Title: A survey of online library tutorials: Guiding instructional video creation to use in flipped classrooms.

Authors: Alexandra Obradovich[a], Robin Canuel[b], & Eamon P. Duffy[b]

Affiliations:
[a]School of Information Studies, McGill University, 3661 rue Peel, Montreal, Quebec, H3A 1X1, Canada
[b]Humanities and Social Sciences Library, McGill University, 3459 rue McTavish, Montreal, Quebec, H3A 0C9, Canada

Abstract

There has been a steady increase in library literature on “flipping the classroom.” This teaching strategy requires students to review course material outside the classroom beforehand, thereby allowing more time during workshops to apply newly gained knowledge and techniques. The proliferation of literature on classroom flipping provoked an interest to determine if other academic libraries were making explicit reference on their websites to the preliminary viewing of videos in a classroom context. To ascertain the extent of this practice, and inform the development of instructional videos at McGill, the authors surveyed all Canadian Association of Research Libraries (CARL) and Association of Research Libraries (ARL) websites to document the production of instructional videos, determine the various types of videos, and take note of explicit pre-viewing instructions prior to a workshop. Of the 140 libraries examined, 107 (76%) provide instructional videos on their website. However, of this group, only 2 (2%) clearly instruct users to watch instructional videos before attending a library research workshop. A literature review documents this emerging trend and contextualizes the results.

Introduction and Purpose

MyArts Research is a set of two 90-minute workshops designed for undergraduates in McGill University’s Faculty of Arts. The objective is to teach students how to search for, access, evaluate and manage the sources required to complete their current assignments. The workshops cover formulating a research question and concept identification, searching specific resources like catalogs and databases,

learning search techniques and strategies (such as Boolean logic and truncation), understanding peer review and research dissemination, and using bibliographic citation software to manage search results and properly cite literature.

McGill librarians have conducted and developed these workshops over the course of five years. While student feedback has always been very positive, the instructors have long felt that increased time for additional active learning activities would increase the impact on their research skill development and overall academic literacy. The research has consistently shown that active learning techniques applied within information literacy workshops positively impact student engagement and learning outcomes (Detlor, Booker, Serenko, & Julien, 2012; Holderied, 2011; Shamchuk & Plouffe, 2013). Apart from active learning techniques, the instructors would also like to allot time for the introduction of core concepts embodied in the Association of College & Research Libraries' (ACRL) *Framework for Information Literacy for Higher Education* (ACRL, 2015b). The *Framework* outlines a set of competencies beyond the mechanics of searching, such as understanding authority in different contexts, the motivations behind information creation, and the unfolding of scholarly conversation (ACRL, 2015a). These important concepts, however, require sufficient time for explanation and discussion. Working them into an already busy lesson plan can be a difficult task.

Since students already spend three hours attending the *MyArts Research* workshops, increasing their duration to meet these objectives would likely have a negative effect on registration and attendance. New pedagogical methods, however, seek to address this obstacle. One such instructional innovation involves a technique

known as “flipping the classroom,” which has been discussed within many disciplines and has been given increased attention recently regarding its appropriateness for information literacy instruction (Gibes & James, 2015). Flipping the classroom is an instructional technique that optimizes the in-class interaction between students and the instructor (Becker, 2013). In a flipped or “inverted” classroom, the lecture material is viewed outside of class time through the use of interactive videos or tutorials, while homework or application of core concepts is completed during class time. The instructor acts as a facilitator, assisting students where needed and offering additional clarification as required. The objective of the flipped classroom is to have students apply core concepts to a variety of contexts and engage in active learning, in order to more effectively build concepts into their knowledge base.

Given the potential benefits of this structure, the *MyArts Research* organizers decided to explore the possibility of flipping the classroom through the use of instructional videos as a means of incorporating new content and teaching new competencies. In light of the recent interest of instruction librarians in classroom flipping, a study was undertaken to document and describe the extent to which academic research libraries were including instructional videos on their websites, and specifically instructing students to view these videos before attending a library instruction workshop. The authors also sought to identify the various types of instructional content most commonly found within the videos, the formats used, who produced the videos, and whether there was any accompanying textual material. The results of this study will guide our own video creation by identifying the material most suitably presented online ahead of time to facilitate a flipped classroom teaching model. Furthermore, a review of

the library literature on flipping the classroom was conducted to provide an overview of this emerging trend, and to place the results of the study in a broader context.

Literature Review

Though the concept of flipping the classroom has been given a somewhat limited treatment from the perspective of information literacy instruction, other literature exploring the topic has compared the technique to the traditional lecture, discussed its effectiveness in the context of various disciplines and courses, and evaluated the potential benefits of the flipped classroom on student learning outcomes. Many authors begin by providing a preliminary definition of the flipped classroom, indicating that the technique is driven by technological innovations and the ability to share content online (Albert & Beatty, 2014; Becker, 2013; Berrett, 2012; Garver & Roberts, 2013; Herreid & Schiller, 2013; Kim, Kim, Khera, & Getman, 2014; Rivera, 2015; Strayer, 2012; Youngkin, 2014).

The flipped classroom fundamentally shifts the way that the classroom is structured, from a frontal teaching model to a collaborative space where learning is created (Albert & Beatty, 2014; Vaughan, 2014). Many authors compare the flipped classroom model to the traditional classroom setting and examine the potential benefits of this pedagogical technique (Albert & Beatty, 2014; Berrett, 2012; Garver & Roberts, 2013; Mok, 2014; Rivera, 2015). Rivera (2015) describes the process of flipping a library competency course at Long Island University's Post Campus. The course, spanning seven weeks, had previously been structured as hour-long weekly lectures, with limited opportunities for students to actively engage with the content. To assess the

impact of the flipped model on the students' comprehension of concepts, the course was first taught as a traditional lecture in one academic year and then taught using the flipped model the following year. In both iterations of the course, a pre-test and a post-test method of assessment was used and the test results from both the traditional and flipped classrooms were compared. Results indicated that "nonflipped courses showed a moderate increase in scores while the increase in scores in [the] flipped section was more than double of that in the nonflipped sections" (Rivera, 2015, p. 38). Similarly, Albert and Beatty (2014) present the results of a study comparing the impact of a flipped classroom to that of a traditional lecture in an undergraduate management course. The authors found that students in the flipped classroom scored significantly higher than students in the traditional classroom.

In the flipped classroom, basic course content is communicated outside of class, which allows students to contextualize the material and apply the concepts to various settings (Gilboy, Heinerichs, & Pazzaglia, 2015; Lemmer, 2013; McLaughlin et al., 2014; Schlairet, Green, & Benton, 2014). In exploring the impact of the flipped classroom model on a graduate level legal research course, the model was found to be an effective tool in preparing law students for the complexities of legal research (Lemmer, 2013). Since the flipped classroom model liberated more class time to focus on the application of core concepts to a variety of situations, students were advantageously prepared for the dynamic, unpredictable nature of legal research in a real-world context. Similarly, Gilboy et al. (2015) and Schlairet et al. (2014) cite the usefulness of the flipped classroom in enabling students (specifically within nursing) to apply course content to various situations. These two articles underscore the flipped classroom

model as an effective method for assisting nursing students in applying their knowledge to complex, unpredictable environments as they embark on their professional careers. Consequently, students who are prepared to apply their knowledge and utilize their skills are better able to understand the possibilities of controlling their own learning and engender a sense of empowerment (Arnold-Garza, 2014a; Mok, 2014; Strayer, 2012).

In addition to allowing students to apply their knowledge within a variety of contexts, the flipped classroom model favors active over passive learning and is an effective method in motivating students to achieve higher-order thinking skills on Bloom's taxonomy of learning (Albert & Beatty, 2014; Arnold-Garza, Sara, 2014a; Becker, 2013; Enfield, 2013; Gilboy et al., 2015; Murray, Koziniec, & McGill, 2015; Sams & Bergmann, 2013; Schlairet et al., 2014; Rivera, 2015; Semple, 2013; Strayer, 2012). Instead of passively viewing a traditional lecture, students participate in learner-centred activities during class time (including group discussions, problem-based learning, case studies, or conceptual exercises) and are required to engage with the content (Gilboy et al., 2015). With basic course content shifted outside the classroom in the form of online videos, students can now focus on establishing the building blocks of knowledge using active learning strategies in the application, analysis, and synthesis of content, improving overall learning outcomes (Gilboy et al., 2015; Sams & Bergmann, 2013). The flipped classroom model, therefore, is a learner-centered pedagogical technique (rather than content- or instructor-centered), with the instructor acting as a guide to facilitate the students' understanding (Albert & Beatty, 2014).

Other benefits of the flipped classroom model include the ability to optimize the limited time instructors have with students (Arnold-Garza, 2014a; Berrett, 2012; Enfield

2013; Roehl, Reddy, & Shannon, 2013). Arnold-Garza (2014a) notes that the flipped classroom allows the instructor (once again, acting as a facilitator) to provide point-of-need assistance to students as they complete in-class exercises, aiding them where any problems arise. Enfield (2013) also asserts that providing students with feedback as they apply new skills is one of the foremost benefits of the flipped classroom model.

Another benefit of flipping the classroom is that the technique allows students to review instructional content at their own pace. They can choose to re-watch videos covering particularly complex topics or follow along with examples shown in the videos (Arnold-Garza, 2014a; Sams & Bergmann, 2012; Schlairet et al., 2014; Youngkin, 2014). Furthermore, the flipped classroom is practical since students who miss a lecture can review the content and stay up-to-date with the course (Albert & Beatty, 2014; Becker, 2013; Enfield, 2013). To address a variety of learning preferences, the in-class activities should also be sufficiently varied and might include lab work, in-class experimentation, or group and peer discussions (Arnold-Garza, 2014a). The flipped classroom is also particularly geared towards Millennial learning preferences (Herreid & Schiller, 2013; Roehl et al., 2013). Roehl et al. (2013) argue that Millennials, raised with readily available information technology and adapted to a 24/7 connection to information, have a preference for “environments that support multi-tasking” and group activities that allow them to engage with the social aspects of learning (p. 45).

Though its treatment has been limited, discussions of the flipped classroom in the specific context of information literacy instruction have also cited the more effective use of classroom time as one of the primary benefits of the model (Arnold-Garza, 2014a; Arnold-Garza, 2014b; Becker, 2013; Datig & Ruswick, 2013; Gibes & James,

2015; Rivera, 2015; Semple, 2013; Valenza, 2012; Youngkin, 2014). Furthermore, effective information literacy instruction equips students with the tools needed to cope with the complications of real-world library research (Arnold-Garza, 2014b). Although information literacy competencies are essential to a student's knowledge base, librarians providing such instruction are met with increased time constraints (Arnold-Garza, 2014a; Becker, 2013). They are often restricted to hour-long information literacy workshops that not only include essential library research concepts but also incorporate active learning strategies requiring students to apply these skills (Becker, 2013; Semple, 2013). The flipped classroom may be an effective answer to the time constraints librarians face in trying to cover basic course content and incorporate active learning strategies (Arnold-Garza, 2014a). Though active learning strategies are not unique to the flipped classroom model, the technique provides more time for active participation in the development of practical library research skills (Arnold-Garza, 2014a). The time benefits associated with the flipped classroom have also been recognized in a variety of educational environments in which instructors are also under pressure to meet increased curriculum requirements in a shorter period of time (Berrett, 2012; Enfield 2013; Roehl, Reddy, & Shannon, 2013). An additional advantage to using the flipped classroom model is that, by moving the basics of information literacy instruction to online videos, the librarian can provide students with more individualized assistance that is customized to their particular assignment or topic (Semple, 2013).

The flipped classroom model, despite numerous attestations to its advantages, has been criticized. Fulton (2012) notes that educators are sometimes subject to adopting new instructional innovations without carefully considering whether these

innovations support the curriculum requirements. Lemmer (2013) builds on this criticism by cautioning that the adoption of any instructional technique must be driven by the pedagogical goals of the curriculum. Another criticism of the flipped classroom is that simply transferring lectures to online videos does not address the issues associated with traditional instruction and creates a “passive learning instrument” (Becker, 2013, p. 258). Sankey and Hunt (2014) also argue that online videos do not correct the inadequacies of the traditional lecture. Conversely, others maintain that online videos are not the essential component when implementing the flip and urge instructors to focus on using the videos to optimize class time with students (Sams & Bergmann, 2013). A possible resolution of this point of contention is the suggestion that the flipped classroom incorporate a meaningful integration of synchronous and asynchronous tools to create an optimal learning environment for students (Sankey & Hunt, 2014).

Student resistance to such a drastic change in classroom reorganization is also a frequently cited drawback to the flipped classroom (Garver & Roberts, 2013; Gilboy et al., 2015; Sankey & Hunt, 2014; Strayer, 2012). Three case studies implementing the flipped classroom at the University of Southern Queensland in Australia, found that students were resistant to this change (Sankey & Hunt, 2014). For example, some students felt that, by relying more on online instructional videos to present the course content, the academic staff was not fulfilling their roles as educators. Similarly, Strayer (2012), comparing the benefit of a flipped university statistics course to a traditional lecture-style course, found that students in the inverted classroom had some difficulty understanding what was expected of them and more quickly disengaged with the material as a result of their confusion. Garver and Roberts (2013) maintain that the

instructor must clearly communicate the reasoning behind implementing the flipped classroom model to obtain student support. Ensuring that the content covered in the online videos coherently matches the in-class activities will help give the flipped classroom more structure and allow students to orient themselves to in-class activities (Herreid & Schiller, 2013; Strayer, 2012).

One of the most frequently cited limitations of the flipped classroom is the lack of rigorous research measuring the technique's impact on student learning. Much of the assessment of the flipped classroom is limited to measurement of student experiences and their own assessment of the benefits of the model (Arnold-Garza, 2014b; Enfield, 2013; Gilboy et al., 2015; Lemmer, 2013). Though it is valuable to evaluate the students' perception of the flipped classroom model, future research could possibly compare student grades before and after implementing the flip. Some studies have sought to fill this gap in the research by comparing student performance (rather than student experience) in a flipped classroom to the traditional lecture (Albert & Beatty, 2014; Fulton, 2012; Garver & Roberts, 2013). Another used a pre-test and post-test assessment method (Rivera, 2015).

Methods

The authors examined the online instructional content available on the websites of all members of the Canadian Association of Research Libraries (CARL) and the Association of Research Libraries (ARL). The McGill Library is a member of both associations, which include the largest research libraries in Canada and North America respectively. A total of 140 peer institutions were included in the survey. Within this

group, 15 institutions belong to both CARL and ARL, and were only counted once in the collection and analysis of survey results.

The study was completed during a four-week period from late-January to mid-February 2015. First, the institutional library websites were analyzed to determine the presence of online instructional videos. In the context of this article, an online instructional video is defined as audio-visual data that can be played on its own with limited interaction from the viewer, and that informs viewers how to use library resources or services. The investigators browsed each website looking for evidence of videos, with particular attention paid to locating sections related to instruction, such as "Research Help," "Information Literacy," "Tutorials," or "Helpful Videos." In cases where these sections were not present or videos could not be located through browsing, we searched each site for the terms "tutorials" or "videos" to locate the online instructional content. Some of the online instructional videos were contained within specific subject guides on the library website and provided instruction more aligned with the informational needs of students within that particular discipline. Furthermore, we recorded the number of the websites containing explicit instructions for students to view the videos before attending a library workshop.

Once we identified which of the 140 institutions provided online instructional videos through their library website, we organized the videos thematically into distinct categories to identify the library research topics, skills, and concepts most commonly featured. In cases where a single video provided information falling within more than one of these categories, we recorded it as providing instructional content in all relevant categories. We also took note of the various file formats in which instructional content

was provided, and whether the library produced its own videos or linked to external content.

Findings and Discussion

Of the 140 member institutions of CARL and ARL included in this survey, 107 (76 %) libraries provide online instructional library videos on their library website (see Figure 1). Though the majority of North American research libraries incorporate instructional videos on their websites, a significant number of them still have not fully leveraged this service for their students. The online instructional videos are often located on a dedicated web page. Many libraries that do offer online instructional videos also link to a YouTube channel maintained by the home institution, which is an effective option for maintaining a centralized location in which all of the videos can be found. Less frequently, libraries embed the videos in the particular subject or course guide to which the content most appropriately applies rather than provide a centralized page through which the online instructional videos may be accessed. Interestingly, of the 107 libraries that do provide online video tutorials, only two members (2%) clearly instruct users to watch instructional videos prior to an information literacy workshop (See Figures 1 & 2). When users are instructed to watch online videos prior to an information literacy workshop, it suggests the use of the flipped classroom model for information literacy instruction. In the case of Duke University, for example, students are advised to view a series of six “Research 101” videos and take a review quiz prior to attending the related in-person library workshop. Though other institutions may use the online video tutorials in a flipped classroom environment, they do not make explicit

mention of this either within the videos or on the library website and so, within the context of this survey, were not included in the findings.

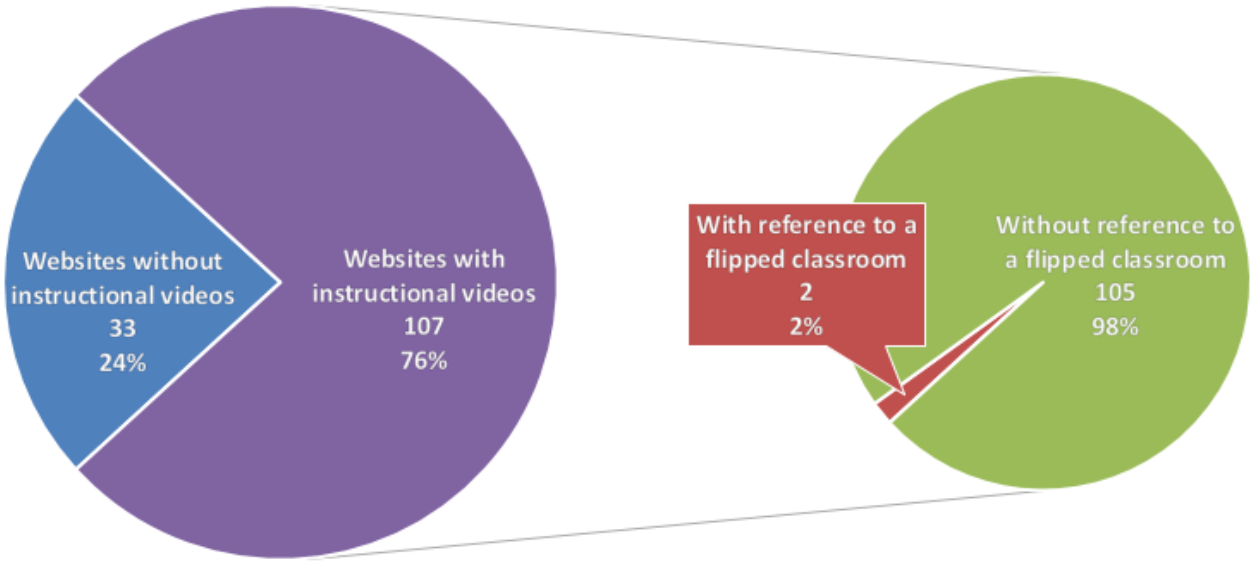

Figure 1. The number and percentage of CARL and ARL member institutions that provide online instructional videos, with the number and percentage of those making reference to viewing videos prior to a library instruction session.

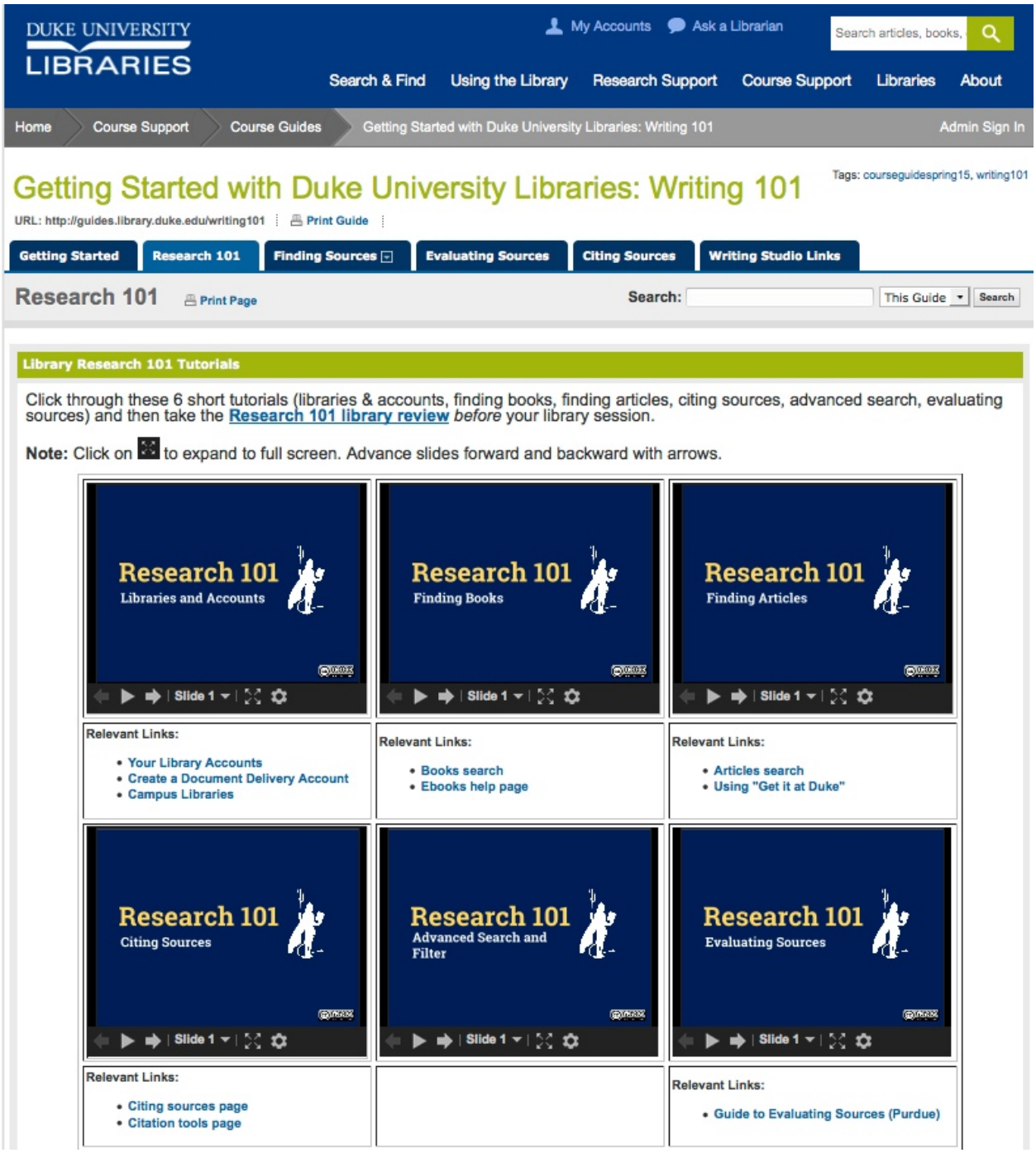

Figure 2. Duke University Libraries research video tutorials page for *Writing 101*, with reference to viewing the videos before the library session. See http://guides.library.duke.edu/content.php?pid=62424&sid=5083297

The categories that emerged from our analysis of instructional video content included the following: catalog or discovery tool searching, database searching, using citation management software, search preparation and strategies (proper formulation of a research question and identification of core concepts), academic integrity, evaluating resources (peer-review process, evaluating websites, etc.), technical skills (how to print or scan; use of interlibrary loan or document delivery services; how to place a hold or recall an item) (See Figure 3). Of the 107 CARL and ARL institution libraries that host online instructional videos on their websites, 83 libraries (78%) provide videos about using a library catalog or discovery tool. This was the most commonly found video category, and these videos typically discuss basic and advanced searching and frequently instruct users on how to find subject specific content using the subject guides or particular types of information resources (print and electronic books, articles, newspapers, dissertations, rare materials, as well as audio-visual material). The second most prevalent video category, with a total of 78 libraries (73%), provide instruction on the use of specific bibliographic databases, such as OVID Medline, ERIC, and America: History and Life, and the like.

Forty-two percent (45 libraries) offer online instructional videos that discuss formulation of a research question, identification of core concepts within a research question, or combining these core concepts with Boolean operators. Less than half (50 libraries or 47%) provide online instructional videos on using citation management software, such as EndNote, Zotero, or RefWorks. Most institutions provide links directly to instructional videos produced by the companies responsible for creating and supporting citation management software, though some institutions have created their

own videos. It is worth noting that in some cases users can be directed to high quality videos produced by library vendors that already exist and therefore it is not always necessary to reproduce these instructional videos.

Ethical use of information, academic integrity, and proper citation methods are important components of academic information literacy. This is reflected in the fact that forty-six libraries (43%) provide videos discussing key issues such as citation methods, the components of a citation, plagiarism, or methods of properly paraphrasing information. In terms of online instruction discussing the evaluation of sources, just under half of institutions (52) have online instructional videos that inform users on how to assess the quality of information, distinguish between peer-reviewed and popular literature, or evaluate the appropriateness of the information for its intended use.

Another component of this study recorded whether CARL or ARL libraries provide videos that discuss various technical tasks in the library, which includes (but is not limited to) where to locate printing services, how to place a hold on an item, how to use interlibrary loan, how to use compact shelving or self-checkout machines, or how to remotely access online resources. More than half of the member libraries included in this second phase (57 libraries or 53%) provide videos discussing some aspect of these tasks. This category also relates to technological literacy, an important sub-component of information literacy as a whole.

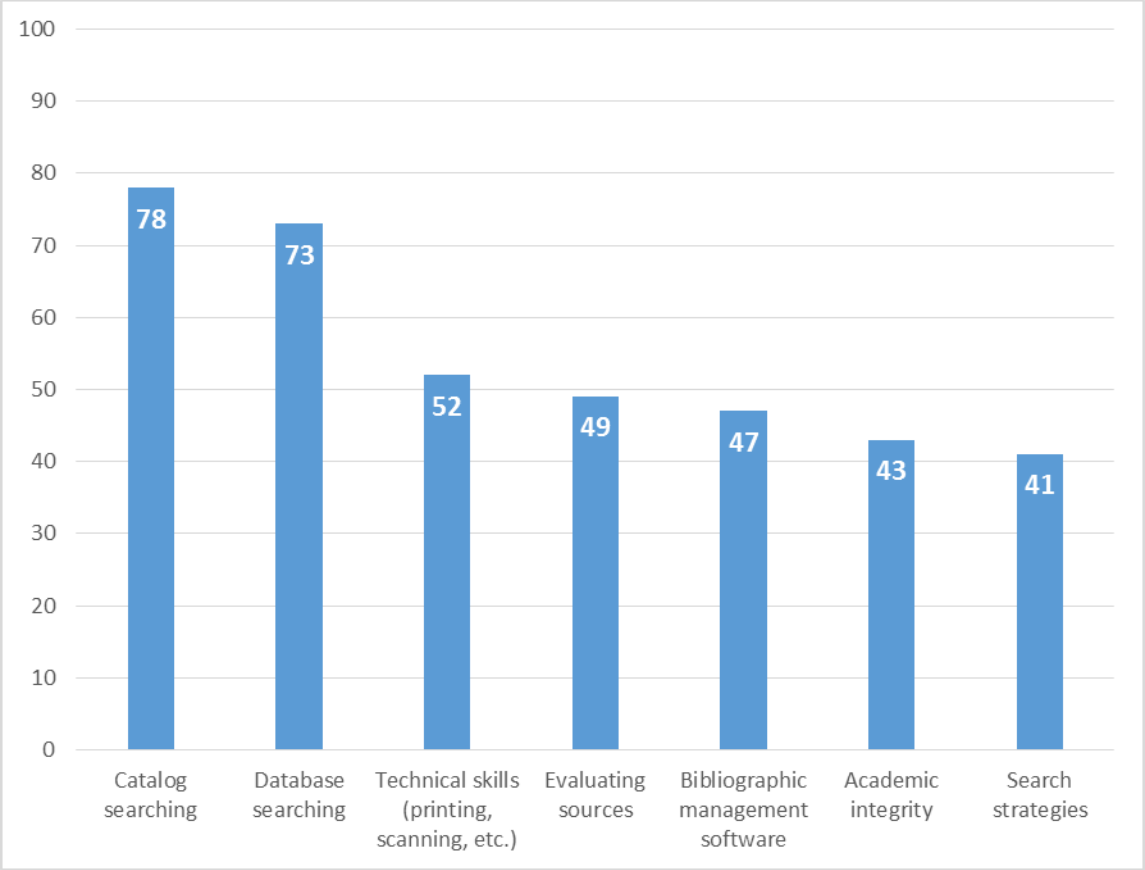

Figure 3. A breakdown of the types of online video tutorials available on academic library websites, expressed as a percentage of video-providing websites that include each type (n=107).

The survey also noted the video formats libraries used to provide their content, such as flash, MP3, MP4, WMV, or HTML. Although offering videos in multiple formats supports compatibility with the various devices students use to access online instructional content, there is an additional cost in staff time to create and update them. Thirty-five institutions (or 33%) offer videos in multiple formats, but the majority only have one. Seventeen institutions (16%) provide online instructional content in the form

of videos with supplementary documents in a text-based format, such as PDF files, HTML web pages, or Word documents. Indeed, flipping the classroom does not need to be done through videos exclusively. Such supplementary material can be useful in catering to different learning styles.

The final element of the survey was to record whether the libraries created their own online instructional videos or linked to external videos produced by other institutions. Videos made in-house offer information specific to the institution in question. For instance, these videos might include screenshots or demonstrations depicting how to navigate through the library homepage, identify when students will need to use their credentials to access specific library services or databases, or show images depicting the physical space of the library. Eighty libraries (75%) provide videos that are exclusively made by the home institution. Eighteen libraries (17%) offer videos made by the institution and also link to videos made by other research libraries or companies such as ProQuest, EBSCO, and Endnote. Nine libraries (8%) only provide videos made by other libraries or companies.

There are some inherent limitations involved with this exploratory study. First, CARL and ARL are comprised of libraries at large, research-intensive universities. Other academic libraries at smaller or more teaching-based institutions were not examined. It is likely, however, that some of these libraries produce video content for use in their information literacy programs, and that they integrate them into a flipped classroom. The results of this study, therefore, should not be extrapolated to include this group. Furthermore, though we attempted to be as thorough as possible in our method

of locating video content and evidence of flipping the classroom, it is possible that some of these were missed.

Conclusions and Implications for Practice

Given that 76% of library websites included videos, we were surprised to find only two examples of libraries that explicitly asked students to watch videos before attending a library workshop. While we suspect that some individual librarians might be flipping the classroom on their own initiative using these videos, we expected to see more evidence of their systematic integration into information literacy programs at an institutional level. With the emerging interest in flipping the classroom for library information workshops, however, we predict more and more libraries will instruct students to watch videos before attending library research workshops.

The initial impetus for this study was to investigate the nature of instructional videos at peer institutions with a view to informing our plan to create our own videos in an effort to redesign our *MyArts Research* workshop series by flipping the classroom. The results of the study and the types of videos discovered have reinforced our preconceived notions as to the types of videos to prioritize in our effort to take pre-workshop student preparation outside of the classroom. The content and organization of these videos from our peer institutions have influenced our instructional video creation and implementation plans. The workshop team's next priority will be to create the necessary videos and to establish the needed connections between pre-workshop videos and in-class workshop activities.

While videos can be a useful tool for library instruction, resources are required to create, maintain, and update them. Not all schools possess the resources that major research libraries have at their disposal. In cases where there is lack of support or expertise for video creation, libraries should consider carefully selecting and linking to videos created by other libraries or vendors. It should be noted, however, that software such as Camtasia or Jing allow for quality video creation with relatively little investment in time. Videos also hold the advantage of being viewable both ahead of time and also after an in-class workshop. Students can come back to a video again and again to review content and reinforce their new skills if they forget how to do something or are struggling with understanding certain concepts.

It should also be kept in mind that videos are static. When the research tools they demonstrate change or have new features added, videos also need to be updated to avoid becoming confusing and obsolete. While it is important to realize that such changes are inevitable, and perfection is unattainable, libraries that create videos should have a plan for the periodic reviewing and updating of their content. That said, modern video creation software allows for good quality videos to be created and edited with relative ease, and the tools are sufficiently user friendly to allow for new editors to gain skills quickly with relatively little experience.

Access to video content is also an important factor to consider. One way to ensure that students can successfully view videos on the host of different devices available on the market is to offer them in more than one format. Another option is to upload them to a dedicated YouTube channel, ensuring that they can be viewed universally. Additionally, while we have considered the use of videos and flipping the

classroom for a series of stand-alone workshops at our institution, they would be beneficial in other contexts as well. The most effective videos are customized to a specific task and discipline, so their use in curriculum-integrated instruction is an area worthy of future exploration.

As the skills students must acquire to become information literate continue to develop, librarians have a responsibility to help students achieve and refine these skills to become lifelong learners and critical thinkers to contribute actively to communities of learning. Indeed, as the ACRL states, the *Framework* “opens the way for librarians...to redesign instruction sessions, assignments, courses, and even curricula” (ACRL, 2015b, para. 8). Flipping the classroom might be a way to do just that.

An opportunity for future research will be to further assess the practical impact of flipping the classroom with instructional videos, using our *MyArts Research* experience as a template. There are currently very few studies that measure the impact of such initiatives. We plan to evaluate our implementation and assess the impact of our workshop redesign on student learning. We intend to publish our findings in an effort to fill the gap in the literature relating to flipped classrooms in the context of information literacy instruction, and also the lack of published research measuring the technique’s impact on student learning.

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