maple, Mathcad. Magma
Statistics	Simulation with Monte Carlo methods
	Combination and permutation equation
	Algorithms for enumeration of all possibilities

### Science Department

Branch	Computer Connection
Physics	Programming solutions to some physics problems
	N-body problem
	Gear inch calculations for bicycle
	Analysis of sound waves from recordings
	Experiments with color and light models
	Simulation of electric circuits, Spice, LabView
	Osmosis and diffusion simulation or measurement
Chemistry	Calculations in mechanics: projectile motion, friction
	Counting bonds
	Nomenclature quiz
	Enhanced, interactive periodic table with pictures of electron cloud and numbers for atomic radii, ionic radius, electronegativity
	Recreation of Bohr experiment, shooting at gold foil

Biology	Biometrics
	Neural networks
	Genetic algorithms
	Protein folding
Environmental Science	Ecosystem models simulation (like SimEarth)
	Pollution and nutrient tracing (contamination models)
	Water table models
	Environmental impact statements
	GPS-Geographical Positioning Systems
	GIS-Geographical Information Systems
	Google Maps, Earth
	Weather prediction
	Satellite photography
	Analyzing samples in the field

### Social Studies Department

Branch	Computer Connection
Geography	Mapping with GPS assistance
	Spatial event cluster analysis
	Dynamic maps with time axis
	Google street view
Economics	Web 2.0 and eCommerce
	Taxed paycheck, regular paycheck (laws for overtime)
	ATM machine simulation
	Bank account object-oriented analysis
	QuickBooks for businesses
Government	Census (taking and data analysis)
	Government funding of technology infrastructure, internet
	Electronic voting machines
	H-1B visas
	Electronic tax filing
	Paycheck calculators that figure payroll taxes
	Digital divide
	Laws regulating computer user DMA digital millennium act
	Distribution and copyright issues
	End user license agreements (EULAs)
	Laws regarding copyright, patents
	Polls and surveys
History	Reconstruction of historical climate (tree rings, atmospheric gasses)
	Replay of historical battles
	Enigma machine
	Computer History Museum

	Calendaring and calendar widget
	Analyzing historical artifacts
	Virtual tours of historic buildings
	Web quests

### Fine Arts Department

Branch	Computer Connection
	Computer can make art more accessible
	Some paintings are being scanned and with the help of image processing software, underlying images are being discovered.
Music	Can bring museum paintings to your own computer screen.
	Paintings can be edited once they are there.
	Scratch animation or splash screen, related to story telling
Art	MP3 learn more about sound signals
	MIDI composing
	They are playing instruments into a computer which is saying whether they get the pitch and duration correct
	Photoshp or GIMP, help edit, rough drafts just like composition
	Analysis of old paintings
	Blueprint of museum
	Music and media copying
	Program to read music to blind
	Music writing programs with notes and sound as well

### English Department

Branch	Computer Connection
Literature	Archives of famous authors and thinkers
(reading)	Project Gutenberg
	eBook readers
	amazon.com & bn.com
	Google books
	Online book clubs
	Eye movement training programs
	Speed reading practice programs
	Optical character recognition (OCR)
	If you bought this you might be interested in, other people who purchased this book also purchased...
Speech	Text to speech, speech to text
(talking)	Pronunciation comparison
	Historical recordings that are available online
	Reading emails aloud (so can listen while driving)
	Navigation systems with voice output
Composition	Spell checking

(writing)	Grammar checkers
	Thesauri at the click of a button
	Custom dictionaries
	Dictionary programs, Shoebox
	Support for making outlines
	Self publishing, desktop publishing
	Programming is more like English composition than engineering, math, or science
	Automatic composition grader: compositions for SAT are processed by computer, sign up at Pima and have to take writing test which is graded by computer
General	Google search is about language processing
(mixed)	Computer vocabulary
	Online dictionary
	Vocabulary trainer
	Computational linguistics
	Parsing and sentence diagramming, is used by compiler writers
	Corpus work on language
	Analysis of language shift

### World Languages Department

Branch	Computer Connection
General	Vocabulary training programs increase language acquisition rate
	Web sites in or about the language or culture bring the world to your desktop
	Foreign radio over internet
	Local weather in foreign lands
	Online dictionaries
	Wikipedia and WordNet in multiple languages
	Internationalization of software, I18N
	Address, telephone number, zip code formats around the world that computers must deal with
	Analogy between computer language and foreign language
	Automatic language identification for email and web pages
	Pen pals
	Get world perspective when all connected