Move Aside Scotty, Jing is the Thing: Individualized Student-Created Tutorial Collections, Performance Assessment, and Easy Instructor Feedback

Stephanie Wiegand

"If a picture is worth a thousand words, then a movie is worth a million."

-- Internet adage

The pace of human progress hit fast-forward with the development of written language, Gutenberg's printing press, and a population able to both read and write. Human progress shot ahead again with the advent of the Internet, a population with access to freeware, and technology that records motion and sound. Individuals are now able to record and share knowledge worldwide in moments. The audience is ever growing: Internet access increased over 400% in the last ten years (Miniwatts Marketing Group, 2011).

A screencast, also known as a video screen capture, is a recording of both action on a computer screen and the voice of a narrator. While Jing, a product of TechSmith, is a popular screencast tool, it is not the only one (see Appendix A). Screencast programs are available in both shareware and freeware. In general, screencast shareware and freeware programs are fairly straightforward and intuitive. A screencast-software user can learn and use the product in a matter of minutes. With a few additional minutes the user can upload the screencast to the Internet.

While the online-video tutorial is a mainstream medium for teaching library skills and concepts, utilizing online videos for assessment purposes is uncommon. With a literal capture of student work, instructors can conduct true

performance-based assessment. When students create videos as assignments in library courses, they end the semester with a collection of self-created tutorials of research mechanics and concepts. Employing online videos to communicate feedback to an entire class or to a single student is easy, efficient, and effective. Quick online videos are also a powerful means of one-on-one instruction and continued communication with one-shot class sessions. There are practical considerations to using screencasts in library courses, but the list is short.

At the University of Northern Colorado's University Libraries (UL) multiple sections of *LIB 150: Introduction to Undergraduate Research* are taught each semester by library faculty. Sections are either fully online or face-to-face with an online component. Blackboard is the course management system used by the campus. While most LIB 150 instructors at UL create video tutorials with both commercial and freeware screencast software, in 2010 I began using student-created screencasts for performance-based assessments.

Performance-Based Assessment

Instructors set goals (objectives) for students to reach. Through assessment, instructors judge if individual students meet these goals. A long-standing argument of educators concerns whether or not comprehension can be adequately gauged using indicator assessments rather than performance-based assessments. In a test employing indicators, a student is simply asked to give answers to questions. A correct answer indicates student comprehension. An incorrect answer indicates lack of comprehension. Through performance-based assessments student achievement is based not only on correct or incorrect answers, but on the process—in thinking or in action—the student experiences to arrive at the answer. Performance-based assessment is also known as 'authentic' assessment (Wiggins,

Wiegand (Health Sciences Librarian)
University of Northern Colorado [Greeley, CO]

1989). In the last thirty years, the need for performance-based assessment was demonstrated by many educational researchers (Travis, 1996; Berlak, Newmann, Adams, Archbald, Burgess, Raven, & Romberg, 1992; Wolf, Bixby, Glenn, & Gardner, 1991; Wiggins, 1989; Lynn, Baker, & Dunbar, 1991). Further, multimedia learning situations are conducive to authentic assessment (Herrington & Herrington, 1998). The advantage of assessment by indicators is, of course, efficiency. Today, indicator assessments are generally graded by computers. Learner evaluations derived from a mixture of indicator- and performance-based assessments enables instructors to authentically assess students *and* work efficiently.

Skill demonstration is the most obvious type of screencast assignment; however, student introductions, concept presentations, and final projects (such as modified Ignite® presentations (http://igniteshow.com/) with bibliography) all work equally well. Students enjoy expressing their creativity through video assignments involving concept comprehension. Assignment instructions must be clear and concise—a checklist of included features is most effective. Instructors can determine how students are likely to stumble in a specific search skill by asking for unscripted/non-practiced screencasts. Or instructors can most efficiently grade screencasts by asking students to practice the assignment before recording. Grading of performance-based assessments is more time intensive, which is why I suggest a mix of indicator and authentic evaluations. For a class of twenty, viewing three- to five-minute videos while comparing to a rubric will take between one to two hours.

Practical note: Since employing student-created screencasts for assessment, my class sizes numbered 35 or less. I do not necessarily recommend assigning screencasts to larger classes, as the time consumed grading bordered on prohibitive with 35 students. Modification is, of course, always possible. Assigning students creation of two videos during a semester with a larger class, then staggering due dates, is one possibility.

Individualized Student-Created Tutorial Collections

There is an oft-quoted adage that states, "People remember 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they hear *and* see, 70% of what they say *or* write, and 90% of what they say as they experience." This information is attributed to multiple scholars and is suspected as fraudulent (Thalhemier, 2006). Yet we generally accept that students do not retain all knowledge read, heard, seen, said, written or experienced. Even though librarians offer assistance and instruction in research to all students, including students who complete library courses, no librarian is available to every student at every moment. One answer to this conundrum is the online-video collections proffered by many academic libraries. Research demonstrates that streaming video, specifically compared to static websites, is a more effective teaching tool—if the videos are constructed well (Tempelman-Kluit, 2006).

There are, of course, potential pitfalls with any lecture or instruction modality. As instructors, we may move too quickly through material, use jargon not understood by students, or speak excessively on a point needing little clarification. If tutorials are ill-constructed, incomprehensible, or overly long, students will not use them. It is logical that students will create tutorials that they will understand, while minimizing length, using the least possible clicks and keystrokes. Thus, it is sensible that individual students create tutorials for themselves. When class assignments incorporate creation of screencast tutorials, students depart the course with a collection of videos to revisit when conducting future research. Further, peer teaching not only improves content retention, but is enjoyed by college students (Goldschmid & Goldschmid, 1976).

There are three designs for curriculum resulting in student-created tutorial collections. First, instructors design assignments in which each individual student creates a screencast demonstrating the same skill or concept comprehension. For example, each student creates a screencast exhibiting author, title, and subject heading searches in the library catalog. Individual students end the semester with collections of self-authored screencasts. In the second curriculum design, students (or sets of students) demonstrate different skills or concept comprehension, and the screencasts are shared with the entire class. For example, all students must create a search screencast for a research article from a peer-reviewed journal that is full text through the library on a topic of their choice; however, students are assigned one of six databases: Academic Search Premier, ProQuest Research Library, JSTOR, ScienceDirect, PsycINFO, or Sociological Abstracts. In a class of 18, each student will end the course with three examples of how to search each of these databases. Instructors exert much more control in the first model, whereas students exercise greater choice and creativity in the second. The third possible design is a mixed model. For example, early in the course, while students learn the screencast software, each creates a video presenting the same material; later students are allowed more freedom in choice of concept or skill to demonstrate.

A hazard of sharing student-created videos with classmates emerges when faulty or misleading videos are submitted for grading. Screencasts authored by students need not be perfect, but must be comprehensible and demonstrate the assigned skill or concept. One method for dealing with problem videos is requiring both draft and final versions.

Practical note: It is common for library websites and database interfaces to change. Student-created videos that provide a "how-to" of a database or tool will still be instructional even after a visual transformation transpires. I do, however, offer students this advice before completing the course:

> The library website, the catalog, and library databases are constantly changed and updated. If you use a library database in the future and it operates differently from what you experienced this semester, please contact the library. We are always happy to help you with any of your research needs. This is true even after you graduate.

EFFICIENT FEEDBACK

Assessment is necessary to assist student improvement and provide grades. Most students look at an assignment grade before viewing instructor feedback. Students receiving high marks are excited to peruse instructor comments; but students receiving low marks are likely to dread or delay reviewing instructor reaction beyond the grade (Lipnevich & Smith, 2009). Such findings suggest that feedback for an assignment be given *before* a grade. Separating feedback and grades can be accomplished through specific assignments being 'grade-less' or through a draft/final scenario.

A partial solution is instructor-feedback screencasts sent to students before grades are posted, especially when feedback or grades are expected to be viewed negatively. Multiple students displaying the same misunderstanding of material or mistakes prompt a screencast addressing the issue, which is delivered to the entire class. Conversely, students presenting significant confusion or errors concerning differing skills or concepts merit responses to each individual. Feedback of this sort is easily communicated in screencasts. With the instructor's voice and a visual correction, students are provided personalized feedback that emulates face-to-face delivery.

Practical note: In some instances, separating commentary from a letter or number grade is unnecessary or inefficient; though there are times it proves potent and productive. Recently, while grading, I encountered an assignment for which more than 80% of the class read neither the lecture nor instructions. These students therefore failed to complete the homework correctly. I created a screencast to summarize the material, to ensure that students at least grasped the basics, while explaining why so many students received zeros. Additionally, I revisited the directions and explained how easily they could avoid such mistakes in the future. This saved considerable time from writing comments to each individual student.

POWERFUL ONE-SHOT FACILITATION AND ONE-ON-ONE INSTRUCTION

All librarians who teach are presented with unique challenges in one-shot class sessions. Instructors' dual reactions to one-shots include the alarm of struggling to teach research acumen in one class session and the pleasure of connecting with students who need library help. Although many librarians furnish one-shot attendees with library and librarian contact information, the responsibility of further contact is primarily upon students. Many students are either averse to asking questions about material already covered (*i.e.*, they believe they should know) or procrastinate until too late to request additional help. Moreover, when faced with course instructors' wants and students' queries, time is consumed quickly in the one-shot session and librarians are not always able to sufficiently prepare attendees for research.

Time is also an obstacle in one-on-one instruction, especially with distance students. Answering questions by phone, email, and instant message are all possibilities, but present problems and can be incredibly time consuming. When librarians cannot view what students see on their computer screens, diagnosing or treating issues by phone is formidable. Emails describing step-by-step processes for a visual medium (the Internet) are lengthy and often confusing to students. Instant-message conversations yield these complications as well.

Screencasts can provide both extensions to one-shot classes and visual answers to individual questions. In a few minutes librarians can record a database search using Boolean operators and truncation symbols, video reminders of full-text retrieval processes while providing narration, or help students discriminate between research and non-research articles by visually pointing to methodology and design headings. These web-based videos can be shared via email or course management system. Librarian-created quick screencasts give one-on-one instruction sessions at a distance that address specific needs and allow replay after replay.

Practical note: In all screencasts addressed to individual students or as follow-ups to one-shots, I include a screenshot of my name and contact information that I also read aloud. This ensures students know how to reach me for further questions or help. Anecdotally, I receive many emails of appreciation from students receiving screencasts that are specific to the question they asked. Many times, students receiving a screencast in answer to a question will distribute the video to classmates.

PRACTICAL CONSIDERATIONS FOR STUDENT-SCREENCAST ASSIGNMENTS

Before including student-screencast assignments in a course, there are practical considerations. For instance, if students are only guaranteed access to Apple computers (Macs), screencast software is limited. Beyond operating systems, estimate time students need to complete assignments in a screencast and determine any customization tools needed. Many students may own computers, but not all will choose to download freeware or shareware. Any screencast software that requires downloading onto institutional computers will probably require the cooperation of the information technology (IT) department. IT personnel will also need to update the software as newer versions become available. Instructors should encounter few constraints in adopting and incorporating screencast assignments into library courses. The technology is free and typically the essential equipment is already in place. Jing is the screencast program I ask students to use because it operates on both Windows and Mac operating systems. Most students own computers and, so far, chose to download the program to their personal equipment rather than using university machines to create video assignments.

Equipment:	Computers with Internet connection, headset plug-in, screencast software, software able to display the file output
	Multiple headsets with microphone available for checkout
	Access to a hosting site or institutional server space allowing student access
	Computers with booking or reservation requirements ensure access to screencast software
Space:	Computers located in quiet areas or study rooms are best for audio recording

CONCLUSIONS

Screencasts are not a panacea for obstacles to instruction, assessment, or communication with students. The software does provide instructors with another tool for education. While screencasting is a powerful instrument for instructors to communicate with students, students can also communicate with instructors this way. By no means should instructors adopt screencasts as the sole means of student evaluation, but student-created videos allow for performance-based assessment. The software will engage students in a novel medium for homework, encourage student creativity, and provide learners with reminders of research skills and concepts they can access in future research. This method also provides an efficient means of feedback and a delivery-method for one-on-one instruction and follow-ups to one-shot sessions.

REFERENCES

Berlak, H., Newmann, F. M., Adams, E., Archbald, D. A., Burgess, T., Raven, J., & Romberg, T. A. (1992). *Toward a new science of educational testing and assessment*. Albany, NY: State University of New York Press.

Goldschmid, B. & Goldschmid, M. L. (1976). Peer teaching in higher education: A review. *Higher Education, 5*(1), 9-33. Retrieved from http://www.springer.com/

Herrington, J. & Herrington, A. (1998). Authentic assessment and multimedia: How university students respond to a model of authentic assessment. *Higher Education Research & Development, 17*(3), 305-322. doi: 10.1080/0729436980170304

Lipnevich, A. & Smith, J. (2009). "I really need feedback to learn:" Students' perspectives on the effectiveness of the differential feedback messages. *Educational Assessment, Evaluation & Accountability, 21*(4), 347-367. Retrieved from http://www.springer.com/

Lynn, R. L., Baker, E. L., & Dunbar, S. B. (1991). Complex, performance-based assessment: Expectations and validation criteria. *Educational Researcher, 20*(8), 15-21. doi: 10.3102/0013189X020008015

Miniwatts Marketing Group. (2011). World Internet users and population stats. Retrieved from http://www.internetworldstats.com/stats.htm

Tempelman-Kluit, N. (2006). Multimedia learning theories and online instruction. *College & Research Libraries, 67*(4), 364-369. Retrieved from http://crl.acrl.org/

Thalhemier, W. (2006, May 1). People remember 10%, 20%... Oh really? In *Will at Work Learning* [Blog]. Retrieved from http://www.willatworklearning.com/2006/05/people_remember.html

Travis, J. E. (1996). Meaningful assessment. *The Clearing House, 69*(5), 308-312. Retrieved from http://www.tandf.co.uk/journals/titles/00098655.asp

Wiggins, G. (1989). A true test: Toward more authentic and equitable assessment. *The Phi Delta Kappan, 70*(9), 703-713. Retrieved from http://jstor.org/

Wolf, D., Bixby, J., Glenn, J., & Gardner, H. (1991). To use their minds well: Investigating new forms of student assessment. In G. Grant (Ed.) *Review of Research in Education* (no. 17). Itasca, IL: Peacock. Retrieved from http://jstor.org/

APPENDIX A: SELECT LIST OF SCREENCAST PROGRAMS

Please note that the following is not an exhaustive list of freeware, shareware, or open source screencast programs. Only programs that allow audio recording are included. Benefits and drawbacks listed are in comparison to other free programs, not commercial screencast programs. This list results from trial and error and research. All links and information last retrieved on April 18th, 2011.

Product	Audio	Output	Benefits	Drawbacks
CaptureFOX from Firefox http://www.capturefox.com/	Yes	.AVI	Firefox add-on, no additional downloads	Not paired with a hosting service OS: Only Windows
CamStudio (Open Source) http://camstudio.org/	Yes	.SWF .AVI	Picture-in-picture from webcam More customization tools	Not paired with a hosting service Video files are large OS: Only Windows
Jing from TechSmith www.techsmith.com/jing/	Yes	.SWF	Paired with free hosting service Easy to use OS: Windows and Macs	Advertising banner Limited to 5 minute videos
Krut http://krut.sourceforge.net/	Yes	.MOV	Some beyond-basics features Can record audio-only files (.WAV)	Not paired with a hosting service OS: Only Windows or Linux
Screencast-O-Matic http://www.screencast-o-matic.com/	Yes	.MP4 .AVI .FLV	Paired with a free hosting service Web-based, so no download necessary OS: All	Videos are lower quality Limited to 15 minute videos
Screentoaster http://www.screentoaster.com/	Yes	.MOV .SWF	Paired with free hosting service Web-based, so no download necessary OS: All	Advertising banner Video length is determined by file size (no larger than 20 MB)
TipCam http://www.utipu.com/	Yes	.FLV	Records remote screens via VNC server	Advertising watermark OS: Only Windows Limited to 20 minute videos
UltraVNC Screen Recorder http://www.uvnc.com/screenrecorder/	Yes	.AVI	Built off of CamStudio open source software, but retooled to work faster Records remote screens via VNC server	Not paired with a hosting service OS: Only Windows
Wink http://www.debugmode.com/wink/	Yes	.SWF .EXE	Customization tools	Not paired with a hosting service OS: Only Windows or Linux