

# Computer Literacy 2

## Project Selection Catalog (Spring, 2014)

Each group must choose one of the following projects for the Computer Literacy 2 class, then prepare a written plan in consultation with one of the teachers for exactly what you hope to accomplish, with a week-by-week schedule of how you will do it, and measurable milestones so we can evaluate your progress.

1. Create three two-minute video “book trailers.” These are like movie trailers. They entice viewers to read the book by showing a “clip” of the story or a collection of scenes and effects that give a flavor of the book. See some good examples of this at the following sites:

<http://www.youtube.com/playlist?list=PLF5316EC25DD56E15> (Many of these are publisher-produced and so have the money to create an authentic movie feel. Nevertheless, something to strive for!)

<http://www.teachingbooks.net/>

<http://www.slideshare.net/mira93/creating-book-trailers>

Here is a source that lists free tools for creating book trailers: <http://www.freetech4teachers.com/2011/08/5-free-tools-for-creating-video-book.html>

2. Have a big manga collection at home? Are you a compulsive reader? Catalog and share your book collection using Library Thing (<http://www.librarything.com>), which imports data and images from Amazon and other sources. Write reviews, import your own cover images, tag your entries by subject and genre, find out who else reads what you read, and develop a to-read list based on what you’ve found. You can also do this with your CD collection. See: <http://unihighlibrary.librarything.com/catalog/unihighlibrary>
3. Create a 5-minute instructional video which teaches people to ....
4. Become webmasters for a community organization needing serious help with updating, upgrading and maintaining an informational website. (The Illinois Heritage Association is one organization that has contacted us about helping them revamp their web pages. Other options might be your church, Scouting organization, Humane Society, historical preservation agencies, local arts or theatre groups, etc.)
5. Develop a marketing campaign for a candidate for political office. Create a two-minute video, a 60 second radio spot, two press releases, a bumper sticker design, and a T-shirt design.
6. Develop a marketing campaign that either supports or does not support a state referendum to ban the use of social networking software in schools and libraries. Create a two-minute video, a 30 second radio, two press releases, a bumper sticker design, and a T-shirt design.
7. Create a gallery of photographs that you have creatively combined and manipulated in Photoshop (or another picture editing program like GIMP). To qualify as a complex enough project for this class, you will need to demonstrate that you have learned multiple new image manipulation techniques, and/or have produced a very substantial and high quality portfolio of images. Close cooperation with the art teacher is mandatory.
8. Design and build a robot that can perform an action like playing ping-pong or travel along a line marked on the floor. Develop the drawings, circuit descriptions and other documentation that would allow someone else to duplicate your design.
9. Create a web-based version of a traditional story (or stories) with multiple hyperlinks glossing vocabulary, expressions, references, etc. Links can be visual, verbal, or both, but should be original and specific. If

possible, this would be an excellent project for a group sharing a common language study (i.e., the story would be useful for a language class reading on an elementary level).

10. Digital Storytelling is the practice of using computer-based tools to tell stories. Using a mix of images, text, recorded audio narration, video clips, and/or music, create one or two digital stories that are between three and five minutes long. You can use media you find online or you can create it yourselves. The emphasis should be on good storytelling. Each story should have a defined audience (e.g., a children's story) and contain all the elements that you would find in any form of excellent storytelling. Alternatively, the story can be nonfiction - a portrayal of someone's life, an exploration of the natural world, a historical vignette, etc. For help, see <http://digitalstorytelling.coe.uh.edu/>, <https://tle.wisc.edu/digitalstorytelling> and <http://aaslsmackdown.wikispaces.com/Digital+Storytelling>.
11. Use either Animoto (<http://animoto.com>) or VoiceThread (<http://voicethread.com>) to create a brief multimedia lesson or story. The length of your production will depend on which platform you choose and will be negotiated with your teacher-supervisor. Create a second lesson for teachers that introduces them to the platform you have chosen and describes the benefits of using it in their classroom. Resources that will help you choose a direction: <http://www.slideshare.net/suziea/voicethread-examples-in-education-presentation> and <http://animoto.com/> (scroll to the bottom).
12. Utilize the facilities of the C-U Community Fab Lab (<http://cucfablab.org/>) to build a small model or toy using 3-D design software, and a combination of 3-D printing, laser cutting, computer-controlled milling and vinyl/paper cutting to make a practical and attractive object. Document the equipment and processes you use so others can duplicate your design.
13. Create a video (five minutes or less) incorporating “found” footage and images from the Web, but *without* any material you shot yourself. This could be based on a piece of music, coverage of an event, or an instructional theme. The “copyright” video using clips from Disney films is an example of this, as are any of the music-video “mash-ups” found on YouTube and elsewhere. You will need to present a very clear and specific plan for what you want to make to get this one approved.
14. Create a web site to support buying and selling used textbooks among Uni students. It will need to have a way for buyers and sellers to register themselves as users, for sellers to list their books (and the prices), and for buyers to search for the books they want and commit to a sale. The *design* of this system (on paper, or using mock-ups of screen designs created with a graphics program) is probably more important than the actual *implementation*, and should take the majority of your time.
15. Create a visual history of Uni High, using still images from archived sources (yearbooks, etc) thematically and historically arranged, in the manner of Ken Burns` documentaries. The problem might be writing and recording the material, but it could be a good final result if done well.
16. Re-create a classic early video game like Pong, Frogger or Pac-Man in the Java, Python, or C++ programming language.
17. Build a small digital sign board that, for example, a teacher might hang outside their office door to display their daily schedule. It will need to be easily reprogrammed to display different messages. Suitable processors and display devices are available from vendors like SparkFun Electronics (<http://www.sparkfun.com>).
18. Use the *Scratch* programming language to build a computer model of a dynamic system like a roller coaster, a rocket in flight, or some other physical object in motion.
19. Similar to the previous, but use the *Mathematica* computer mathematics system and language instead of *Scratch*.

20. Create a microprocessor-based device to monitor the temperature in a Uni High classroom over a period of days or weeks. Analyze the data it records and see if you can suggest ways to improve the comfort of our rooms while decreasing energy usage.
21. Help Mr. Smith design and fabricate a set of microcomputer trainers that students in his Computer Technology class can use to learn about circuit design and programming. These need to incorporate an Arduino processor, input and display devices, some sensors, and a prototyping area where students can build small electronic circuits of their own. We need to build five to ten units in time for the class to use them this semester.
22. Create a 30-minute audio podcast with weekly news from Uni High. **Serious** content and high journalistic and technical standards will be expected.
23. Program a microcomputer in assembly language to control a robot, simulate the rolling of a pair of dice, or another similar task.
24. Write a program in *C++* or another high-level language that takes students' requests for classes and automatically builds the best possible master schedule for an 8-period day.
25. Design and build a game-playing computer using an *Arduino* microcontroller, keypad and graphical display panel, possibly with a touchscreen. Games such as Tic-Tac-Toe, checkers or chess might be good subjects for this kind of approach. Mr. Smith can help with the hardware aspects of this project; the challenge will be mainly in writing the software.
26. Compose and record a piece of music using a combination of synthesized and live instruments. Write a paper describing what you did. Make sure Mr. Murphy reviews and approves of your composition before you record it.
27. Modify an existing open-source program written in the *C* or *C++* language to incorporate additional features you would like. This is a fairly open-ended idea, so your specific proposal must be approved by Mr. Smith before you begin.
28. Using a drawing or drafting program, re-design a classic board game to incorporate Uni High elements and themes. Produce a game board, game pieces, instructions and any other printed or graphical material required. A program like *Adobe Illustrator* or *Google SketchUp* will be most useful for this purpose.
29. Create an online, playable version of a classic board game accessible through a Web-based interface.
30. Using information downloadable from the Web, analyze the variability of a star or the distribution of sunspots on the sun over a period of years. Like any scientific paper, you should propose a hypothesis about the phenomenon you are studying and then use the available astronomical observations to confirm or refute that hypothesis. This could turn into a legitimate, formal science fair project.
31. Develop a program that uses historical information about stock prices downloaded from the Web to predict future prices and help you make investment decisions. Starting with \$1000 to invest in the market, use your program's recommendations to see how much your portfolio is worth after a year of simulated investing.
32. Calculate Uni High's "carbon footprint" using data available from the Web and your own careful measurements and estimates of energy consumption.
33. Choose a classic film that incorporates themes of computer and communications technology. (The teachers can make some suggestions if you need ideas.) Critique the presentation of technology in the film and

describe how actual advances in computing have paralleled or deviated from the vision presented in the movie. Your final product may be a copiously illustrated paper, a video, or an interactive website.

34. Using Google Earth or a similar service, create a world map showing where Uni High alumni are living. Allow the user to zoom in to any reasonable level of detail, or out to show the entire distribution of alums. Enhancements would include the ability to select subjects by year of graduation, or show the movements of a particular graduating class over time.
35. Create a wiki instructional guide for teachers on using Web 2.0 technology in the classroom. At a minimum, include the following tools: RSS, blogs, wikis, podcasts, microblogging, photo and video sharing, social bookmarking, and social networking. See these sites for inspiration: <http://sdst.libguides.com/newtools> and <http://webtools4u2use.wikispaces.com/>.
36. Choose a classic film that is set in a particular city (we can make some suggestions if you don't have your own ideas). Using Google Maps or a similar service, create a map with interactive links to locations shown in that film. Annotate your entries to discuss the history and significance of each location and describe how it was portrayed in the film.
37. Using a Global Positioning System (GPS) receiver, design a system that will record your movements over the course of a day and plot them on a map. How many miles do you travel in a day? Portions of this project might run on a smartphone or iPad-like device, or you might design your own hardware for it.
38. Create a guide to customizing your computer under either the Microsoft Windows 7 or MacOS environments. Topics to be covered would include changing the desktop wallpaper and appearance, setting up start and program menus to make them easier to use, changing file associations, and possibly using free add-in software to completely alter the look and feel of the system's user interface. You would probably need to do this on a laptop computer of your own rather than a school-owned machine. The end result could include a paper booklet, web pages, and/or slide shows describing the changes you made and how to set them up.
39. Create a QR (Quick Response) code (or barcode) treasure hunt that highlights books and other library resources. Link QR codes from books to book reviews written or recorded by group members, and also link to published book reviews, authors' websites, book trailers, and "read-more-like-this" suggestions. Plant "stealth" QR codes around the school that link to the Recommended Reads blog, the library blog, and to other information about library services.
40. Propose your own project, similar in scope and detail to the ones already described here. You'll need to "sell" it to the teachers – it must involve learning to use some new computer software or hardware, and has to be both challenging enough to keep your team engaged for the whole semester, but realistic in scale so you can finish it in the available time.