



## Technology for Flipping the Classroom

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### Overview and Definition

Flipped classrooms – also referred to as inverted classrooms or flipped learning – are the strategic reversal of the traditional classroom: initial student exposure or exploration of learning content happens outside of the classroom in order to allow for clarification and active engagement of learning content inside of the classroom. Technology used to achieve a flipped classroom may include newly developed technologies or older technologies repurposed for the task. Regardless of the technology's age, the collection of tools available for flipping the classroom continues to expand, and it is the technologies behind the flipped classroom that are the focus of this guide.

### Basis for Current Interest

As awareness of the flipped learning model grows, so does the number of educators interested in its application. Teachers, professors, librarians, and other educators create, experiment with, and add to an ever-growing collection of tools that support the flipped classroom approach. Recent publications by ACRL (Benjes-Small and Tucker 2013) provide an excellent [overview to flipped classrooms](#), and this guide complements the existing literature by focusing on a discussion of the technologies used to support the flipped learning method.

### Current Applications in Academic Libraries and Higher Education

Current applications of the flipped model have a natural place in higher education, where students are often expected to assume more responsibility for their own learning than in traditional K-12

settings. Early pioneers of the flipped classroom approach focused on recording lecture material, primarily using [Microsoft PowerPoint](#), for viewing outside of the classroom, both in the K-12 (Bergmann and Sams 2012) and higher education arena (Lage, Platt and Treglia 2000). This setup encourages students to view or listen to the lecture before class and then participate in class activities intended to help them more fully grasp the learning material.

Existing technologies that educators use to support this lecture approach include user-created collections such as the broad, peer-reviewed [MERLOT](#) collection to the math and science-focused [Khan Academy](#). Educators can take multiple approaches to flipping their classroom: using campus hardware/media labs to record videos of traditional lectures that can be shared electronically; adding voice-overs to traditional presentation material through tools such as [Present.Me](#) or [Movenote](#); using [screencast](#) technologies to help students walk through a particular process or [screenshot](#) options such as [thinglink](#) to allow self-directed image exploration; or creating interactive/applied learning tools for students using licensed software or other freely available tools.

In academic libraries, the idea of a flipped model is also growing in popularity. Librarians are often limited to one-shot instruction sessions to introduce students to academic-level research skills, so the opportunity to get students to start learning the basics of research skills before the session is an option with broad appeal. The flipped classroom approach in academic libraries allows students extra time to practice and process rudimentary research skills before the live library workshop, which can be used to clarify or build on those basic skills.

### Applications in Academic Library Instruction

Academic librarians interested in using the flipped learning approach can benefit from existing

collections of user-created content that target research skills. [ANTS](#) is an international and collaborative project aimed at sharing information literacy tutorials with library colleagues. [PRIMO](#) is a peer-reviewed collection of instructional materials created by librarians. [MERLOT](#) also has a collection of lecture and learning object tutorials that specifically target the library and information service profession.

Academic librarians have also adopted the various technologies that support the creation of their own content. Because much of the content involves demonstrating the process of locating and accessing electronic research materials, screencasting is a popular choice. From the simple and free screencast options such as [ScreenCast-O-Matic](#) or [Jing](#) to licensed purchases of [Camtasia](#) or the Windows [Snipping Tool](#)/Macintosh [Snapz Pro X](#), the ability to visually document research steps and share them electronically with students before they attend a library session is essential. The resulting screencasts can be uploaded to [YouTube](#), [Vimeo](#), or [Screencast.com](#) to serve as video tutorials that can be easily shared directly with students before their library session, emailed directly to students, or even posted in the online course environment before a research workshop.

Outside of screencast and screenshot technologies, the creation of instructional materials can take many forms. [GoAnimate](#) and [PowToon](#) enables librarians to generate cartoon scenarios that visually present issues relating to information literacy. Another popular approach is the purchase of tools such as [Adobe Captivate](#) or [SoftChalk](#) to create polished, interactive tutorials. The University of Arizona's open-source software [Guide on the Side](#) is another popular approach that combines research walkthroughs, interactive tutorials, and live research.

As Benjes-Small and Tucker (2013) point out, having faculty buy-in is crucial for the flipped model to work: students who attend library sessions without having completed the assigned tutorial/activity may be completely lost. Many college and university libraries are experimenting with the flipped model by targeting the faculty of first-year students. Working collaboratively, the professors have their students complete an online module or set of activities created by the librarian, often as a completion grade or for extra credit. This

opens up time during the classroom library session for hands-on research for the students with a librarian available for guidance or for the building of other higher level research skills.

Sam Houston State University's Newton Gresham Library uses this approach with first-year students completing a graded, [interactive online research module](#) that introduces basic information literacy topics such as selecting information resources, resource evaluation, and plagiarism. Students work through the module on their own and then print out or email a completion certificate identifying their scored performance on the module.

Sara Arnold-Garza (2014), from Towson University's Albert S. Cook Library, also [detailed the librarians' flipped classroom approach](#), sharing their pre-library assignment, in-class activities, and assessment plan (including participant questionnaires and group interview results).

## Potential Value

The flipped classroom approach in library instruction allows librarians to expand and deepen the learning potential for students who attend library sessions, particularly one-shot sessions. Students can have additional time to process new research skills, practice them, and even begin their research on target projects before they even attend the session. This approach also supports setting up the session as more of a guided research lab than a traditional lecture/demonstration, enabling active learning. For example, the flipped approach allows hands-on research activities during the classroom session, giving librarians the freedom to clarify research processes or broaden student research skill sets.

## Potential Hurdles

Potential hurdles of adopting the flipped classroom model include budget and time restrictions. While some technologies are free, many of them are not; they may require a sizeable upfront price for software or a moderate annual subscription cost. There may also be a significant time investment in creating tutorials. The learning curve for some technologies, particularly pricey software, can be significant, as can the time to ensure training of all

staff who are involved with the project. There may also be some accessibility barriers if the technology is limited to a single device or to a single login.

Another concern includes technology accessibility and compatibility. Ensuring that the flipped technology used is ADA compliant and widely accessible across an increasing collection of mobile devices may present educational, if frustrating, challenges.

Perhaps one of the chief concerns of using the flipped classroom approach in academic, one-shot library sessions is that in at least some cases, potentially many cases, students will not have completed the out-of-class assignment before attending the session. The librarian will then face the conundrum of whether to step back to ensure all students get those basic skills by leading a traditional session, push forward with the planned in-class activities, or achieve some combination of the two by grouping students together according to whether they completed the out-of-class activity (and if resources allow).

Awareness of these potential hurdles up front can better prepare academic librarians to examine the suitability of the flipped classroom approach for their environment. Resource restrictions can be minimized by selection of freely available technologies that support the flipped approach. TechRepublic provides online [ADA compliance checklists](#), and there are also tools that can assist with testing [content visibility on mobile devices](#) (Pring). Eastern Michigan University librarians (Marino and Memmott 2013) also provide an online research guide for [creating accessible resources](#) that spotlights widely available tools of which librarians may not be aware. The larger issue of whether students complete the out-of-class portion of the flipped approach can also be minimized by the collaborative efforts between the librarian and professor that have some type of grade tie-in.

## Conclusion

The flipped classroom approach is a growing trend in education, and it may prove particularly appealing in the academic library setting. Improving student research skills is a rewarding experience, but the opportunity to move beyond a basic introduction to library resources and to

deepen or expand students' research skills and knowledge of information literacy processes merits the attention and consideration of any librarian focused on instruction.

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## Further Readings

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