Find the Best Software

Using Bloom's Taxonomy and Multiple Intelligences
to Select and Use Software

By Walter McKenzie

Subject: Multiple intelligences, Bloom's taxonomy, evaluating software to build the various intelligences and thinking skills

Audience: Technology coordinators, library media specialists, teachers, teacher educators, administrators

Grade Level: K–12 (Ages 5–18)

Technology: Educational software

Standards: *NETS•T* II; *NETS•A* II (www.iste.org/standards/)

Supplements: www.iste.org/LL/

The software market has grown exponentially in the past 20 years as the demand for a wide range of applications has increased. Educational software in particular has become a viable market as educators and parents alike have sought titles that meet the learning needs of children. Because market forces dictate so much of what is published, it is easy to locate titles by content area and high-interest topics. But, we as educators have a responsibility to examine applications in terms of their effectiveness in an instructional setting.

I begin by categorizing software and seeing how these categories relate to Bloom's Taxonomy of Educational Objectives (Bloom & Krathwohl, 1956) and Gardner's (1983) theory of multiple intelligences (MI). Then I take you through a software inventory and provide a classroom-based example to help you address MI with technology tools.

Categorizing Software

The first attempt at accomplishing this analysis was to categorize software by identifying the primary instructional function of each application. Consider these categories of software:

- *Tutorial:* offering content, concepts, and skills with the opportunity for their application

- *Guided Practice:* application of specific skills with support, interaction, and feedback
- *Independent Practice:* use of specific skills to reach an identified goal
- *Assessment:* evaluation of student mastery of specified skills and concepts through appropriate tasks
- *Heuristic:* learning activities that require problem-solving skills and provide for more than one strategy to successfully complete the tasks
- *Productivity:* used for writing, composing, organizing, sorting, calculating, drawing, painting, and publishing
- *Simulation:* providing a vicarious experience for the students through electronic means

Making use of these categories helps assess the strengths and deficits of a school's software collection. However, approaching the process of evaluating and selecting instructional applications through these categories disregards the consideration of the learner in the instructional design process. Looking at each software category in terms of cognition can further reveal which paths to learning a specific software title truly supports. Consider Table 1, which brings into play both MI (Figure 1) and Bloom's taxonomy (Figure 2).

Certainly, software can be designed that addresses more intelligences or higher levels of thinking than those identified here, but in isolation these are the minimum attributes for each software category.

The connections we make to the intelligences should be just as natural and logical; not forced or contrived. If you're going to force connections to the intelligences so that you can claim your instruction is all-inclusive, you're only making the effort to justify the way you've always taught. Why bother?

Consider the implications of breaking down software in this way: Tutorial and Assessment applications address at least the logical and verbal intelligences at the lowest levels of Bloom's taxonomy. Can't these applications involve visuals, auditory effects, and other extras? Of course. But look at the process these applications take the learner through to accomplish a task. They tend to be very linear and depend on a learner's ability to recall, restate, or identify.

Guided and Independent Practice applications bring in the musical and naturalist intelligences. In these kinds of software, students are invited to find and apply patterns and make sense of content in different contexts. This brings into play Bloom's Application level in Guided Practice and both the Application and Analysis levels in Independent tasks.

Heuristic and Simulation software add the emotional intelligences: interpersonal and intrapersonal. In problem solving, this allows for the use of individual values and attitudes and the opportunity to participate in group collaboration. In simulations, students can also be engaged through the visual and existential intelligences. Use of these intelligences is critical when students place themselves in a virtual environment and apply their knowledge and skills to successfully complete tasks. Both Heuristic and Simulation applications promote Bloom's Synthesis level as students generate possible solutions to identified challenges.

Productivity software includes all of the intelligences including the kinesthetic, as students manipulate various tools to create their own original products. Response to one another's work stimulates the existential and emotional intelligences at the Evaluation level of Bloom's taxonomy. Productivity applications can be the most useful in accommodating all the intelligences in

Table 1. Software Categories by Intelligence and Level of Thinking		
Software Category	*Intelligences*	*Level of Thinking*
Tutorial	Logical Verbal	Knowledge Comprehension
Assessment	Logical Verbal	Knowledge Comprehension
Guided Practice	Logical Verbal Musical Naturalist	Knowledge Comprehension Application
Independent Practice	Logical Verbal Musical Naturalist Intrapersonal	Knowledge Comprehension Application Analysis
Heuristic	Logical Verbal Musical Naturalist Intrapersonal Interpersonal	Knowledge Comprehension Application Analysis Synthesis
Simulation	Logical Verbal Musical Naturalist Intrapersonal Interpersonal Visual Existentialist Kinesthetic	Knowledge Comprehension Application Analysis Synthesis
Productivity	Logical Verbal Musical Naturalist Intrapersonal Interpersonal Visual Existentialist Kinesthetic	Knowledge Comprehension Application Analysis Synthesis Evaluation

Verbal/Linguistic: Traditionally one of the heavily emphasized intelligences in the classroom. It has been valued because it matches the way we traditionally have taught: lecture, recitation, textbooks, and board work. It includes the ability to express oneself orally and in writing, as well as the ability to master foreign languages.

Logical/Mathematical: Also highly valued in traditional instruction. It is not simply the intelligence of mathematics but of logic and reasoning. This intelligence allows us to be problem solvers. It seeks structure in the learning environment and thrives on sequenced, orderly lessons. In the traditional classroom, students are asked to conform to the teacher's instructional approach, and this intelligence allows them to do so.

Visual/Spatial: Provides for spatial reasoning through the use of charts, graphs, maps, tables, illustrations, art, puzzles, costumes, and many other materials. As educators, we are instinctively aware of this intelligence. The visual/spatial intelligence allows students to picture ideas and solutions to problems in their minds before they are able to verbalize them or put them into practice.

Bodily/Kinesthetic: The intelligence of active learning. The kinesthetic intelligence is promoted through fine and gross motor activities, such as manipulative learning centers, science labs, active games, and dramatic improvisations. Students with a strong bodily/kinesthetic intelligence may tend to seem overactive in the traditional classroom, but they thrive in hands-on learning environments.

Musical/Rhythmic: The intelligence of patterns, including songs, poetry, instruments, environmental sounds, and response to rhythms. By picking up the patterns in different situations, learners are able to make sense of their environment and adapt successfully. Note that this is not exclusively an auditory intelligence; it can include all kinds of patterns.

Intrapersonal: The intelligence of feelings, values, and attitudes. The intrapersonal intelligence helps the learner make an affective connection with the curriculum. Children who ask, "Why do I need to learn this?" or "Is this policy fair?" are exercising their intrapersonal intelligence. It is the part of us that expects learning to be meaningful.

Interpersonal: The intelligence that provides for social learning in all its forms. Interpersonal intelligence requires social interaction in order to make sense of learning. Students with a strong interpersonal tendency may have been labeled "too talkative" in the traditional classroom. They thrive in cooperative groups where they work with partners, and even in whole-group instruction where they are free to ask, discuss, and understand.

Naturalist: The intelligence of categories and hierarchies. While the naturalist intelligence does include the study of plants, animals, and other sciences, consider the processes that these disciplines promote: classification, categorization, and hierarchical frameworks. Biologists, botanists, zoologists, archaeologists, and geologists have been classifying and categorizing for centuries by using their naturalist intelligence.

Existential: The human response to being alive in all ways. It can include aesthetics, philosophy, and religion and emphasizes the classical values of beauty, truth, and goodness. The existential intelligence allows students to see their place in the big picture, be it in the classroom, community, world, or universe. Gardner is still not satisfied that he has enough physiologic brain evidence to conclusively establish this as an intelligence, but he has been considering establishing it as the ninth intelligence. I am including it here for the purposes of our discussion. After all, who has not observed this intelligence in their classroom?

Figure 1. MI overview. Reprinted from Multiple Intelligences and Instructional Technology: A Manual for Every Mind, *copyright © 2002, ISTE.*

your classroom, because your students can use productivity applications according to their own unique distribution of the intelligences.

Of course, the identified intelligences stimulated by any software are dependent on the context in which an application is used. A tutorial application can be used to stimulate a number of intelligences if it is used in consort with other instructional tasks. Likewise, a productivity tool can be used as minimally as a word processor stimulating the verbal intelligence to show student understanding of vocabulary words at the Knowledge level. Context is the defining standard in evaluating and selecting software. The categories I have suggested here are meant in general terms only and can be modified based on your particular instructional technology practices.

On the other hand, there is a temptation to be all-inclusive in matching software to learner. If you sit there and think about it long enough, any strategy or application can accommodate any level of thinking or intelligence with enough contortions and forced connections. Bloom and Gardner describe human cognition in its natural state as it actually functions within the learner. The connections we make to

Knowledge: Define terms from rote memory

Comprehension: Complete a task and explain how he or she did so

Application: Select appropriate methods to solve problems and implement them effectively

Analysis: Solve problems and explain how he or she did so

Synthesis: Employ learned processes in a new or unique context

Evaluation: Select the best solution to a problem based on established criteria

Figure 2. Overview of Bloom's Taxonomy of Educational Objectives.

the intelligences should be just as natural and logical; not forced or contrived. If you're going to force connections to the intelligences so that you can claim your instruction is all-inclusive, you're only making the effort to justify the way you've always taught. Why bother? Once you start down the road of putting the learner first in instruction, you make an implicit commitment to yourself to be honest, to be open to new possibilities, and to be willing to change.

Inventorying Your Software

The best way to know what software you have and how it is used is to take a software inventory. Get a master list of software library titles and plug them into a table that considers each application by Gardner's MI model (Table 2).

It is important to only check off those intelligences that are primarily stimulated by each application's affordances. Accelerated Reader, for example, primarily stimulates the verbal and logical intelligences through its emphasis on reading comprehension and its multiple choice quiz format. TimeLiner, on the other hand, stimulates the logical and visual intelligences through its time line features, the musical intelligence through the patterns one can pick up by interacting with a time line, and the naturalist intelligence through the different kinds of categories and hierarchies you can create using

this software. Certainly Kid Pix could have a logical or interpersonal component to it if the lesson is designed to accommodate those specific intelligences, but that isn't what you're evaluating in an inventory. The point is to determine the intelligences each application supports on its own merits *before* instruction takes place. In completing an MI software inventory, you can identify those intelligences that need to be considered in future software purchases.

Another way to evaluate software is through its Content, Interface, Design, and Documentation features. (***Editor's note:*** Read more about these evaluation criteria in the supplements at www.iste. org/LL/.)

Getting Peer Recommendations

Often, you will want to know which software titles have already been classroom tested and are the popular choice of teachers for instructional use. To this end, I have pulled together a listing of software applications by intelligence that have been rated the best by educators from around North America. Table 3 provides an example, and the full list is included in the supplements at www.iste.org/LL/.

Using Software in the Classroom

Regardless of the titles you select for instruction, the proof comes in the way they are used in instruction. A software application should not be an end to it-

self. It should be part of a larger instructional approach that will help address a variety of intelligences in your classroom. This means you will want to set up the context for using the software before introducing it to students and provide follow-up activities that extend and enrich the learning experiences it provides. This practice of offering pre-software activities, then learning experiences with the software, and following up with post-software experiences that allow for accommodation of multiple intelligences will be referred to here as the PEP model (Pre-software, Experience, Post-software). It can come in many shapes and sizes, but the intent is always the same: to infuse the technology into your instruction so thoroughly that it becomes a vital piece in the learning process.

Consider Accelerated Reader. It's quite easy to have the software in place and tell your students to read books and take quizzes, relying on the software to keep track of each student's performance. But that leaves Accelerated Reader as an extraneous task in your classroom that exists on its own without any true tie-in to the meaningful learning you want to provide for your students each day. However, placing Accelerated Reader in the PEP model suddenly provides for all kinds of connections into your curriculum.

Pre-software. Identify a monthly genre to read. Discuss the characteristics of the genre and have your librarian put Accelerated Reader titles that fit this genre on loan to your classroom for your students. Work with students to

> Of course, the identified intelligences stimulated by any software are dependent on the context in which an application is used.

Table 2. Software Inventory by Intelligence									
	Verbal	*Logical*	*Visual*	*Kinesthetic*	*Musical*	*Intrapersonal*	*Interpersonal*	*Naturalist*	*Existentialist*
Accelerated Reader	✓	✓							
Kid Pix	✓		✓	✓	✓	✓			✓
TimeLiner		✓	✓		✓			✓	
Oregon Trail		✓	✓	✓	✓	✓	✓	✓	✓

Table 3. Sample List of Software Grouped by Intelligence

Intelligence	Applications	Information
Musical/Rhythmic	Cubase	www.steinberg.net/products/ps/cubase/mac/vst/
	Finale	www.codamusic.com/coda/
	Introduction to Patterns	http://sunburst-store.com/ (search by title)

Table 4. PEP Activities for Accelerated Reader

Pre-software	Experience	Post-software
Identify genre	Read books in the genre	Design original Accelerated Reader quizzes
Identify cumulative activity	Complete Accelerated Reader quizzes	Pass out Accelerated Reader points

plan a cumulative activity at the end of the month that will celebrate this genre. Perhaps the videotaping of booktalks or asking each student to dress as a character from a specific book in the genre would be appropriate. Students might even like designing their own Accelerated Reader quizzes for a book of their choice.

Experience. Have students select titles from the classroom collection of the genre and complete Accelerated Reader quizzes as they are done. Continue studying the genre in class.

Post-software. Complete the culminating task you and the class agreed upon at the beginning of the month. Pass out Accelerated Reader certificates indicating the points each student earned during the process. Review the genre and offer an extension activity in which groups of students work on writing their own stories in the format of the genre.

Table 4 shows how a decidedly verbal and logical software application became easily adaptable for a variety of intelligences simply because the teacher made the decision to plan using PEP.

The unit plan included in the supplements online at www.iste.org/LL/ provides an example of software use in the classroom. Susan Mannas of St. Theresa School in Austin, Texas, uses applications within the context of a larger unit to provide for rich, meaningful learning for her fifth graders

across the range of intelligences that naturally function in the classroom.

It is the context in which you use software that determines its effectiveness. Integrating a software application into instruction can be so seamless a part of the process that students naturally make use of it in learning and demonstrating understanding. By considering the orientation to learning that a software application supports, educators can more effectively evaluate and select software titles that will optimally, effectively promote learning. Use the rubric in the online supplements to evaluate software.

Resources

Gardner, H. (1991). *Multiple intelligences: Theory into practice.* New York: Basic Books.
Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach.* New York: Basic Books.
Gardner, H. (1999). *The disciplined mind.* New York: Simon & Schuster.
Gardner, H. (1999). *Intelligence reframed.* New York: Basic Books.
McKenzie, W. (2002). *Multiple intelligences and instructional technology—A manual for every mind.* Eugene, OR: ISTE.
NETS Project. (2000). *National Educational Technology Standards for Students—Connecting curriculum and technology.* Eugene, OR: ISTE.
Vaille, J. A. (Ed.) (1998). *Guidelines for the evaluation of instructional technology resources.* Eugene, OR: ISTE.

References

Bloom B. S., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals, by a committee of college and*

university examiners. Handbook I: Cognitive domain. New York: Longmans, Green.
Gardner, H. (1983). *Frames of mind.* New York: Basic Books.

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Use your multiple intelligences to respond to this article by taking the *L&L* reader survey. You may even win a fabulous prize! See p. 5 for details.

Evaluation Criteria

In examining software, consider these probing questions to help you identify strengths and weaknesses. They are broken down into four categories: Content, Interface, Design, and Documentation. In each case, you are invited to evaluate software by a number of criteria, including the ways in which it may accommodate multiple intelligences.

Content

- Do the objectives stated in the software go beyond the lower-level thinking skills? In other words, is it just skill, drill, and recall, or are students challenged to use the material in new and different ways to practice mastery?
- Does the content addressed in the software lend itself to uses across the curriculum? For example, does a mathematics application solely address an isolated math skill or does it have applications in other areas of your curriculum?
- Does this content tend to lend itself to the perspective of several different intelligences? Is it strictly a linear, logical application, or can visual and existential learners appreciate its content too?
- Is the content adaptive to different intelligences, even those not addressed in the software itself? What are the possibilities for extending the content and skills in the application into other classroom activities?
- Do explanations, definitions, and directions accommodate different intelligences? Is there more than one way to learn in the application, or will it be optimal only for verbal or logical learners?

Interface

- Does the software intuitively adapt to different intelligence strengths? Can the application make adjustments based on the kinds of input it receives from students, or does it simply track ability level?
- Are there visual, auditory, and kinesthetic components to the software? Will students be able to navigate with ease through a variety of different kinds of prompts, or do they tend to be strictly visual? Are there alternative ways to interact with the software aside from the mouse and keyboard?
- Do the support and help functions accommodate students of different intelligences? When students look for assistance within the application itself, is it always verbal or logical or are there examples for kinesthetic and naturalist learners, too? Are there opportunities for the naturalist intelligence to be stimulated through strong organization of support materials and the kinesthetic intelligence to be accommodated through direct manipulation of the help interface?
- Do the metaphors used to explain software functions address varied intelligences? Are there only icons and buttons, or are there familiar contexts such as storybooks, playgrounds, neighborhoods, and families?
- Is navigation throughout the software global and open-ended rather than linear and skill based? Do students have lots of choices, and can they make them in any order they choose without hindrance?

Design

- Is the software interactive and responsive to student input? Do intelligences become activated through student input and responses? Does the application make ability-level adjustments based on student progress on previous tasks? Are student preferences taken into consideration as the application tracks them?
- Does it provide for a variety of intelligences? Are there multiple ways to successfully accomplish tasks in the application, or must everyone use the same strategies and orientation?
- Is there evidence of scaffolding to support the learner as they strengthen less developed intelligences? Does the application provide support for students who may not feel as confident or comfortable completing certain kinds of tasks because of their personal distribution of intelligences?
- Are there ways to extend the learning experience from the software into the classroom? Can you adapt the application's instructional strategies into classroom lessons that will reinforce what students are practicing?
- If assessment takes place, does it match the intelligences used in instruction? If there is testing and/or record keeping of skill mastery, does it provide assessment tasks that use the same intelligences targeted in the instructional tasks provided by the application?

Documentation
- Do the manual and teacher support materials address different intelligences? Is there explicit treatment of different student orientations to learning in the support materials that come with the application?
- Do the manual and teacher support materials acknowledge higher-order thinking skills? Are there synthesis and evaluation tasks included at the higher end of the applications learning activities?
- Are there extension activities included that can help address additional intelligences beyond the limitations of the software? Does the documentation include lesson plans and/or activity sheets that can help you transfer digital experiences into classroom activities?
- Are there recommended resources you can use to further enrich and extend use of the software across the intelligences? These can include online activities, print materials, and even additional software titles.
- Are there suggestions for alternative assessment tasks? If the application tends to provide verbal and logical assessment tasks, does the documentation also suggest other ways to assess student learning?

Of course, many software companies are not yet addressing the distribution of intelligences across a student population, so you probably will not see specific references to intelligences in software documentation, per se. But with your own multiple intelligence awareness, you can identify the elements of well-designed software that accommodate multiple intelligences no matter how the publisher packages them.

Software Recommendations by Intelligence

Thanks to the members of the following lists and groups who submitted titles for consideration for inclusion in this listing:

- California Educational Computing Consortium: http://www2.sanjuan.edu/preview.guide/cecc.html
- Connected Teacher mailing list: http://connectedteacher.classroom.com/listserv/subscribe.asp
- Early Childhood Educator's list: http://www.ume.maine.edu/ECEOL-L/listserv.html
- Lesley University: http://www.lesley.edu
- National Association for the Education of Young Children's list (for members only): http://www.naeyc.org/affiliates/interest-forums.asp
- The Snorkel Tech Coordinators List: http://www.thesnorkel.org/people.htm

Intelligence	Applications	Information
Bodily/Kinesthetic	CyberStretch	http://www.cyberstretch.com/
	IntelliTools (various products)	http://www.intellitools.com/
	Lego Dacta robotics products	http://www.pitsco-legodacta.com/
	Mavis Beacon Teaches Typing	http://www.broderbund.com
	Probeware Activity Kits	http://www.teamlabs.com/
Existentialist	Geodesy	http://www.bgrg.com/geodesy/
	Neighborhood Map Machine	http://www.tomsnyder.com/classroom/mapmachine/
	SimCity	http://simcity3000unlimited.ea.com/us/guide/
	Trudy's Time and Place House	http://www.riverdeep.net/products/edmark_house_series/ trudys_time_place.jhtml
	With Open Eyes	http://www.artic.edu/aic/books/subwith.html
	CUseeMe	http://www.cuseeme.com
Interpersonal	Dreamweaver	http://www.macromedia.com/software/dreamweaver/
	ICQ	http://web.icq.com/
	Instant Messenger	http://aim.aol.com/
	Minnesota Multiphasic Personality Inventory	http://www.psychscreen.com/p310.htm
	Net Meeting	http://www.microsoft.com/windows/netmeeting/
	Choices, Choices series	http://www.tomsnyder.com/products/ productdetail.asp?PS=CHOCHO
Intrapersonal	Decisions, Decisions series	http://www.tomsnyder.com/products/productdetail.asp?PS=DECDEC
	Feelings	http://www.cdgarden.com/main/software/mw/feelings.htm
	Forrest Center Stage	http://www.orcca.com/MMProd.htm#Forrest
	Perseus Talking Walls	http://www.perseus.com/
	Geometer's Sketchpad	http://www.keypress.com/sketchpad/
Logical/Mathematical	Graph Club	http://www.tomsnyder.com/products/productdetail.asp?PS=GRPGRT
	Microsoft Excel	http://www.microsoft.com/office/excel/default.htm
	MicroWorlds	http://www.kidsandcomputers.com/
	Millie's Math House	http://www.riverdeep.net/products/edmark_house_series/ millies_math_house.jhtml

Pre-Algebra World, Algebra World,
and Geometry World .... http://www.cogtech.com/
Prime Time Math http://www.sheppardsoftware.com/pmath1.htm
StageCast Creator .... http://www.stagecast.com
Tabletop and Tabletop Jr. .... http://sunburst-store.com/ (search by title)
Math & Music .... http://www.wildridge.com/
Cubase .... http://www.steinberg.net/products/ps/cubase/mac/vst/

Musical/Rhythmic
Finale .... http://www.codamusic.com/coda/
Introduction to Patterns .... http://sunburst-store.com/ (search by title)
Music Ace .... http://www.harmonicvision.com/products.htm
Sibelius .... http://www.sibelius.com/
Thinkin' Things .... http://www.edmark.com/prod/tt/
Amazing Animals .... http://www.kidsource.com/software/amazing.animals.html

Naturalist
Chime Pro and ChemScape .... http://www.mdli.com/cgi/
                                                                                          dynamicproduct.html?uid=$uid&key=$key&id=6
Field Trip to the Rainforest Deluxe .... http://sunburst-store.com/ (search by title)
FileMaker Pro .... http://www.filemaker.com/
IHMC Concept Map Software .... http://cmap.coginst.uwf.edu/
Inspiration/Kidspiration .... http://www.inspiration.com/
Sammy's Science House .... http://www.riverdeep.net/products/edmark_house_series/
                                                                                          sammys_science_house.jhtml
Stella .... http://www.hps-inc.com/Education/new_Stella.htm
TimeLiner .... http://www.tomsnyder.com/classroom/timelineronline/
AppleWorks .... http://www.apple.com/appleworks/

Verbal/Linguistic
Bailey's Book House .... http://www.riverdeep.net/products/edmark_house_series/
                                                                                          baileys_book_house.jhtml
Clicker4 .... http://www.cricksoftware.com/clicker4/c4write.htm
Co:Writer http://www.donjohnston.com/catalog/cow4000s.htm
Write:Out Loud .... http://www.donjohnston.com/catalog/wols.htm
Microsoft Publisher .... http://www.microsoft.com/office/publisher/
Dragon Naturally Speaking .... http://www.scansoft.com/naturallyspeaking/
Microsoft Word .... http://www.microsoft.com/office/word/
Flash .... http://www.macromedia.com/software/flash/

Visual/Spatial
Golly Gee Blocks .... http://www.gollygee.com/
GraphMaster .... http://www.tomsnyder.com/products/productdetail.asp?PS=GRAMAS
Green Globs and Graphing Equations .... http://sunburst-store.com/ (search by title)
HyperStudio .... http://www.hyperstudio.com/
iMovie .... http://www.apple.com/imovie/
KidPix .... http://www.kidpix.com/
Microsoft PowerPoint .... http://www.microsoft.com/office/powerpoint/
NIH Image .... http://rsb.info.nih.gov/nih-image/index.html
Onadime .... http://www.onadime.com/
Adobe Photoshop .... http://www.adobe.com/products/photoshop/
Tessellation Exploration .... http://www.tomsnyder.com/products/productdetail.asp?ps=TESEXP

Unit Plan

Created by Susan Mannas, St. Theresa School, Austin, Texas.

Lesson Title: Multimedia Presentation on Animal Dissection

Teacher: Susan Mannas

Subject(s): Science

Date: September–October

Time: 14 45-minute periods

Objective(s): Each fifth-grade student will create and share a multimedia presentation comparing and contrasting the four animals they dissected in science class.

Intelligences: Verbal, Musical, Logical, Naturalist, Interpersonal, Visual, Intrapersonal

Hardware/Software: Computer, scanner, CD burner, HyperStudio, Internet Explorer, Word, Inspiration

NETS•S 5 Students use technology tools to process data and report results.

Materials: Science binder with dissection information, Internet resources sheet, grading rubric

Intelligences: Verbal, Visual, Logical, Musical, Naturalist, Intrapersonal

Procedures

Pre-lesson: Students spent several months participating in dissections of four different animals: worm, grasshopper, starfish, and squid. They took many notes as they learned about these animals. A colleague and I created a rubric that cited the information to be included in the presentation. Students spent time learning how HyperStudio works prior to this assignment, as well.

Lessons

Lesson	Intelligences
Day 1: Go over rubric.	*Intelligences:* Visual, Logical, Verbal, Naturalist
Days 2–4: Build skeleton pages, work on organization of stack and navigational buttons	*Intelligences:* Visual, Logical, Verbal, Naturalist
Days 2–10: Students build their stacks including the topics from the rubric.	*Intelligences:* Verbal, Musical, Logical, Naturalist, Interpersonal, Visual, Intrapersonal
Day 4: Introduce Web sites to collect graphics from. Teach how to ask Webmaster for permission to use the graphics, cite their references under the image they used, and to include it on their "credits" page.	*Intelligences:* Visual, Verbal, Logical
Day 5: Scan in "squid ink" pictures (When the students dissected the squid, some of the squid still had ink in them. The students were allowed to create pictures with this ink. We then scanned them and placed them in a shared folder so they could include these pictures in their projects.)	*Intelligences:* Visual, Naturalist
Day 11: Students are reminded to check their stacks to make sure they have included the areas on the rubric and to check their navigation. At this point, they are allowed to add sound to their stacks. (I have learned from experience that if students are allowed to add sound as they go, some students won't get the "meat" of their project done. They will spend the whole time focusing on sound.)	*Intelligences:* Musical
Day 12: Finishing touches.	*Intelligences:* Intrapersonal
Days 13–14: Presentations (The two presentation days will be scheduled with the classes involved and parents will also be invited to view their child's work. A class CD will be burned with the presentations and used in the library as a reference source.	*Intelligences:* Interpersonal, Visual
Assessment: Grading rubric.	*Intelligences:* Spatial, Logical, Verbal, Visual, Naturalist

Multiple Intelligence Software Evaluation Rubric

	1 *Not Evident*	2 *Attempted But Not Successful*	3 *Present But Needs Improvement*	4 *Present and Effective*	5 *Beyond Needs of Most Users*
Design The learner is able to move through the application without repetition or confusion.					
The software is highly interactive. The application accommodates learners based on a variety of abilities and intelligences.					
Activities within the program reach the higher levels of Bloom's taxonomy.					
The software is designed to motivate learners through high-interest topics and levels of success.					
Learner responses elicit appropriate feedback.					
The software provides for guided discovery through scaffolding.					
All forms of assessment closely correspond to the learning objectives and intelligences identified by the application.					
Total:					
Content Instructional objective(s) are clearly stated. Content clearly maps to varied intelligences.					
Target audience is identified.					
Prerequisite skills are stated explicitly.					
Content and vocabulary are appropriate for the identified audience.					
Activities allow for higher-order thinking skills.					
Content is accurate.					
Sequencing and navigation of content is logical.					
Instructions are clear.					
The software accommodates three or more intelligences through various activities.					
Text, images, animations, sound, video, and other multimedia elements enhance the content.					
Hypertext links are appropriate.					
Total:					

	1 *Not Evident*	2 *Attempted But Not Successful*	3 *Present But Needs Improvement*	4 *Present and Effective*	5 *Beyond Needs of Most Users*
Interface Simple metaphors are used to successfully explain complex software functionality.					
Screen display designs are easy to read.					
Screen elements enhance, not detract from the content.					
The application is consistent in how its tasks are executed.					
The display is clean, simple, and attractive.					
Learners have control over the pace and navigation.					
Controls for manipulating the application are visible and easy to use.					
Shortcuts in the application are provided and can be mastered by advanced users.					
Help menus are visible and easy to use.					
Total:					
Documentation The manual is laid out in a logical manner.					
The manual consists of sections or chapters with a table of contents and page numbers.					
Narrative text is written in non-technical, easy-to-understand terms.					
Documentation includes graphics and diagrams that demonstrate directions and clarify the accompanying text.					
All images are clean, clear, and colorful.					
The manual has a complete index with cross-referencing of all major topics.					
A separate reference sheet of frequently asked questions is available.					
The documentation offers ideas for integrating the software into the curriculum.					
Customer support phone numbers, e-mail addresses, and Web site addresses are provided.					
Help functions are visible and easy to use.					
Total:					
Grand Total:					

Once you have finished scoring, you can compare products to see which scored higher overall or on the specific dimensions most important to you.