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University Faculty Describe their Use of Moving Images in Teaching and Learning and their Perceptions of the Library's Role in that Use

The moving image plays a significant role in teaching and learning; faculty in a variety of disciplines consider it a crucial component of their coursework. Yet little has been written about how faculty identify, obtain, and use these resources, and what role the library plays. This study, which engaged teaching faculty in a dialogue with library faculty, revealed a gap between faculty's film and video information retrieval needs and provision of access by the library. Ultimately, the findings of this study can inform and transform library practices to make more moving images available for use in coursework and research.

Introduction

Ours is a culture pervaded by images. The moving image in particular, surrounds us: on television, on the Web, via mobile devices, and increasingly, in teaching and learning. Use of video in higher education is accelerating rapidly; it is expected to increase further, and the demand for educationally-targeted video archives and services is high.ⁱ In a culture where processes of media creation, distribution, and consumption are faster and cheaper than ever before,ⁱⁱ faculty more and more are integrating moving images into the classroom, as a way of informing discussion, enriching understanding, and bridging the generational divide that can mark both media fluency and faculty-student relations.

It is surprising, then, that so little has been written on faculty use of moving images: how they are used, by whom, and why, what types are favored, where faculty identify and obtain appropriate titles, the role of the library catalog, and barriers to use. Without these data, it is difficult to define the library's role in this increasingly important aspect of the educational process. In fact, a 2009 Intelligent Television report on video use in higher education reveals that of all obstacles to video use cited by faculty, a substantial number were rooted in library services: the library lacked copies; the library catalog was poor; there was inadequate information about library acquisitions.ⁱⁱⁱ

This paper reports findings from a discussion forum, survey, and interviews with teaching faculty about their use of moving images in coursework and research, and the library's role in that use. At Rutgers University Libraries (RUL), moving images are a focus of technical and public services and technology development. In addition to cataloging commercially released titles in the library catalog, the Libraries led collaborative development of the statewide video repository, NJVid (<http://www.njvid.net>). They have targeted video deposits in the institutional repository, RUcore, in an effort to preserve and disseminate forms of research ineligible for traditional publication. The Libraries have worked with faculty to customize metadata for video research, and developed a number of tools for managing and enabling discovery of these resources, including a workflow management system incorporating extensive source and technical metadata for moving images.^{iv} The Libraries offer "partner portals" to provide portable, configurable, targeted access to selected collections and RUanalytic, RUL's award-winning video annotation tool, enables faculty to compile, annotate, and post clips to the repository for preservation and wide distribution.^v

On the "traditional cataloging" side, the Libraries have been anticipating the implementation of RDA^{vi} and are active participants in a statewide initiative to develop an open source integrated library system. RUL librarians are closely following the progress of the Mellon Foundation-funded Quali OLE Project (an open source ILS designed by and for academic and research libraries),^{vii} while concurrently evaluating discovery layers such as VuFind and Blacklight that support faceting by format. Rutgers librarians know that moving images are ubiquitous, that demand for moving images, particularly streaming video, is bound to grow at dramatic rates, and that there will be significant implications for their technical and public services operations. In 2010-2011 Technical Services Department responsibilities were reorganized to meet growing needs in this area and a new moving image cataloger was hired. The time was ripe to talk to faculty about moving images in research and the curriculum, in order to learn how they use film and video now, how they would like to use them, and how they are

using the library catalog to find them. The Libraries' objective was to transform technical and public services to enable greater use of moving images in coursework and research.

Literature Review

A rich body of research on the efficacy of moving images in teaching and learning exists in the education and psychology literature, and within many disciplines there is considerable literature on moving image use in the specific curricula.^{viii} However, relatively little has been said in the library literature about why and how faculty use video, and there appear to be no studies involving a dialogue on the topic between librarians and faculty.

Much of the library literature on video in higher education focuses on student- or faculty-produced video, search and retrieval mechanisms such as transcript and caption mining or visual indexing, collection development, cataloging and metadata, video games, access via mobile devices, reserves, video tutorials, or video conferencing.

In terms of faculty use of moving images in teaching and learning, Krippel et al. (2009) discussed both recent and historical claims made for the value of multimedia (broadly defined) in education, and where multimedia has fallen short. The authors cite conflicting research findings in this area, noting how research studies have been formulated on multiple theoretical bases and some have employed questionable methodologies. The authors assert that pedagogy must drive educational technology usage and not the reverse; therefore future research should examine the educational environments where new technologies yield superior results, identify and define the characteristics of those environments, and identify those characteristics in specific disciplines.^{ix} Shephard (2003) presented case studies to describe streaming video use in post-compulsory education in the U.K. Although written before video was extensively used in higher education, barriers of use described there echo those of today: a lack of metadata and a plethora of technical issues.^x Barford and Weston (1997) presented original research on video as a teaching resource within a single university. Paralleling the current study,

theirs found that the video selection and acquisition process adopted by lecturers tends to be independent and individualistic. The authors recommended that management of faculty video use be supported at the policy level through promotion of existing services. Information about video resources (inside and outside the institution) should be centralized and disseminated. At the same time, faculty should be offered training in video selection and use, and the time to develop customized resources. Barford and Weston's findings, while 15 years old and predating YouTube, are strikingly similar to those presented in this paper, particularly with respect to how video is used, barriers to use, and confusion as to stewardship of the resources.^{xi} Intelligent Television (2009) focused on video use in higher education more broadly. Based on interviews with 45 faculty and 12 librarians across 18 academic departments in 20 institutions nationwide, this study reported an accelerating faculty demand for video across disciplines, from arts, humanities, and sciences to professional and vocational curricula. Authors noted that technology, legal, and other barriers continue to thwart faculty attempting to identify and access the video resources they need, and that faculty and librarians are eager to collaborate in creation of resources that are easy to find and use.^{xii}

In other literature on moving images and libraries, Primary Research Group (2011) published a study on library use of video and audio based on a 30-question survey returned by 50 North American organizations, including colleges, universities, public libraries, and other cultural institutions. Questions pertained to budgets, facilities, formats, streaming video use, licensing, and other topics, but insights gleaned from these data would largely relate to library services to libraries, rather than library services to patrons.^{xiii} Special media issues of *Library Trends*, published in 1967, 1971, 1985, and 2010, confirmed the aphorism that "the more things change the more they stay the same." The introduction to the 2010 issue chronicled a continuing series of shortcomings related to metadata, rights issues, budget, format changes, and technology.^{xiv} In terms of solutions, Vallier (2010) asserted that media centers are models for innovation and adaptability and described several areas where thinking outside

the box has produced advances in services to moving image users.^{xv} Healy (2010) added to Vallier's innovations with her description of Netflix as a collection development tool and means to speed content to patrons. Her comment that "Today's research libraries are not the right finding tools for users" is consistent with some of the findings presented here.^{xvi}

The Research Project

This research project was conceived as a conversation between librarians and faculty in three parts: a discussion forum, survey, and interviews conducted in a variety of venues throughout the duration of the study. The purpose was to answer questions about faculty use of moving images in teaching, learning, and research; specifically:

- How often are moving images used?
- What types and formats of moving images are most useful?
- How does usage vary by discipline?
- How do faculty identify relevant moving images, where do they obtain them, and how effective are the library catalog and other library services in facilitating these processes?
- What are the obstacles to faculty use of moving images?

Faculty input on how moving images are discovered and used for teaching, learning, and research will help library professionals assess library services in this area.

The project targeted faculty who actively use moving images in their coursework or research at Rutgers, the State University of New Jersey. Because the research addresses the area where teaching and library tools converge, and because library tools and technologies are emerging and evolving at a rapid rate, participation was limited to the Rutgers population in order to have a manageable and representative sample of teaching faculty using moving images within a single library environment.

Moving Images in Rutgers University Libraries

To place the research in context, some background about moving images in the Rutgers University Libraries is needed. RUL is a system of nearly 30 libraries and resource centers on three main campuses across the state. The New Brunswick-Piscataway Campus is composed of five smaller campuses^{xvii} and Rutgers Cooperative Extension county offices are found in all 21 New Jersey counties.^{xviii} Rutgers also has several off-campus sites located at three community colleges^{xix} and is actively growing its offerings of online courses and degree programs.

The Libraries hold approximately 20,000 moving images titles, the bulk of which are located in the Media Center on the Douglass Campus, although smaller collections may be found in five other libraries on as many campuses.^{xx} Delivering physical media from multiple locations to faculty across the state is a continuing challenge. A rapidly growing collection of commercial streaming video serves all campuses, as do the digital videos in the institutional repository.

Rutgers University Libraries have significant holdings in older formats, but virtually all new moving image acquisitions are DVD or electronic, either locally produced or commercially released. Streaming titles are purchased individually, or as a subscription to a video database, or acquired through the Federal Depository Library Program. Some are restricted to Rutgers affiliates; others are available to all via open access; some are in the public domain. Streaming video may be stored in the institutional repository, hosted on vendor platforms, or available via NJVid, the statewide video repository. Soon the Libraries will host electronic media centrally through a streaming server with authentication/authorization capability.

Patrons can expect to find titles of moving image resources within the Libraries' website, but where a resource is listed can be a function of its subject, provenance, authorship, and acquisition workflow. Listings of individual titles and collections are scattered, and not necessarily where users would expect to find them. Patrons encounter references on the alphabetical and subject-classed

'Indexes & Databases' list (linked from 'Find Articles' and 'Research Resources'), in two different listings of new acquisitions, as well as in LibGuides, the library catalog, and RUcore, the institutional repository.

Broadly speaking, commercially released streaming titles are described in the library catalog alongside all other moving image formats and made available, usually just to Rutgers affiliates, through links to the host platforms. The largest influx of streaming video comes to the Libraries as video databases, almost exclusively, so far, from Alexander Street Press, which provides the platform, the bibliographic records, playlist creation and sharing capability, and numerous other features.^{xxi} Examples are *Dance in Video*, *Counseling and Therapy in Video*, and *Theatre in Video*.

Rutgers-produced videos (i.e., those forming part of the University's scholarly output) are described and made freely available through RUcore to any person with access to the Internet. Research data and conference proceedings comprise the majority of moving images in the repository, but RUcore also includes educational materials created by the University's strategic collaborators, such as the oral histories in the Asia Society's *China Boom* project.^{xxii} RUcore titles are generally not listed in the library catalog since the Libraries anticipate federated search capability in the future.

Librarians at Rutgers University Libraries, believing the organization's moving image collections to be under-discovered and underutilized, wished to make them more accessible to users, and particularly to faculty who had been vocal about the importance of these resources. Approval of an Institutional Review Board exemption was obtained, the discussion forum was organized, and the research project commenced.

Faculty Discussion Forum on Moving Images in the Curriculum

Because of the dearth of current literature on faculty use of moving images, it was important to hear directly from faculty on expressly how and why they use moving images in coursework and research, and how they use the library to find and obtain these resources. The discussion forum was planned in order to shed light on these questions, as well as to engage faculty, provide a framework for

further discussion, make contacts for later interviews, verify the validity of survey questions already drafted, and promote the survey. The two-hour forum was organized by the author, with (public services) Media Librarian Jane E. Sloan and their staffs. It opened with an introductory presentation by the author briefly outlining the Libraries' role in facilitating video use, some constraints under which the Libraries are forced to operate (e.g., cataloging rules, technology shortfalls), and the availability of options which can improve services. The author stressed that the Libraries can more effectively exercise its options once it has a clear idea of how faculty use video and the catalog, and how they'd like to use them. The audience also learned that changes in library staff, emerging developments in cataloging rules and systems, as well as the proliferation of streaming video, put the library at a crossroads where their comments could make a difference in transforming video cataloging, availability, and use. Three faculty speakers were then introduced. Following these presentations, a 45-minute question-and-answer session allowed participants to share their experiences using moving images in research and the curriculum, discuss their concerns, and suggest improvements to library services. This part of the program was moderated by the author with a prepared list of talking points.

The discussion forum was videorecorded, originally with the single intent to document the proceedings for further analysis. The faculty presentations were outstanding and the organizers received numerous requests to view the proceedings online, so with permission of the participants, we hope to make them available in RUcore at a later date.

To ensure maximum participation, the forum was scheduled as a luncheon event in late October. Publicity materials, developed and disseminated in consultation with the Libraries' Communications Director, described the research project, and included testimonials and a photograph which became the brand for the event. The forum merited a news story on the Libraries home page and was listed on the University's online calendar. Deans in departments whose faculty were showcased were contacted individually and provided additional publicity through their own distribution outlets.

The event was a success; fifty people attended, with library and teaching faculty equally represented. Many faculty, including those unable to attend, expressed considerable enthusiasm for the topic and contacted the organizers before and after to offer input and request interviews.

Three Rutgers faculty members from diverse disciplines were asked to open the forum by describing their own use of moving images in their work, using clips to illustrate. These three were heavy users of both moving images and the libraries, and vocal advocates for media in teaching and learning. All spoke eloquently about the value of moving images in the University environment.

One professor uses moving images both to increase media literacy, and as a pedagogical tool to explain abstract concepts, reclaim lapsed attention in very long class sessions, and to bring distinguished lecturers from other institutions and countries into the classroom. A second teaches a range of classes, from introductory surveys to smaller scale seminars and production courses. She incorporates moving images into all of these classes, and her usage exemplifies the range of films used in teaching and learning: clips, short documentaries and occasionally feature films from the library, her own personal collection, or online videos from sources like YouTube. In addition, she employs her own research footage, to teach research methods and show students how to effectively incorporate video in ethnographic field work. The third speaker, a cinema studies professor, drew the analogy between film and art, pointing out that students studying the art and history of cinema are not using film as media adjuncts to their primary course of study; “they’re studying film as film.” Calling cinema studies a classical tradition, he argued the need for the actual film artifacts for study, and described the financial and philosophical struggles of cinema studies faculty to hold and maintain the University’s film collection.^{xxiii}

Survey Methodology

After the discussion forum, a 17-question survey was individually emailed to attendees, as well as to the Media Library contact list, which is comprised of approximately 300 faculty members who use

the University's media collections. It was also distributed to University departments via library liaisons, as a means to reach other faculty employing moving images, across all campuses and disciplines, who may not be in contact with the Media Librarian. Although the survey was confidential, more than fifty percent of respondents identified themselves by name. Therefore it is known that the Media Library contact list, not surprisingly, produced a much higher response rate than blanket invitations sent through library liaisons, and those contacts are heavily weighted toward the social sciences and humanities.

The survey was drafted prior to the discussion forum in consultation with public, media, technical, and digital user services librarians. After the discussion forum it was revised slightly based on comments made by the speakers and by members of the audience during the question and answer session. The questionnaire asked faculty for their discipline, department (optional), frequency of moving image use, and preferred moving image formats (DVD, web-based video, or other). They were asked to rate the value of various types of moving images (documentaries, fictional films, etc.), and the value of resources for identifying and obtaining moving images for teaching, learning, and/or research. In terms of the library catalog, respondents were asked about the library catalog's ease of use, and the relative value of various parts of the library catalog bibliographic display. They were also asked to rate particular obstacles to use (library-related and otherwise). Respondents were asked their availability for follow-up, and offered a final, optional, open-ended question asking for "anything else you'd like to tell us about how or why you use moving images in your research or coursework."

Because the survey focused primarily on moving images in teaching and learning, it was considered important to include the University's entire teaching community, and therefore "faculty," for the purposes of this study and in this paper, has been broadly defined as those employed by Rutgers to teach classes. This allowed input from part-time lecturers and adjuncts who have not yet achieved permanent status as tenured faculty, but who, it was believed, might be more likely to be classed as

“digital natives” and more open to use of streaming video and newer technologies. Two hundred fifty faculty completed the survey. All quoted remarks in this paper are drawn from the survey responses, unless footnoted.

Survey Responses

Use of Moving Images by Discipline

Survey responses indicate, not surprisingly, that use of video in coursework and research varies by discipline. The object of querying faculty about their teaching discipline was to determine differences between usage in hard sciences, social sciences and the humanities. Respondents were asked to self-identify by broad area, rather than by department, since many Rutgers faculty teach across departments, and some departments (e.g., Psychology) span hard and social sciences. Of 250 survey respondents, 38 (15%) self-identified as working (“teaching and/or research”) in the natural, physical, and computing sciences; of these, five had responsibilities which crossed over into social sciences. All other respondents but two self-identified as working in the social sciences and humanities, including Area, gender, class and/or race studies, Language studies, Communication studies, Other visual/performing arts, and Other social sciences and humanities. Two respondents came from vocational programs.

As mentioned above, surveys distributed to Media Librarian contacts were returned in disproportionately high numbers, and this may account for the relatively low response rate from sciences faculty. These faculty are also geographically removed from the Media Center, where the Media Librarian works and where most of the Libraries’ moving images are held. Responses to subsequent survey questions are consistent with significant video usage in the sciences, but they also indicate that any moving images employed by Rutgers sciences faculty are most likely acquired from sources other than the University Libraries. (Interestingly, the science literature indicates that physics teachers were early adopters of visual media for teaching; they used visualizations long before any form

of motion picture was available, and were producing films since at least the early 1950s.^{xxiv}) Sciences faculty survey responses and interviews suggest that many of these faculty are largely unaware that the Libraries purchase video, and don't realize titles can be searched in the library catalog. According to a respondent in Psychology, faculty were notified in the early 1990s that the Libraries no longer had funds available for purchasing video; perhaps this policy coincided with the beginnings of the serials crisis.^{xxv} He, and possibly many other sciences faculty, never returned to the Libraries for moving images. In dividing respondents into disciplines, categories were broad, but certain branches of the social sciences and humanities were called out, based on the assumption that moving image use in those areas would vary by specific discipline and otherwise skew results. For example, Cinema studies was expected to have a disproportionately high use of moving image materials; Area, gender, class, and/or race studies were thought to rely heavily on fictional feature films. Visual/performing arts faculty were expected to utilize performance recordings, and sciences faculty to screen moving images documenting a process.

<insert Figure 1>

Frequency of Moving Images Use

Virtually all respondents used moving images in the classroom a minimum of once or twice per academic year, and the majority (72%) used it six or more times.^{xxvi} It is impossible to calculate the number of classes, or class sessions, any given professor would teach during an academic year, but a clearer picture emerges from the comments. Of 20 respondents who were more specific, 11 said they showed moving images in almost every class session; four said they showed it every week, and five said they screened moving images two to five times per class over the semester. One professor averages five videos per class and his students (combined) use up to 15 or 20 in their oral presentations. Many faculty assigned video outside the classroom as well as in class, although outside classroom usage was

significantly lower than in-class use. Some of the outside classroom numbers may also represent viewing assignments for online or hybrid courses, where there is no classroom.

<insert Figure 2>

<insert Figure 3>

Many factors influence how often moving images are employed, including discipline and specific course topic. Many faculty point to greater use in undergraduate education, and use often appears to increase with class size and duration. Several responses suggested use of moving images in general is increasing, which may correspond to increasing media availability, especially of online video from YouTube and similar sources. There were some indicators usage would rise with the increase in hybrid and fully online courses, an emphasis at Rutgers. For example, one professor uses “10+ for three face-to-face classes [and] 50+ for three online classes.” This may be due to a preference for online clips and films, coupled with the fact that streaming video is less problematic outside classroom walls. Infrastructure issues at Rutgers, including lack of media-equipped classrooms and bandwidth congestion, inhibit effective video streaming in the classroom. Several respondents said they would use more moving images if they had more time to identify appropriate titles and/or compile clips.

Frequency of Use by Discipline

As expected, cinema studies professors showed the most moving images in the classroom, with 94% screening six or more times in a typical academic year. For faculty using the most and the least moving images per academic year, the numbers break down as follows:

<insert Table 1>

<insert Figure 4>

Types of Moving Images Used

Survey participants were asked to rate usefulness of these moving image types:

- Fictional films (commercial or independent, features or shorts, theatrical, television, or online)
- News
- Documentaries
- Experimental film/video
- Recorded performances (e.g. operas, sporting events)
- Television other than the above (episodic television, religious programming, commercials, etc.)
- Footage documenting a process/activity/ritual/experiment etc.
- Video captured as part of your own research
- Locally-produced from YouTube and similar sites (other than the above)

<insert Figure 5>

For social sciences and humanities, virtually all respondents identified the three most useful categories as documentaries, fictional films, and “locally produced video from YouTube and similar sites.” The exception was for Communication Studies faculty, where news and other television edged out fiction. Sciences faculty showed a heavier reliance on research video and footage documenting a process or activity. Based on survey comments and knowing that YouTube is a source for most of the forms listed, it is likely that YouTube is far and away the richest source of moving images for coursework.

Sources for Identifying and Obtaining Appropriate Titles

For the librarian, knowledge of where users (faculty, in this case) go to identify and obtain resources is essential to fulfilling collection development, cataloging, and public services missions. Survey respondents were asked to rate the usefulness of several resources for *identifying* the best moving images for teaching, learning, and/or research:

- Rutgers Media Collections Research Guide^{xxvii}
- "More titles like this" listings at Amazon, Netflix etc.
- A library catalog outside Rutgers
- Your own movie-going or television viewing
- Vendor catalogs or advertisements
- Online syllabus exchange
- Reviews
- Word of mouth
- YouTube and similar sites
- The Rutgers library catalog
- Other

Respondents then were asked to rate the usefulness of several resources for *obtaining* the best moving images for teaching, learning, and/or research:

- Rutgers University Libraries
- Rentals (e.g., Netflix DVDs or streamed, video store)
- Library other than Rutgers (e.g., public library)
- YouTube and similar sites
- Personal/departmental purchase
- Personal collection
- Other

In general, sources most useful (extremely useful or very useful) for *identifying* the best moving images were online sites like YouTube, word of mouth, and the faculty's own movie-going or television viewing, followed by (in a rough tie) reviews and the Rutgers library catalog. The handful of faculty who answered "other" listed textbook publishers, producer/distributors (e.g., PBS), Google, professional

associations, newsgroups, and online databases such as Internet Movie Database (IMDB). One professor, upon identifying a need, produces the video himself. Three of the four resources least familiar to faculty were library resources (Figure 7).

<insert Figure 6>

<insert Figure 7>

For *obtaining* moving images for coursework, the Libraries ranked fourth after Personal collection, YouTube and similar sites, and Personal or departmental purchase. The faculty who answered “other” listed another Rutgers unit (the Department of University Relations), scientific websites, and professional associations.

<insert Figure 8>

That said, 70% of faculty found the Libraries “moderately to extremely useful” for *obtaining* moving image titles, compared with 56% who found it “moderately to extremely useful” for *identifying* moving image titles. It may be that faculty users tend to approach the catalog looking for a particular item they have already identified elsewhere. It is likely, though, that some bypass the catalog altogether; they simply identify a title, then ask the Libraries to order it. Nonetheless, 75% of respondents found the Rutgers library catalog at least “slightly useful” for identifying the best titles.

<insert Figure 9>

An important finding of this survey is that most video content used in Rutgers coursework is not coming from library collections. In addition to online video sites like YouTube or TED.com, faculty also produce their own content or use other rich sources of digital video, such as the foreign language programming distributed via cable by RU-tv across campuses and into the dorms.

Although 45% of faculty surveyed said they found the Rutgers Libraries extremely useful or very useful for obtaining titles, nearly half (49%) felt “Rutgers Libraries don’t own the title(s) I need.” Thirty-

four percent agreed or strongly agreed with the statement “Even if I know the Libraries have the title, it is too hard/takes too long to get the video.”

However, few conclusions can be drawn about strengths and weaknesses in the Libraries’ moving image collections since many respondents were by choice acquiring much of their content from non-commercial sources not available to the Libraries, and significant numbers are largely unaware of what the Libraries have or how to find out. One respondent mentioned being “continually frustrated” by the difficulty of borrowing media materials via interlibrary loan: “I realize that this type of media is more easily damaged but [DVDs] are also sent to millions of homes each year by companies like Amazon and Netflix without too much of a problem.”

Rutgers University Libraries Discovery Issues

When librarians, and especially catalogers, think discovery, possibly they think first of cataloging and metadata, search and retrieval systems, and public catalog interfaces. This survey, however, revealed a more profound issue: Many faculty do not discover library moving images resources because they are unaware of the Libraries moving images collections and services. Although 34% of respondents said they find the Rutgers library catalog very useful or extremely useful for identifying titles (see above), free-text responses within the survey as well as interviews indicated many are completely unaware that the Libraries purchase videos for faculty and make them available for classroom viewing. This is particularly true of faculty in the sciences.

Fifty percent of respondents indicated they were “not sure where all the Rutgers Libraries’ films/videos are listed.” Perhaps faculty have encountered moving image listings on the RUL website, but have a sense that more is out there. They may also be aware that video collections are housed or described outside the Libraries, but are unsure which belong to the Libraries or where exactly the resources might be found. Certainly survey results indicate that many faculty don’t recognize the

Library catalog as the primary discovery tool, or even *a* discovery tool, for the Libraries' moving image collections.

It is possible this lack of awareness dates to a time when most libraries housed their moving image collections separately and described them outside the regular catalog.^{xxviii} Whatever the reason, over 27% of respondents indicated they don't use the library catalog to find moving images (i.e., they answered "not applicable" when asked about ease of catalog use). Sometimes faculty have librarians, graduate students or support staff do the catalog searching for them, but not always. There were over twenty responses suggesting faculty were not sure how to search the catalog for moving images, didn't know it was available for this purpose, or had simply never tried. A few said they wouldn't look in the catalog—period.

Faculty might also be vaguely aware that Rutgers videos are administered by more than one University unit and may be scattered, physically or virtually, across several locations. Indeed, Rutgers-produced videos may be found in the institutional repository (RUcore), while other collections are housed in the offices of the Rutgers University Television Network (RU-tv), the Department of University Relations, and in departmental collections. Some commercial and locally-produced videos are available through NJVid (New Jersey's statewide video repository), and although these are listed in the library catalog, faculty may not realize it.

Rutgers Library Catalog Issues

Despite the fact that many faculty aren't sure where to look for the Libraries' moving image resources, nearly three-quarters (73%) do use the catalog to find film and video (based on the number who assigned an "ease of use" rating). Unfortunately, of this number, 25% find the Rutgers library catalog "difficult to search and/or navigate." There are many possible reasons for this, most of which could not be effectively identified through a survey instrument. However, many faculty commented on specific problems.

<insert Figure 10>

<insert Figure 11>

Survey responses and interviews strongly suggest that faculty have trouble browsing through the catalog to find relevant materials, and generally find known item searches to be the most effective. Several noted that exact title searches were easiest. Some explicitly stated they identify what they want from an outside source, then turn to the Catalog to see if the Libraries own it. More than one faculty member felt that “If you have it, it is of course easy to find,” belying an assumption that if it is not retrieved in a search, it is not held by the Libraries. On the other hand, faculty have difficulty finding titles within compilations.

There was a general frustration with subject searching; faculty wanted “better search terms,” title suggestions based on search terms, system ranking of “most useful search terms,” autocorrection of search terms, and “Amazon-type fuzzy logic.” Some said that specific search terms yield extremely broad and unrelated titles, or nothing at all. Finally, many respondents would simply like *more* subject access, such as links to fuller descriptions (e.g., on the film’s homepage) or indexing on the scene level, rather than the traditional summary describing the film as a whole. For example, “In the film *Ordinary People*, there are good examples of work between a therapist and patient. I don't want to have to watch the whole film to find them. Instead, I find them on YouTube.” Respondents also implicitly or explicitly criticized the order of search results, which is not alphabetical and can be unpredictable.

Although never explicitly stated, the “needle in a haystack” issue is likely a significant part of the discovery problem. The library catalog includes 2.7 million bibliographic records, of which only 20,000 (seven-tenths of one percent) describe moving images. Numerous respondents noted the difficulty of limiting a search to video, and especially streaming video. (While both are possible, the means are neither obvious nor intuitive.) The survey revealed that many users limit their search to moving images

by limiting to the Media Center, likely not realizing that other libraries also house moving images, and that streaming videos are not assigned that library location.

Finally, respondents were asked to rate the importance of various components of the catalog record display: library location, availability status, link to electronic version, and detailed description. None were rated as being of especial importance. Library location was less important, possibly because faculty often delegate pickup and delivery to support staff, or because of a preference for streaming.

<insert Figure 12>

Preferred Moving Image Formats

Survey participants were asked to indicate whether they preferred DVDs, web-based video (downloaded or streaming), or another format for teaching and learning. They were then asked their preference for their own research purposes. Format preferences did not appreciably vary according to use, although the “no preference” responses doubled (percentagewise) for research use.

<insert Figure 13>

For teaching and learning, faculty indicated they might use any format from 16mm film, to VHS, laser disc, DVD, Blu-ray, and streaming. The greatest number, however, preferred web-based video (44%). No doubt this number would be much higher if reliability were not an issue; over 35% of respondents agreed or strongly agreed that “playback in the classroom is a problem.” Thirteen of the 32 respondents who replied ‘other’ used or preferred VHS. Preference often depended on availability of material, classroom technology (and consequently, reliability), and segment length (DVD for longer pieces, digital files for shorter clips).

In general, respondents like DVD for its dependability, superior image quality, and bookmark capability. Those who prefer VHS find it easier to cue up precisely, and/or know the desired content is available only in that format. Cinema Studies professors may prefer to screen film, but one respondent cited faculty’s constant battle for proper equipment and light blocking shades; another, who might have

been referring to film or video, noted that too many classrooms have small televisions rather than big-screen projection. Although faculty complained that streaming video is the most “glitchy” and image quality is often poor, Web-based video is preferred for its immediacy, flexibility, practicality, and convenience. It is easier to insert into lecture slides, avoids pick-up and delivery issues, and solves the problem of booking conflicts (and thus the need for multiple copies). For faculty who teach both in the classroom and online, and who wish to show moving images, streaming video is the only way to meet the University mandate to provide exactly the same content in all versions of a course.

With physical media, experienced faculty have learned that “the key in access is planning ahead,” not only for classroom presentations but for pre-screenings. If the Libraries own the title, it might be on another campus or checked out. If the Libraries don’t own it, the professor must request it, await its order, arrival, cataloging, and processing, then pick it up and eventually return it. All of this is too time consuming for many faculty and the problem is exacerbated by short loan periods that make pickup and return even more burdensome. As one respondent put it, “It’s not hard to get videos from the library, but sometimes that extra half hour is more than I have, and I opt for something online instead. Whatever I can stream from my laptop is by far the easiest option.” One professor went so far as to say “I will never pick up a DVD to use. That is like starting fire with flint stones. I need to be able to upload it immediately. After all, isn’t that the essence and beauty of learning with film?” When delivery of a title is delayed, the professor can’t use it; s/he is forced to revise the lesson and deviate from the syllabus. At the same time, many professors desire flexibility in their syllabus, and anything requiring advance planning reduces options. In many disciplines currency is paramount; professors want up-to-the minute content, and immediate turnaround. They’d like the option of a last-minute consultation at the libraries, but until streaming becomes the norm and routine, this can be difficult, especially for faculty on the Newark or Camden campuses or at other outlying locations.

Student expectations and viewing needs also play into faculty's preference for streaming media. With streaming, many students can simultaneously view a title and aren't required to visit a library which might be geographically inconvenient to their particular campus. One respondent noted that "because more media is available online, students are less compliant about going to the Media Library" for screenings; then limited copies create problems when several students, "often waiting till the last minute," show up at the same time. One respondent recommended opening "a branch of a media rental department" in the main library, or "at least viewing kiosks with everything centrally located on servers."

When it comes to media use, many faculty at Rutgers find themselves in a quandary. On the one hand, pickup and delivery of physical media items are prohibitively inconvenient in light of faculty schedules. On the other hand, streaming media is a chronic problem due to infrastructural difficulties and lack of technical support.

<insert Figure 14>

Faculty were quite vocal on the technical issues, some of which apply to physical media as well. "Each and every classroom at the University should have the capability to play every format and have Internet connections," said one professor, yet faculty commented extensively about a general lack of reliability, and absence of requisite computers, DVD and VHS players, projectors, Internet access, wireless connections, bandwidth, written instructions, and training (both for classroom equipment and courseware uploading), as well as malfunctioning projectors, screens, and speakers. Faculty are often required to bring their own equipment into classrooms with hardware that is either non-existent, malfunctioning, or outdated. Because equipment and reliability vary from room to room a change of venue can require a change to the syllabus. Professors who teach on more than one campus find video capabilities so different on the two campuses that in some cases they must create two different syllabi

depending on the location of the class. Lack of training and professional development was a particular problem for those who are, as one described himself, “pre-technology.”

The advent of online learning and hybrid courses has increased the need for streaming resources while introducing new challenges. Many faculty commented on their desire to integrate video content into course software such as Sakai, Blackboard, or E-College; those teaching online courses *must* do so. Often these professors feel their selections are limited to what can be found for “free on the Internet,” yet that is not what they would choose to show in the classroom, and as mentioned previously, the University mandates they provide exactly the same content in all versions of a course. Generally, faculty lack a full understanding of public performance rights, fair use, and privacy permissions. Frequently they don’t know how to locate the content they need and lack the technical expertise or training to incorporate it into the courseware. These faculty, and the University staff whose job it is to assist them, need a streaming video solution that is user-friendly, courseware-agnostic and respectful of rights issues.

Whatever the current difficulties, for busy faculty, streaming video affords unrivalled flexibility and convenience, and the greater number prefer it, despite technological issues. There is little doubt that if more streaming content were available and technology issues were addressed, this would be the format of choice and moving images could play a far greater role in teaching and learning.

Unfortunately, when video is streamed beyond the classroom walls, significant rights issues come into play, and while few faculty were vocal on this point,^{xxix} this problem will become more pressing with the growth of online and hybrid courses.

Other Barriers to Moving Image Use

The difficulties inherent in any time-based media significantly inhibit use of moving images in teaching and learning. The dearth of time and tools to identify, pre-screen, and prepare moving images for presentation to students appears to present a major difficulty for faculty. When asked to rate the

various types of moving images, several faculty noted that low ratings are “more a reflection of not having thought about how to incorporate these into the classroom.” “More titles like this” listings at Amazon or Netflix would be rated “extremely useful,” one respondent said, “if I had more time to watch titles and populate the recommendations.” In reference to the various moving image identification tools faculty were asked to rate, one respondent said, “Some would be useful but I have not had opportunity to find and use” them. Another said simply, “I need to use moving images more, but there is so little time.”

One point made clear throughout survey comments was that many faculty often prefer using clips to films in their entirety, for a variety of reasons. (Cognitive learning theories suggest that “learners possess a limited amount of cognitive resources to apply towards encoding new concepts”^{xxx} and video processing requires “high levels of mental abstraction and synthesis” which “can overload students’ cognitive capacity, especially when students are novices in a domain.”^{xxxi} A 2007 study supported the hypothesis that segmenting video would promote students’ retention of relevant visual information. Data suggested that segmenting “allows novice students to reduce cognitive load by minimizing the amount of information that needs to be processed in working memory at one time.”^{xxxii}) Faculty cited their value as class starters, to introduce a topic, to demonstrate concepts, or simply to save “precious classroom time.” Perhaps of most importance to faculty, use of clips puts them in the driver’s seat. While the faculty surveyed would all agree that a video can be immensely valuable, the fact remains that the control exercised by the instructor is limited to turning it off and on.^{xxxiii} Once on, “the flow of information is controlled by the film production team. Thus one of the most important capabilities of the experienced teacher—the ability to respond immediately and appropriately to the needs of the students—is not available in these media.”^{xxxiv} By showing a series of their own selected clips interspersed with lecture content, the faculty member assumes the role of editor, actor, director, and producer. The professor becomes auteur.

Clips present particular difficulties for busy faculty; many are “unsure where to look for such materials”; several respondents said they could use guidance finding more relevant materials, and some would look to the libraries for this. Unfortunately libraries do not index moving image (or any) materials at the excerpt level, so discovery of relevant segments can be a challenge for reference librarians as well. There are technical issues too. One professor noted his biggest problem was editing DVDs to a manageable size and incorporating them into PowerPoint presentations. Another commented, “I’d love to know how to create a clip reel but have no idea where to go to find out.”

Discussion of Moving Images in Teaching and Learning

Although survey respondents were not required to answer any specific question about the uses and benefits of moving images in coursework or research,^{xxxv} virtually every question offered a space for a free text response, and respondents seemed to seize every opportunity to talk about their use of moving images, regardless of the specific question asked. Thus, an unexpected product of the survey was a rich trove of several hundred responses clearly articulating how and why moving images advance teaching and learning.^{xxxvi} Moreover, faculty responses reflected, and at times alluded to, the considerable research on how students learn and the role images and audiovisual presentations can play in the learning process. In order to meet user needs, librarians must have a full understanding of how resources are being used. In the interest of increasing that understanding, some of the research and faculty discussion are summarized below.

The Scholarly Literature on Moving Images in Teaching and Learning

The wider social sciences literature includes extensive research on moving images in teaching and learning. Studies have suggested that video may be superior to textual materials for learning complex skills because it can expose learners to problems, equipment, and events that cannot be easily demonstrated otherwise.^{xxxvii} Video-based instruction can standardize messages^{xxxviii} and allow students to control the sequence and pace of instruction.^{xxxix} For language learning, the moving image is a

particularly effective tool, since language is a cultural product^{xi} and the moving image offers the language's cultural content alongside the more traditional lexical and grammatical aspects of language learning.^{xii} Film and video present "complete communicative situations"^{xiii} including accents, paralinguistic cues, etc.^{xliii}

Further, moving images also play a role in addressing boredom and attention lapses. Research shows that "boredom in the lecture theatre has a significant presence for students" as well as serious repercussions, including diminished academic achievement.^{xliv} Some research has shown that "students do not pay attention continuously during a 50-minute lecture"^{xlv} and "student attention is higher during non-lecture pedagogies."^{xlvi} The least boring teaching methods involve interaction and active learning. "In order to reduce boredom, students must be engaged."^{xlvii} Finally, "a pattern of intentional diversity in instruction creates an educational climate that provides both a solid cognitive and affective base for learning."^{xlviii}

At a more basic level, Baggett observed that information obtained visually was more memorable than that obtained through listening.^{xlix} Kozma supported the fact that the visual component of a moving image is memorable, and "argued that simultaneous processing of auditory and visual information may aid learning."¹ Considerable research has been done on information encoding (imagery vs. verbal), learner preferences for imagery and verbal encoding, and the influence of those preferences on student performance. Research "suggests that pictures are easier to remember than words" and that information coded in both imagery and verbal systems is easier to remember than information coded only in the verbal system.^{li} In short, words and images together are "a powerful team."^{lii} That said, learner preferences differ^{liii} and when the presentation materials conflict with the individual's preferred representational style, recall is lower.^{liv} Those who strongly prefer verbal representation, however, adapt better to the conflicting scheme than those who strongly prefer imagery and have to adapt to the

traditional presentation.^{lv} Thus moving images, by employing both verbal and imagery systems, accommodate the greater number of learners.

Learning styles, an individual's "characteristics and preferred ways of gathering, organizing, and thinking about information,"^{lvi} (visual, aural, read/write, or kinaesthetic^{lvii}) also play a role in student performance.^{lviii} While most individuals use a combination of different learning modalities to learn effectively, each individual has preferences, and the most effective lessons will be those designed to best accommodate all learners.^{lix} Video, by accommodating a variety of learning styles, may best meet the needs of diverse learners.^{lx}

Research findings conflict as to moving images' contribution to understanding and retention. A number of factors have been cited as influencing the efficacy of moving images in learning, including learners' mental effort,^{lxi} engagement,^{lxii} learning styles,^{lxiii} motivation,^{lxiv} attitude,^{lxv} and literacy,^{lxvi} the type of information to be conveyed (e.g., procedural)^{lxvii}, the "capability of the media and the methods they employ,"^{lxviii} and the design and quality of the materials.^{lix} A review of numerous studies on video, comprehension, and retention also reveals that many take place in a laboratory or use video or multimedia presentations which are essentially replicating the print material. "Relatively few studies on video-based instruction have actually engaged learners in active learning."^{lxx}

Rutgers Faculty Use of Moving Images in Teaching and Learning

The uses of moving images described by faculty in this study contrast dramatically with the laboratory studies, painting a clear picture of video's impact and role in knowledge retention. As psychologist Jerome Bruner aptly noted in a 1961 discussion of innovative teaching materials of the late 1950s, "The intelligent use of [audiovisual] resources will depend upon how well we are able to integrate the technique of the filmmaker or the program producer with the technique and wisdom of the skillful teacher."^{lxxi}

In the classroom, be it physical or virtual, some Rutgers faculty use moving images to introduce a topic or provide background and context for lecture content. For literature classes, a film might introduce an historical period or provide historical contexts for literary works. A documentary about a writer which illustrates his or her home, workplace, social milieu, etc., can enrich understanding of the author's corpus. Historically, literature has contained frequent references to contemporary or past events or other literary works. Since literary texts increasingly allude to moving image works, understanding of the text is incomplete without an understanding of the filmic work it references; therefore faculty will show a clip from the film to illuminate the meaning of the text.

In many disciplines, the nature of the coursework itself demands a moving image as exemplar of a particular performance or art form, for example, in classes on public speaking, performing arts, media journalism, or cinema studies. In a business course section on leadership, one faculty member screens both an excerpt from the *Gettysburg* miniseries and an interview with Steve Jobs. A theater professor shows multiple productions of a play; media communications faculty screen the morning's news. For cinema studies courses, one respondent noted "the films we ask students to screen are as essential as are the books we ask students to buy" for literature courses.

That moving images can document and illustrate is axiomatic both within and outside the education community. Several faculty in this study cited video's unique ability to illustrate behaviors, techniques, activities, or processes, demonstrate technologies, or show students clinical concepts in practice. One chemistry professor has been creating and using videos for two decades to provide clear and consistent introductions to a day's experiment. Before the video was introduced, this instructor had Teaching Assistants or faculty course coordinators open each three-hour General Chemistry Lab session with a 15-20 minute talk about the day's experiment, using the chalkboard. Students evaluating these talks gave them low marks. Most TAs were foreign born and had some difficulties with English; often students on this commuter campus would miss the talk due to traffic tie-ups; details of an experiment

could be difficult or impossible to visualize on the blackboard; and with seven lab sections, the quality of the talks was highly variable. In 1988, the professor began replacing these live talks with videos.

Moving images could better show details of the experiments; it could be made available in the Library's video center, and students could replay the video as necessary to understand the more difficult points.

For the last ten years, videos have been created in digital format and posted on the course's home page.

Students can view the video before class, giving them more time for the hands-on experimental work or to think about what they have "discovered." Student ratings have risen dramatically, and the videos are now used three semesters each calendar year by up to 400 student viewers.^{lxxii}

In addition to the more conventional uses of moving images to document, illustrate, and contextualize, moving images offer additional advantages, including impact, timeliness, immediacy, and a communal learning experience, all of which facilitate greater engagement by the students with the course material, and with each other. Many survey respondents spoke to the power of moving images to educate, how they can speak more forcefully than a lecture and "bring the course to life." In the words of one faculty member, "A picture is worth a thousand words. I can tell my students that Blacks were beaten and lynched in the South, or I can show them a segment of PBS' *Eyes of the Prize* with actual footage of these atrocities. It makes all the difference in their learning and retention."

As cultural productions, film and video offer diverse perspectives on social and cultural realities. This fact, together with the inherent force of the moving image, can advance learning by destabilizing the closely-held "truths" which are often rooted in students' individual experience or personal bias. For example, an anthropology professor^{lxxiii} uses *Balseros*, a 2002 Spanish film about the 1994 Cuban rafters crisis,^{lxxiv} in part to explain the different waves of Cuban migration to the U.S. and demonstrate how the rafters of the early 1990s were different from Cubans in prior waves of migration. Frequently the professor's Latino Studies students are first-generation Cuban-Americans whose parents came in previous waves, and they have accepted on faith the anti-Castro Cuban narrative of Cubans as the

“successful” Latino migrants to the U.S. This film can challenge that main migration story and open students’ minds to new ideas.

Also contributing to media’s impact are its timeliness and immediacy; bringing current events into the classroom via the moving image “allows students to connect to real time practice and policy issues.” One professor noted YouTube’s special value for showing up-to-the-minute coverage. For a course on Social Movements and Media, for example, students “will watch quick clips of Occupy Wall Street, often the very day a protest, rally or series of arrests occurred.” Indeed, one professor likened video to “a virtual field trip” that can supplement and contrast with the actual field trips taken by her class.

Just as video can take students out of the classroom and into the field, professors use video to bring experts right into the classroom. One faculty member, when assigning readings by prominent theorists, often finds it useful to have the theorists explain and contextualize their own work. For example, she might “bring Noam Chomsky in and have *him* talk about the propaganda model, or his linguistics, or what have you. It makes the classroom experience more interesting.”^{lxxv}

Capturing and sustaining student attention is a constant challenge for faculty, and particularly in today’s classrooms, where students “are constantly distracted by easily available activities and contacts via their handheld devices.” According to one respondent, “I have found that nothing engages students in the classroom more than moving images.” “Student participation in class discussion increases with the use of visual materials,” says another, because it brings “an immediate common experience that we all have in the same room.”^{lxxvi} Many undergraduates more readily relate to the immediacy of that moment than to a text read in solitude quickly, partially, or several days before. Faculty have also observed that variety in instructional delivery can help sustain students’ attention. One professor notes the transition from lecture to documentary film enables students to “renew their interest and pay

attention again.”^{lxxvii} According to many respondents, this is particularly useful in Rutgers’ larger and longer lecture courses, many of which take place over a half or full day.

Interestingly, students also “seem to feel empowered to analyze visual images more readily than verbal ones,” according to one faculty member; this willingness on the part of students to engage with the moving image explains in part why another uses “for-profit movies loosely based on historical events” as a catalyst for analysis by students who are then asked to respond using knowledge drawn from other sources.

One professor’s use of Dennis O’Rourke’s 1988 documentary *Cannibal Tours* illustrates the many ways in which a moving image can further student understanding and discussion. The film raises its own interesting questions, but this professor uses it to set the stage for an Introduction to Anthropology class and deepen students’ understanding of the discipline they are about to study. Many of these young students are new to anthropology, and have many ideas as to what anthropologists study, such as monkeys, dinosaurs, or native peoples. *Cannibal Tours* depicts European and American tourists traveling to remote locales to experience native culture. The real subjects of the film are not the natives, but the tourists who go to “view” them. The film challenges assumptions about what anthropology is and who cultural anthropologists study. After the screening, the professor’s questions to the students engage them in discussion of the film, anthropology and the process of studying others. This is a way to ask “Who are anthropologists studying?” that can make students think, says the professor, and a way, “against all odds,” to make a very large class become interactive and collaboratively learn.^{lxxviii}

This same faculty member also calls moving images pedagogical tools that are “extremely useful in helping students understand complex issues.” Another said she finds images are useful pedagogically to explain and illustrate certain concepts and abstract theories which she makes “more real and more understandable” through the use of clips.^{lxxix} Furthermore, “students appreciate an image to go with an

idea,” yet another says; they “respond more and are more likely to remember visual images that accompany theory in the readings.”

Several survey respondents alluded to their students’ “visual thinking” or “strong visual memory”; these faculty consciously introduce the moving image into coursework, not as a supplement to the lecture and readings, but as a specific, selected medium of learning. According to one professor, “My students are very visual thinkers, and they enjoy readings more after they have seen a film on the subject.” A science professor cited student feedback in observing “a large proportion of the students that I have taught though the years have stated that they have a stronger visual memory and that they can understand a concept if it is expressed graphically.” Another went so far as to say “I think that in the future almost all learning will be done through film images. Although I still assign academic articles and sections of books, the lasting lessons are from visual images [and] sound. I don't see this as detracting from students' intellectual development; rather it is an enrichment and enhancement of the subject matter.”

Survey responses indicate that many faculty build moving images into their coursework as an effective means to engage students and enhance learning. But this is only part of the picture. To many of these faculty, the moving image’s key role is to advance media literacy. One professor speaks of the “new and different kind of world” in which we live, a visuals-saturated environment constantly bombarding us with images. “No image is ever neutral,” she says; “no image is ever value-free.”^{lxxx} More often than not, an image is used to sell something, be it a commodity, an idea, a lifestyle, or a value. In the words of one survey respondent, “We cannot assume that our students are visually literate on account of their immersion in a so-called visual culture.” Another notes, “It’s a challenge to get undergraduates, who take the video at face value, to look at the videos critically as texts reflecting points of view just like the texts they read.”^{lxxxi} In today’s media-rich culture, taking images seriously, using them, and training students to think critically about them, is crucial.^{lxxxii} “Students often spend far

more time exposed to television and movies than they do to printed texts, yet they are far less equipped by their academic training to deal critically with those visual texts so central to our culture. I believe that students at every stage of their education from pre-school through graduate school should be taught how film and television work, and how best to understand and interpret those texts.”^{lxxxiii} When engaging film and video critically, students refine analytical and interpretive skills and learn how to treat moving images as cultural texts to be analyzed, and not just consumed. One professor occasionally screens, without introduction, satires and small mockumentaries in her courses. Student reactions usually provoke lively discussion, because despite repeated deconstruction of media texts in her classes, viewers are still caught unawares, and students come to realize “we are still a receptacle; we are still ‘tricked’” by the medium.”^{lxxxiv}

Conclusion

We live in a media-centric culture where video creation and consumption are increasing at dramatic rates, and moving images are playing an ever-expanding role in teaching and learning. As a pedagogical tool, the moving image documents, illustrates, and contextualizes; it offers currency, immediacy, impact, and a communal experience that can engage students as texts cannot. Moving images can help students understand complex or abstract concepts and provide an additional modality for learning. They deliver experts directly to the classroom; they teach media literacy. One professor summed up the benefits in three words: “pacing, memorability, explanatory power.”

Nonetheless, little has been written about how faculty identify, obtain, and use this material, and the library’s role in those processes. This study, envisioned as a dialogue between library and teaching faculty at Rutgers University, was conducted to learn more through a discussion forum, survey, and interviews. Findings affirm that the moving image in teaching and learning offers a striking array of benefits and faculty in a variety of disciplines consider it a crucial component of their coursework.

Most faculty surveyed, however, do not find the library the most useful source for identifying and obtaining moving images resources. Many rely on word of mouth, reviews, or their own discoveries to identify moving images, which are then obtained through online video sites, and personal or departmental acquisitions. A surprising percentage of active faculty video consumers are unaware of library collections, tools, and services, including the catalog. Of those familiar with the library catalog, a significant number find it difficult to search and/or navigate. While not explicitly articulated by survey respondents, it is known that moving image resources are siloed and the keys to finding them are scattered. As demand for streaming video increases, libraries are purchasing more and more streaming packages, but these come at a significant cost. At Rutgers, at least, it is too early to tell how well these are known and used, and it will be interesting to see whether or not they gain traction over time.

Of particular concern is the fact that libraries collect and catalog moving image works, but what the faculty often need are clips. In short, libraries play almost no role in facilitating access to the moving images faculty find most useful: individual segments of works, and resources outside the organizational collections. The demand for streaming video, the heavy use of YouTube resources, the expansion of online learning, and the difficulty in obtaining rights clearances, point to an increasing need for open access to moving images.

Findings suggest several areas for further examination. To improve their visibility, libraries might provide more outreach to raise awareness of their collections, tools, and services. They should seek ways to better organize and expose video references to all users, faculty and students alike. Particularly given the complex array of resources, platforms, and access restrictions, it is essential that libraries better integrate moving image resources into bibliographic instruction and other public services presentations, including liaison work, reference services, and chat. Catalog searching, retrieval, and navigation must be improved to aid discovery of the video “needle in the haystack.”

Often it is not only the faculty, but their support staff, who are burdened with the problems of access to moving images. Conversations with these staff indicate faculty need assistance to find streaming content, to understand the associated intellectual property rights, and to navigate complex issues of technology, infrastructure, and video delivery, for both classroom and courseware. Perhaps libraries should focus their resources on the licensed materials and provide guidance on content discovery and acquisitions, complex rights issues, and content delivery.

There may well be ways to facilitate use of clips in syllabi and courseware, either re-examining indexing at the segment level (perhaps on an on-demand basis) and/or offering services to facilitate use of clip reels, but always with an eye toward what the publishers are planning to provide. At Rutgers, our plan is to provide a streaming server to deliver video via RUcore, incorporating our analytic tool with private LDAP-authenticated workspaces for faculty and students, and negotiating licenses accordingly, as we do for reserves. These workspaces will allow faculty and students to share analytics within groups, such as by course or project teams within a course. Our hope is that the analytic will make analysis more interactive, with students documenting their own insights in a manner that can be shared with the instructor and fellow students.

Open access is a ubiquitous topic in academia, but more could be said in terms of open access to video. There is also room for libraries to take the lead in providing open access to today's new "grey literature," locally videorecorded conference proceedings that serve faculty's need to bring world-renowned experts into the classroom. These are areas where libraries have much to offer. Most importantly, libraries must remain flexible as these solutions are subject to change as the moving images domain evolves.

The largest issue, however, may be that faculty video users appear to be falling away. If libraries are to survive as players in this arena, they will have to redefine themselves. They must reexamine their relationship to YouTube and other online video sources. Are there ways in which libraries can facilitate

access to the heavily used resources they don't own, and never will? Will they choose to compete with online providers, or identify new services to complement those of the Internet video sites? Libraries should stake out their territory, marshal their resources, focus their efforts, and get the word out.

COLLEGE & RESEARCH LIBRARIES PRE-PRINT

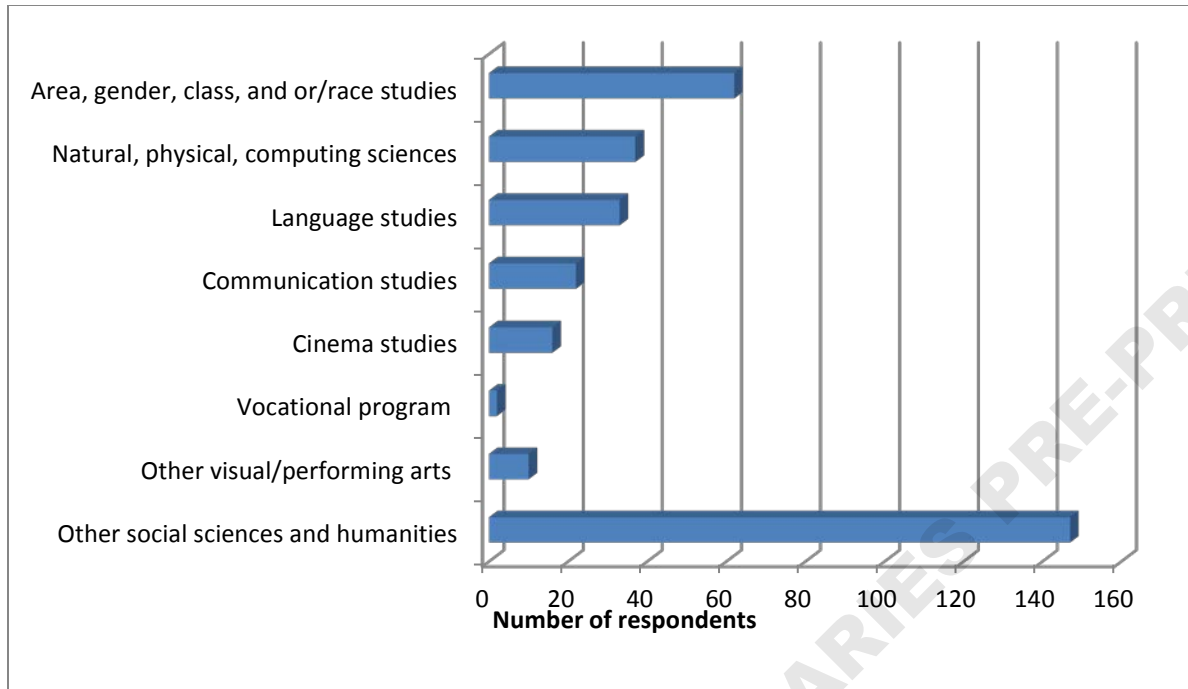


Figure 1. What is your area of teaching or research at Rutgers? (Select all that apply.)

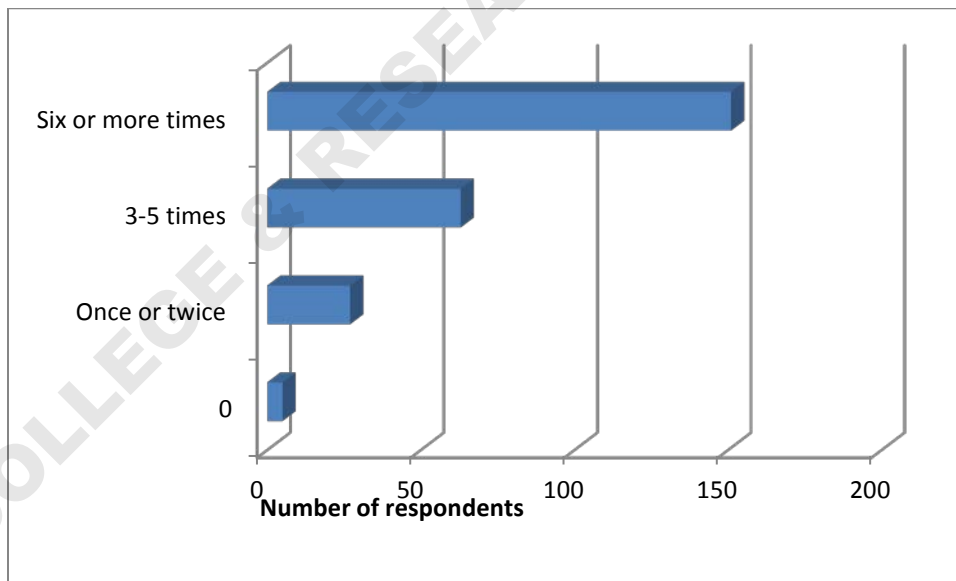


Figure 2. In a typical academic year, how many times do you use moving images in the classroom?

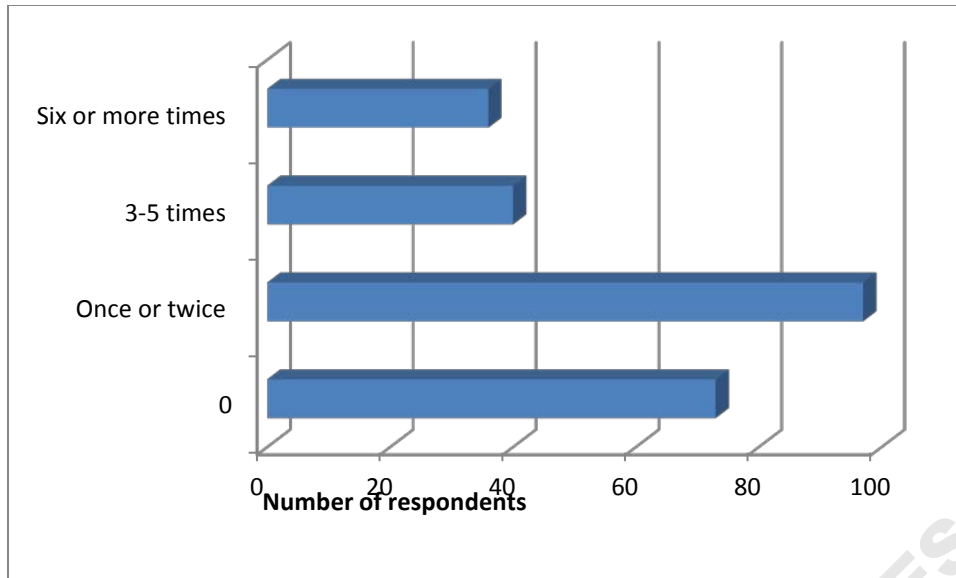


Figure 3. In a typical academic year, how many times do you assign viewing outside the classroom?

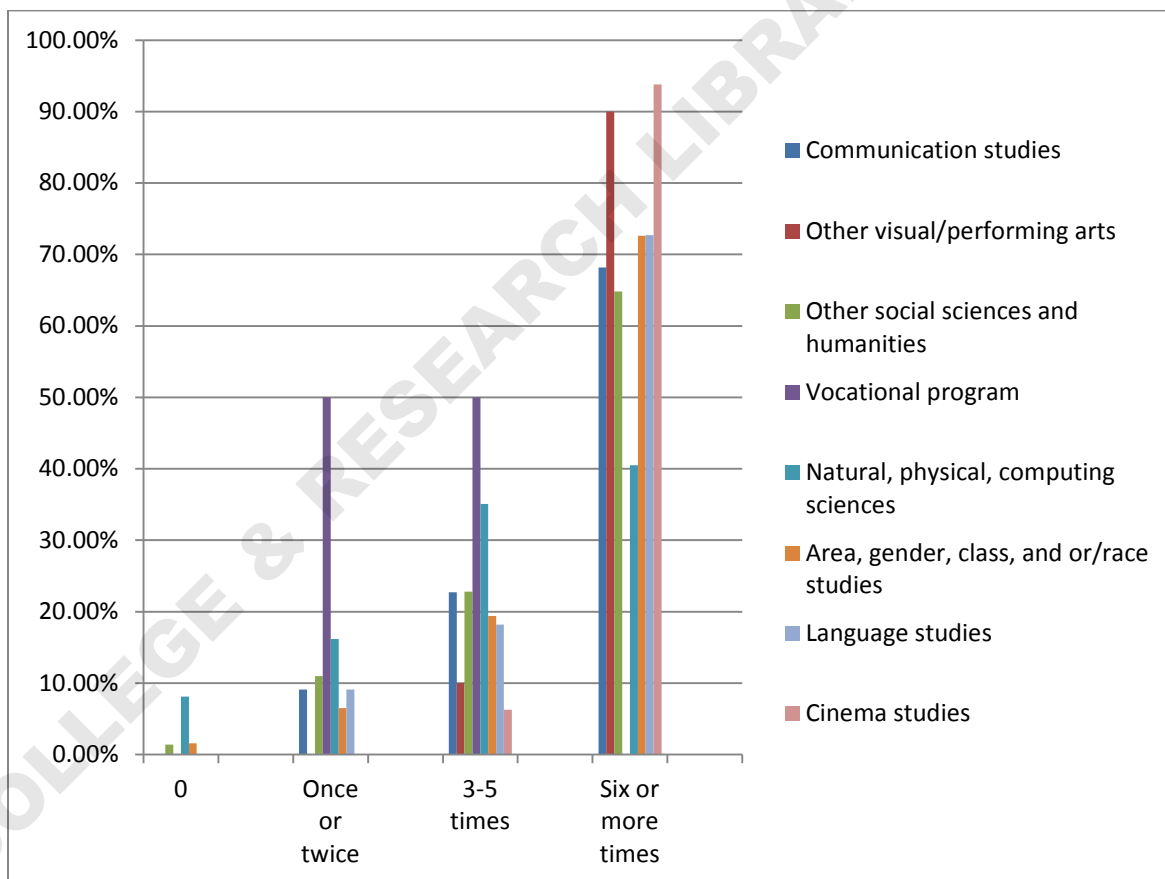


Figure 4. In a typical academic year, how many times do you use moving images in the classroom?

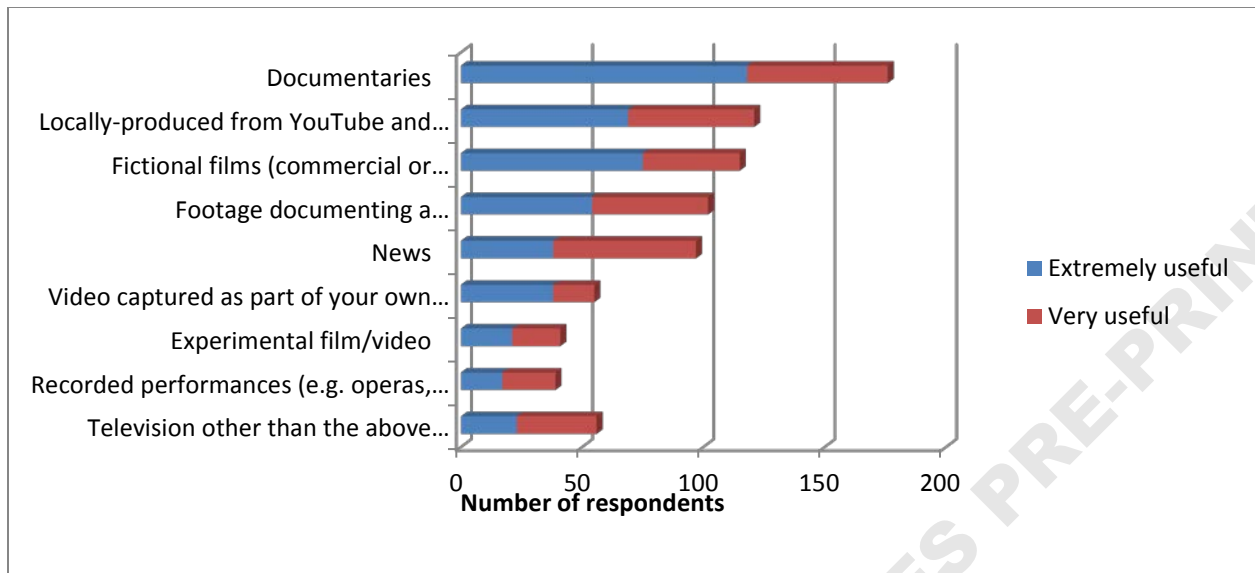


Figure 5. For use in your own courses, how useful are the following types of moving images?

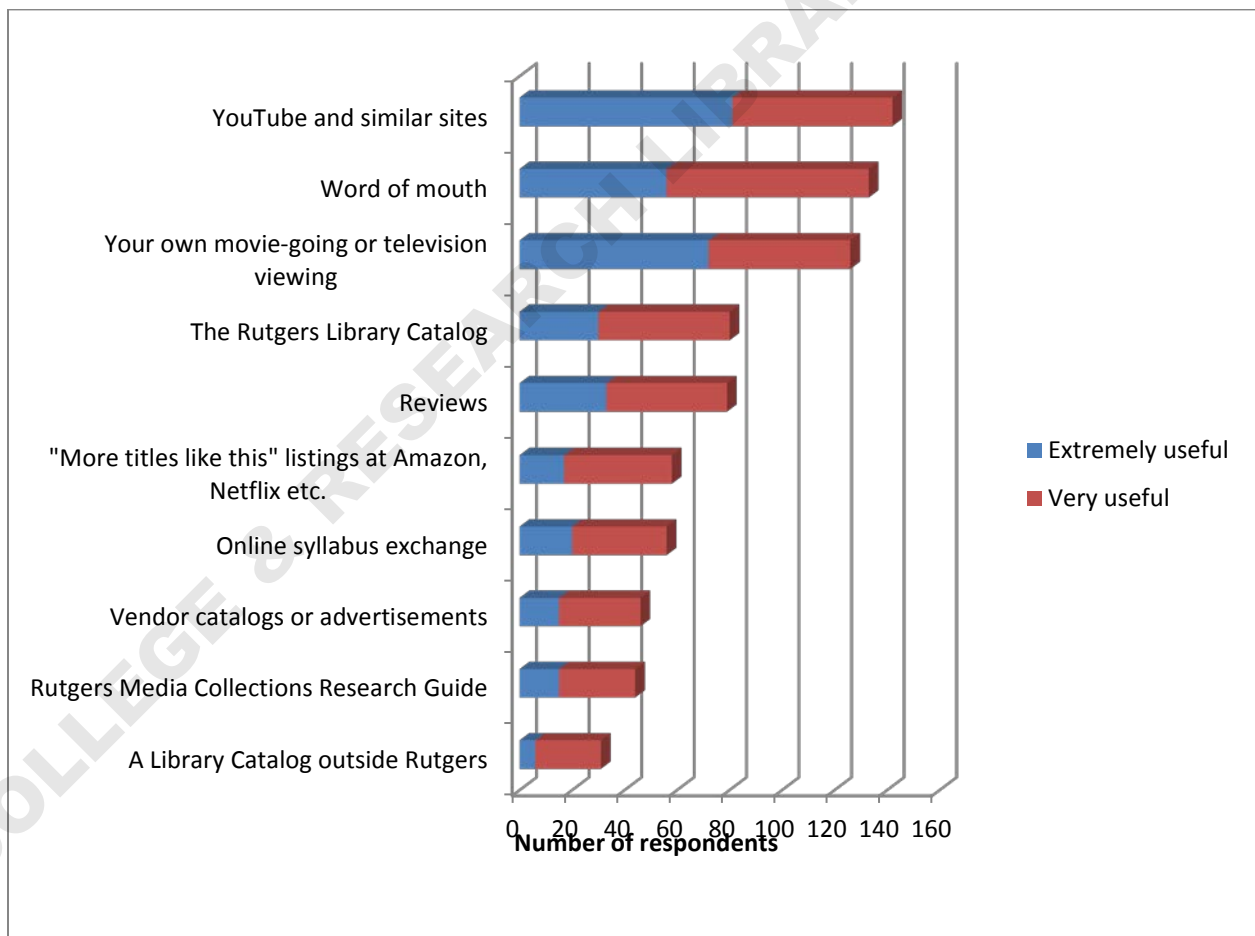


Figure 6. How useful are these resources for *identifying* the best moving images for teaching, learning and/or research?



Figure 7. How useful are these resources for *identifying* the best moving images for teaching, learning and/or research?

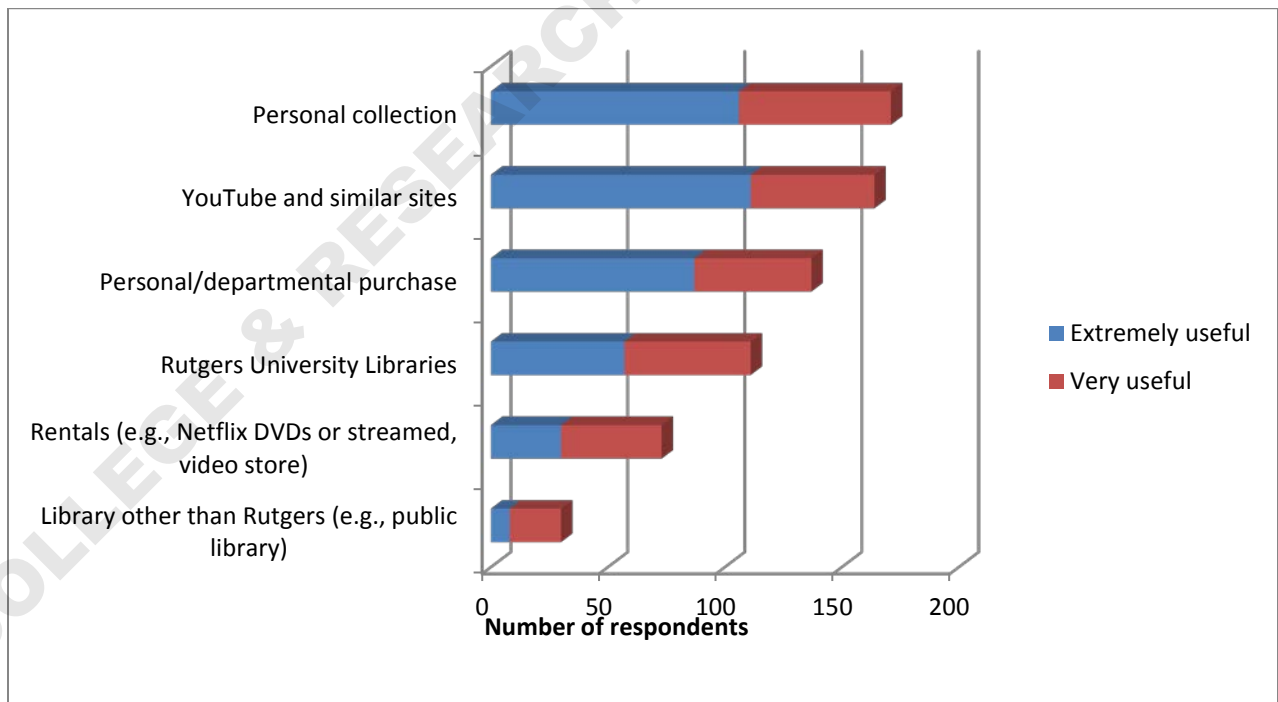


Figure 8. How useful are these sources for *obtaining* moving images for teaching, learning and/or research?

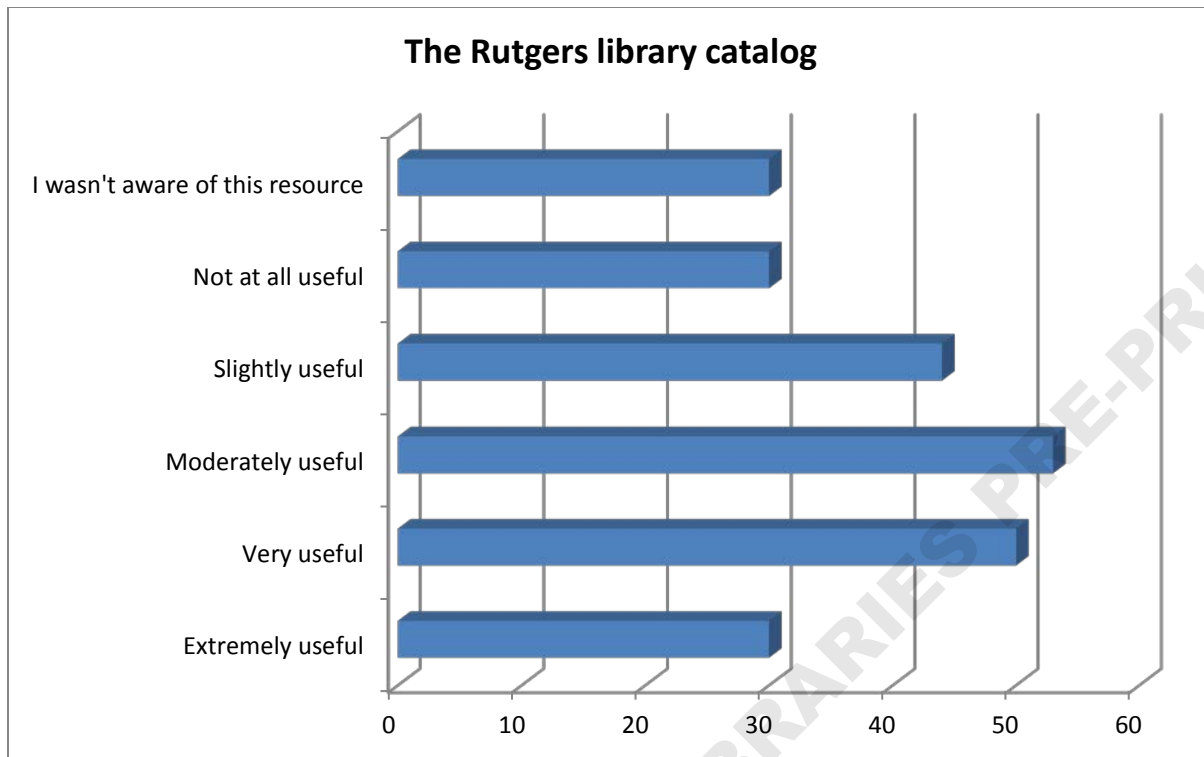


Figure 9. How useful is the Rutgers library catalog for *identifying* the best moving images for teaching, learning and/or research?

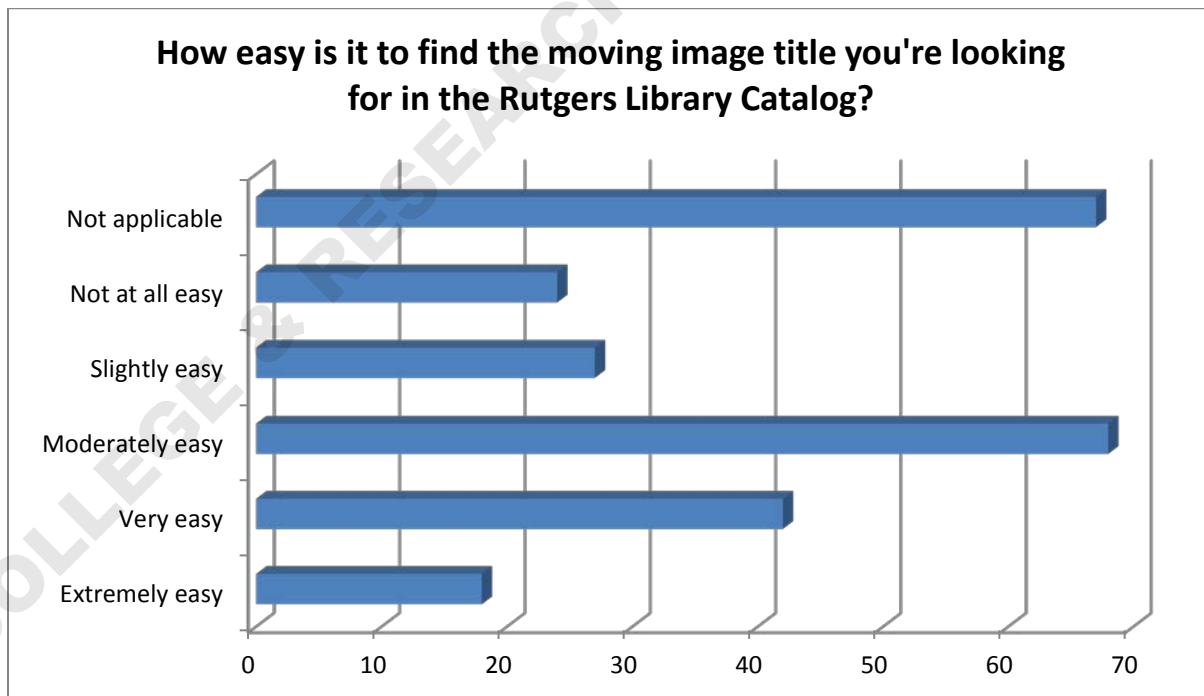


Figure 10. How easy is it to find the moving image title you're looking for in the Rutgers library catalog?

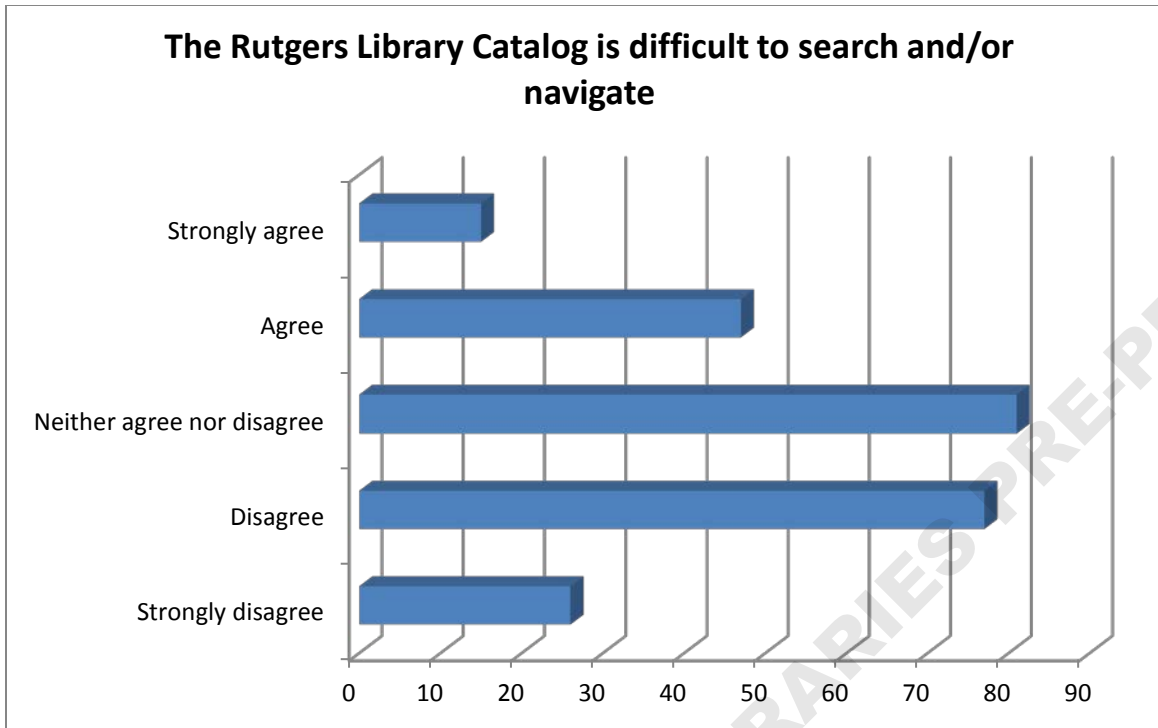


Figure 11. Is the Rutgers library catalog difficult to search and/or navigate?

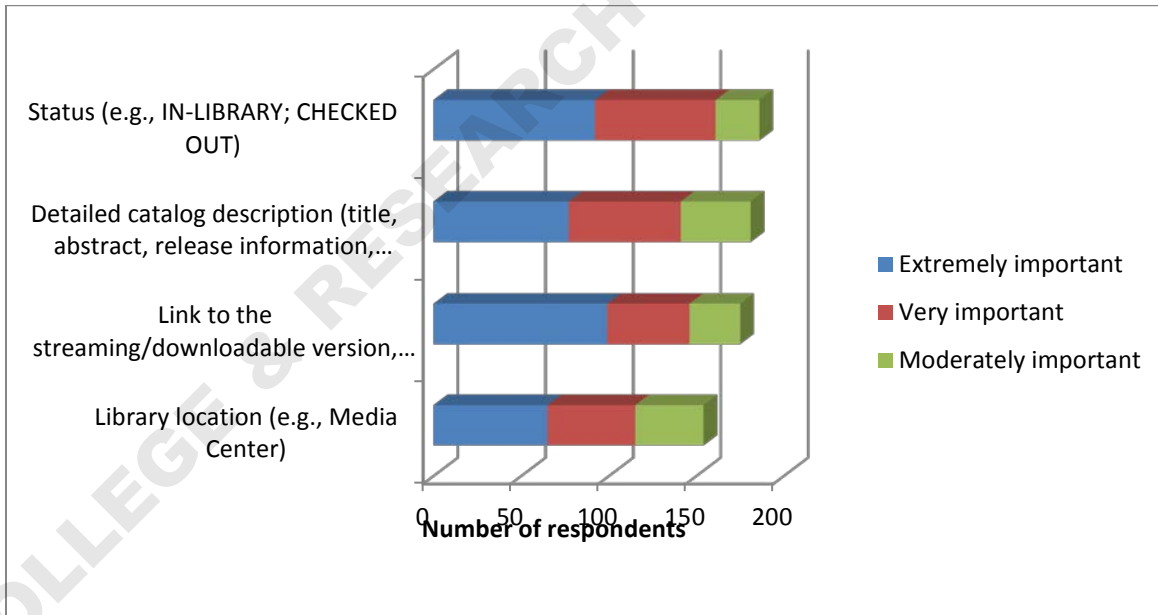


Figure 12. When searching moving images in the Rutgers Library Catalog, how important are the following?

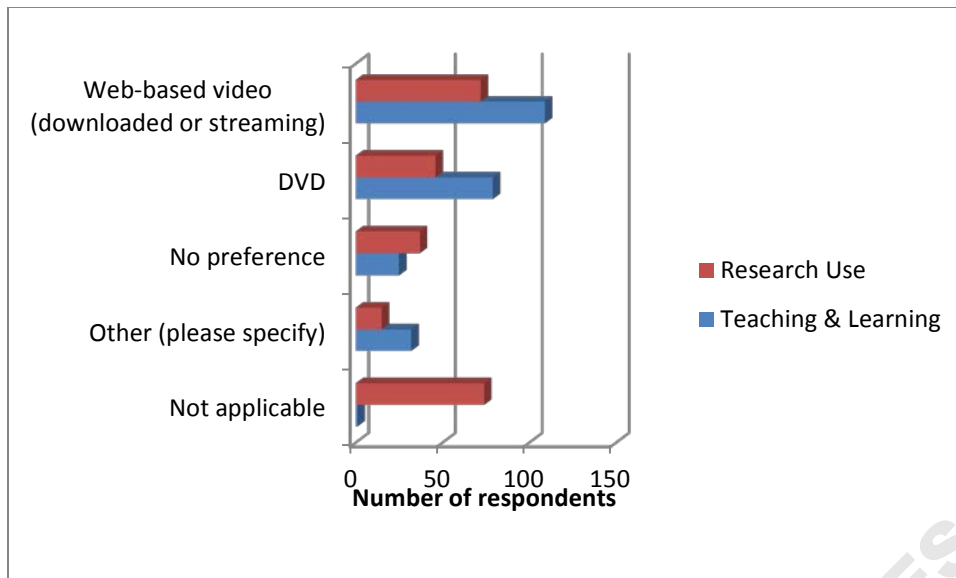


Figure 13. What moving image format do you prefer for teaching and learning? For your own research use?

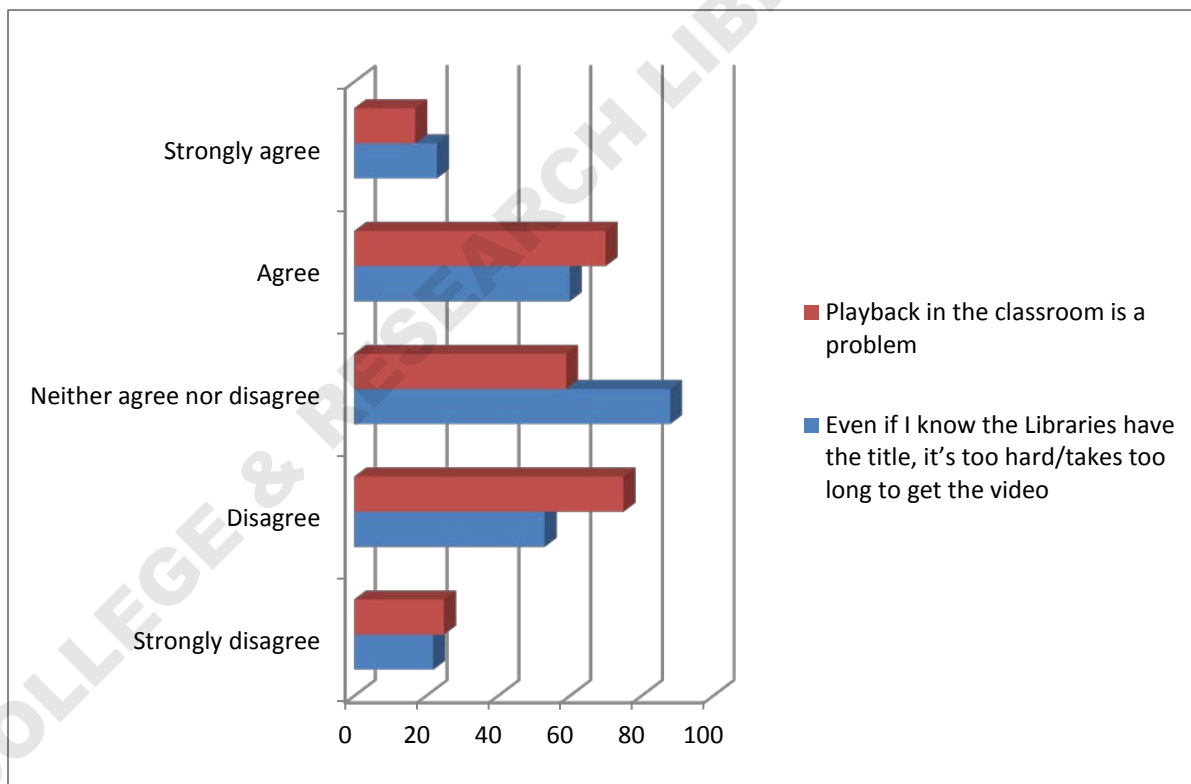


Figure 14. Delays obtaining physical media and infrastructure problems for streaming video

72% of all respondents screen 6+ times per academic year:	
94%	of Cinema studies
90%	of Visual/performing arts (exclusive of Cinema studies)
72%	of Language studies
72%	of Area, gender, class, and/or race studies
68%	of Communication studies
64%	of Other social sciences and humanities
40%	of Sciences
7% of all respondents screen only 1-2 times per academic year:	
16%	of Sciences
10%	of Other social sciences and humanities
9%	of Communication studies
9%	of Language studies
6%	of Area, gender, class, and/or race studies
0%	of Cinema studies
0%	of Visual/performing arts (exclusive of Cinema studies)

Table 1. Highest and lowest use by discipline

ⁱ *Video Use and Higher Education: Options for the Future* (June, 2009), available online at http://www.intelligenttelevision.com/images/uploads/INTCCCNVUVideo_and_higher_edJune_2009.pdf [accessed May 20, 2012].

ⁱⁱ Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (New Haven: Yale University Press, 2006) and Jonah Bossewitch, *Possibility Spaces: Architecture and the Builders of Information Societies* (December 10, 2008), cited in *Video Use and Higher Education* (June, 2009): 3.

ⁱⁱⁱ *Video Use and Higher Education* (2009): 9.

^{iv} Jane J. Otto, "A Sound Strategy for Preservation: Adapting Audio Engineering Society Technical Metadata for Use in Multimedia Repositories," *Cataloging & Classification Quarterly* 48 (2010): 403-422.

^v Jane J. Otto and Sarah L. Ralston, "Disseminating Equine Research and Teaching Videos Through the Institutional Repository: A Collaboration," *Journal of Agricultural & Food Information* 13 (2012): 64-77, available online at 10.1080/10496505.2012.638247. RUanalytic won the New Jersey Library Association College and University Section/ACRL-NJ's Technology Innovation Award for 2012; see *Winner of the 2012 Technology Innovation Award*, available online at <http://cus.njla.org/node/161> [accessed May 20, 2012]. For more information on the RUanalytic, see http://www.libraries.rutgers.edu/rul/news/12/04_RUanalytic.shtml.

^{vi} *RDA: Resource Description & Access*, prepared by the Joint Steering Committee for the Development and RDA, is co-published by the American Library Association, the Canadian Library Association, and CILIP: Chartered Institute of Library and Information Science Professionals.

^{vii} For more information about the Kual Foundation's Open Library Environment (OLE), see *Kuali OLE*, available online at <http://www.kuali.org/ole> [accessed May 20, 2012].

^{viii} For example, see Dean A. Zollman and Robert G. Fuller, "Teaching and Learning Physics with Interactive Video," *Physics Today* (April 1994): 41.

^{ix} Gregory Krippel, A. James McKee, and Janette Moody, "Multimedia Use in Higher Education: Promises and Pitfalls." *Journal of Instructional Pedagogies* 3 (2009): 1-8.

^x Kerry Shephard, "Questioning, Promoting and Evaluating the Use of Streaming Video to Support Student Learning," *British Journal of Educational Technology* 34 (2003): 295-308.

^{xi} Jane Barford and Colin Weston, "The Use of Video as a Teaching Resource in a New University," *British Journal of Educational Technology* 28 (Jan. 1997): 40-50.

^{xii} *Video Use and Higher Education: Options for the Future* (2009).

^{xiii} *Library Use of Video & Audio* (Primary Research Group, 2011).

^{xiv} Ciara Healy, "Introduction: Current Trends in Academic Media Collections and Services" *Library Trends* 58 (Winter 2010): 321-323.

^{xv} John Vallier, "Twenty-First Century Academic Media Center: Killer App or Chindogu?" *Library Trends* 58 (Winter 2010): 378-390.

^{xvi} Ciara Healy, "Netflix in an Academic Library: a Personal Case Study," *Library Trends* 58 (Winter 2010): 321-323.

^{xvii} "Rutgers University," *Wikipedia, the Free Encyclopedia* [accessed May 20, 2012].

^{xviii} "Office of the Executive Dean of Agriculture and Natural Resources" website, available online at <http://execdeanagriculture.rutgers.edu> [accessed May 20, 2012]. The agricultural extension offices are part of the New Jersey Agricultural Experiment Station, a research and outreach arm of the University.

^{xix} Rutgers Continuing Studies, "Off Campus Programs," available online at <http://offcampus.rutgers.edu/home> [accessed May 20, 2012].

^{xx} This count does not include the Shoah Foundation's Visual History Archive, a database of 52,000 oral histories which are cataloged at the collection level.

^{xxi} The other significant streaming video collection is the Shoah Foundation's Visual History Archive.

^{xxii} See Asia Society, "The China Boom Project," available online at <http://chinaboom.asiasociety.org/about> [accessed May 20, 2012].

^{xxiii} The professors were Deepa Kumar, Associate Professor of Journalism and Media Studies, Ulla Berg, Assistant Professor of Anthropology and Latino & Hispanic Caribbean Studies, and Richard Koszarski, Professor of English and a film historian who teaches cinema studies.

^{xxiv} Zollman and Fuller, "Teaching and Learning Physics with Interactive Video," 41.

^{xxv} The Wikipedia article on the serials crisis calls it "common shorthand to describe the chronic subscription cost increases of many scholarly journals. The prices of these institutional or library subscriptions have been rising much faster than the Consumer Price Index for several decades, while the funds available to the libraries have remained static or have declined in real terms." See "Serials Crisis," *Wikipedia, the Free Encyclopedia* [accessed March 28, 2012]. In practice, the consequence was diverting of funding from other library resources in order to cover the costs of the subscriptions.

^{xxvi} The survey was directed to faculty actively using moving images in coursework or research, so in theory, there should be no 'zero' responses. However one respondent was not currently teaching, but answered in terms of his extensive prior experience.

^{xxvii} The Media Librarian at Rutgers maintains a series of LibGuides which pull together titles by broad theme, discipline, and curricular components, and which assist users in locating streaming video. See <http://libguides.rutgers.edu/cat.php?cid=25882> [accessed May 20, 2012].

^{xxviii} In 1993, 30 percent of ARL libraries with video collections included either only some or none of their videos in the online catalogs, according to Kristine R. Brancolini and Rick E. Provine, *Video*

Collections and Multimedia in ARL Libraries: Changing Technologies, ed. Laura A. Round, OMS Occasional Paper, no. 19 (Washington, D.C.: Association of Research Libraries, Office of Management Services, 1997): 11, cited in Jeannette Ho, "Cataloging Practices and Access Methods for Videos at ARL and Public Libraries in the United States," *Library Resources and Technical Services* 48 (April 2004): 108.

^{xxix} In hundreds of free-text survey comments, only one faculty member alluded to rights issues, and s/he mentioned them twice: "I only use professionally generated content and insist on proper projection. I have never and will never encourage students to consult AV materials via any non-licensed source. First-year students should be made aware of the deleterious effects of YouTube both on artistic integrity and on the rights of creative artists." And again, "Permanent collections of the RUL should remain the focus of university efforts to make content available. There is no reason to sponsor external corporate ventures when legal acquisitions are possible. The RUL catalog in AV is good and deep and the new Media Center can contribute to making students aware of the legal channels through which content can be accessed in original form."

^{xxx} J. Sweller, "Cognitive Load Theory, Learning Difficulty, and Instructional Design," *Learn Instr* 4 (1994): 295-312, cited by Elizabeth A.H. Wilson et al, "Media and Memory: the Efficacy of Video and Print Materials for Promoting Patient Education About Asthma," *Patient Education and Counseling* 80 (2010): 393.

^{xxxi} Roxana Moreno, "Decreasing Cognitive Load for Novice Students: Effects of Explanatory vs. Corrective Feedback on Discovery-Based Multimedia," *Instructional Science* 32 (2004): 99-113 and J. Sweller, *Instructional Design in Technical Areas* (Camberwell, Australia: ACER Press, 1999), cited in Roxana Moreno, "Optimising Learning from Animations by Minimising Cognitive Load: Cognitive and Affective Consequences of Signaling and Segmentation Methods," *Applied Cognitive Psychology* 21: (2007): 766.

^{xxxii} Roxana Moreno, "Optimising Learning from Animations by Minimising Cognitive Load: Cognitive and Affective Consequences of Signaling and Segmentation Methods," *Applied Cognitive Psychology* 21: (2007): 778.

^{xxxiii} Zollman and Fuller, "Teaching and Learning Physics with Interactive Video," 41.

^{xxxiv} Ibid.

^{xxxv} The final question in the survey was "Is there anything else you'd like to tell us about how or why you use moving images in your research or coursework?" This question was not required but 19% (58) responded; in a question asking permission to follow up, over 63% said "yes."

^{xxxvi} Interestingly, although the survey asked about research use in several of its questions, almost no free-text responses addressed moving images in the research context.

^{xxxvii} R.C. Anderson, B.B. Armbruster, and M. Roe, *A Modest Proposal for Improving the Education of Reading Teachers*, (ERIC, ED 313674, 1989) and R.C. Overbaugh, "The Efficacy of Interactive Video for Teaching Basic Techniques of Classroom Management of Pre-Service Teachers," *Computers in Human Behaviors* 11 (1995): 511-527, cited by Hee Jun Choi and Scott D. Johnson, "The Effect of Context-Based Video Instruction on Learning and Motivation in Online Courses," *The American Journal of Distance Education* 19 (2005): 217.

^{xxxviii} L.A. Dusenbury, W.B. Hansen, and S.M. Giles, "Teacher Training in Norm Setting Approaches to Drug Education: a Pilot Study Comparing Standard and Video-Enhanced Methods," *Journal of Drug Education* 33 (2003): 325-336, cited by Choi and Johnson, "The Effect of Context-Based Video Instruction," 217.

^{xxxix} R.E. Mayer, "Ten Research-Based Principles of Multimedia Learning," in H.F. O'Neil & R.S. Prez, *Web based learning: theory, research, and practice* (Mahwah, N.J.: Lawrence Erlbaum Association, 2006): 371-389, cited in Doris U. Bolliger and Supawan Supanakorn, "Learning Styles and Student

Perceptions of the Use of Interactive Online Tutorials," *British Journal of Educational Technology* 42 (2011): 471.

^{xi} Erwin Tschirner, "Language Acquisition in the Classroom: the Role of Digital Video. *Computer Assisted Language Learning* 14 (2001): 312.

^{xii} C. White, P. Easton, and C. Anderson, "Students' Perceived Value of Video in a Multimedia Language Course," *Educational Media International* 37 (2000): 168.

^{xiii} R. Tuffs and I. Tudor, "What the Eye Doesn't See : Cross-Cultural Problems in the Comprehension of Video Materials," *RELC Journal* 21 (1990), cited in White, Easton, and Anderson, "Students' perceived value of video," 168.

^{xiii} White, Easton, and Anderson, "Students' Perceived Value of Video," 168. The authors add (p. 174) that video also "replicates situations that the foreign language classroom cannot produce, and for distance learning students in particular, the opportunity to witness the dynamics of interaction in the cultural context is highly valued."

^{xiv} Sandi Mann and Andrew Robinson, "Boredom in the Lecture Theatre: an Investigation into the Contributors, Moderators and Outcomes of Boredom Amongst University Students." *British Educational Research Journal* 35:2 (April 2009): 244, 256. Mann and Robinson found that 59% of students find their lectures boring half the time and 30% find most or all of their lectures to be boring (p. 253).

^{xv} Diane M. Bunce, Elizabeth A. Flens, and Kelly Y. Neiles, "How Long Can Students Pay Attention in Class?: a Study of Student Attention Decline Using Clickers," *Journal of Chemical Education* 87 (December, 2010): 1442.

^{xvi} Bunce, Flens, and Neiles, "How Long Can Students Pay Attention," 1442. The 2009 Mann-Robinson study assigned boredom ratings to various teaching methods, and found that video

presentations fall roughly in the middle of a continuum ranging from laboratory work, the most boring, to group discussions, the least boring (pp. 243, 250, 255).

^{xlvii} Mann and Robinson, "Boredom in the Lecture Theatre," 246.

^{xlviii} Bob Samples, "Instructional Diversity: Teaching to your Students' Strengths," *The Science Teacher* 61 (Feb. 1994): 14.

^{xlix} P. Baggett, "Role of Temporal Overlap of Visual and Auditory Material in Forming Dual Media Associations," *Journal of Educational Psychology* 76:3 (1984): 408-417, cited by Choi and Johnson, "The Effect of Context-Based Video Instruction," 217.

^l R.B. Kozma, "Learning with Media," *Review of Educational Research* 61 (1991): 179-211, cited by Choi and Johnson, "The Effect of Context-Based Video Instruction," 217.

^{li} Shu-Sheng Liaw, "Considerations for Developing Constructivist Web-Based Learning," *International Journal of Instructional Media* 31 (2004): 314. For a description of Dual Coding Theory, see Janet B. Butler and R. David Mautz, Jr., "Multimedia Presentations and Learning: a Laboratory Experiment," *Issues in Accounting Education* 11 (Fall, 1996): 262-3.

^{lii} Liaw, "Considerations for Developing Constructivist Web-Based Learning," 314. Dual Coding Theory posits that both visual and verbal information is used to represent information; see R. Sternberg, *Cognitive theory*, 3rd ed. (Belmont, CA: Thomson Wadsworth, 2003), cited in "Dual-Coding Theory," *Wikipedia, the Free Encyclopedia* [accessed May 20, 2012].

^{liii} Janet B. Butler and R. David Mautz, Jr. "Multimedia Presentations and Learning: a Laboratory Experiment," *Issues in Accounting Education* 11 (Fall, 1996): 263.

^{liv} Butler and Mautz, "Multimedia Presentations and Learning," 271.

^{lv} Ibid.

^{lvi} N.D. Fleming, *VARK: a guide to learning styles*, available online from <http://www.vark-learn.com/english/index.asp>, cited by Bolliger and Supanakorn, "Learning Styles and Student Perceptions," 471.

^{lvii} Doris U. Bolliger and Supawan Supanakorn, "Learning Styles and Student Perceptions of the Use of Interactive Online Tutorials," *British Journal of Educational Technology* 42 (2011): 471.

^{lviii} Bolliger and Supanakorn, "Learning Styles and Student Perceptions," 471.

^{lix} Bolliger and Supanakorn, "Learning Styles and Student Perceptions," 471.

^{lx} *Ibid.*, p. 479. Although the research pertained to online tutorials, it suggests the same would be true of moving images.

^{lxi} K.S. Cennamo, "Learning from Video: Factors Influencing Learners' Preconceptions and Invested Mental Effort," *Educational Technology Research and Development* 41 (1993): 33-45, cited by Choi and Johnson, "The Effect of Context-Based Video Instruction," 217.

^{lxii} G. Salomon, "Television is 'Easy' and Print is 'Tough': The Differential Investment of Mental Effort in Learning as a Function of Perceptions and Attributions," *Journal of Educational Psychology* 76 (1984): 647-658, cited by Choi and Johnson, "The Effect of Context-Based Video Instruction," 217.

^{lxiii} Bolliger and Supanakorn, "Learning Styles and Student Perceptions," 470-481.

^{lxiv} Choi and Johnson, "The Effect of Context-Based Video Instruction," 217.

^{lxv} "Users who have positive attitudes toward a system are more likely to use the system and to use it effectively," according to F.D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly* (September, 1989): 319-342; F.D. Davis, "User Acceptance of Information Technology: System Characteristics, User Perceptions and Behavioral Impacts," *International Journal of Man-Machine Studies* 3 (1993): 475-487; and F.D. Davis, R.P. Bagozzi, and P.R. Warshaw, "User Acceptance of Computer Technology: a Comparison of Two Theoretical

Models," *Management Science* (August, 1989): 982-1003, cited in Butler and Mautz, "Multimedia Presentations and Learning," 265.

^{lxvi} Much of the conflicting literature is surveyed in Elizabeth A.H. Wilson et al, "Media and Memory: the Efficacy of Video and Print Materials for Promoting Patient Education about Asthma," *Patient Education and Counseling* 80 (2010): 394.

^{lxvii} Wilson et al, "Media and Memory," 397.

^{lxviii} R. Kozma, "Will Media Influence Learning: Reframing the Debate," *Educational Technology Research and Development* 42 (1994): 7-19, cited in Bolliger and Supanakorn, "Learning Styles and Student Perceptions," 471.

^{lxix} Bolliger and Supanakorn, "Learning Styles and Student Perceptions," 471, 472.

^{lxx} Choi and Johnson, "The Effect of Context-Based Video Instruction," 218.

^{lxxi} J.S. Bruner, *The Process of Education* (Cambridge, Mass.: Harvard University Press, 1961), cited in Zollman and Fuller, "Teaching and Learning Physics with Interactive Video," 41.

^{lxxii} Email correspondence with professor, October 14, 2011.

^{lxxiii} The professor was Ulla Berg, who described this use in the faculty discussion forum.

^{lxxiv} "Balseros (film)," *Wikipedia, the Free Encyclopedia*, available online from [http://en.wikipedia.org/wiki/Balseros_\(film\)](http://en.wikipedia.org/wiki/Balseros_(film)) [accessed May 20, 2012].

^{lxxv} The professor was Deepa Kumar, who described this use in the faculty discussion forum.

^{lxxvi} The professor was Ulla Berg, quoted from the faculty discussion forum.

^{lxxvii} Kumar presentation at the faculty discussion forum. Note that Bunce et al. found that the pedagogies that decrease student attention lapses have the added benefit of a carryover effect to a subsequent lecture segment; "changing pedagogies within a class period cannot only be seen as a way to present concepts in an alternate format but may also help engage students in subsequent lecture teaching formats." (Bunce, Flens, and Neiles, "How Long Can Students Pay Attention," 1442.

^{lxxviii} The professor was Ulla Berg, who described this use in the faculty discussion forum. The film discussed is described in: “Cannibal Tours,” *Wikipedia, the Free Encyclopedia*, available online from http://en.wikipedia.org/wiki/Cannibal_Tours [accessed May 20, 2012]. For the segment Berg screened in her discussion forum presentation, see “Cannibal Tours - Dennis O'Rourke,” *YouTube*, available online from http://www.youtube.com/watch?v=SQiDufdir_M (segment 00:41:47 - 00:43:30) [accessed April 11, 2012].

^{lxxix} Kumar, quoted from the faculty discussion forum.

^{lxxx} Kumar, quoted from the faculty discussion forum.

^{lxxxi} This testimonial to the use of video in coursework comes from Professor Louisa Schein, Departments of Anthropology and Women’s and Gender Studies at Rutgers University. She adds that students “appreciate very much acquiring these critical skills.” Her statement first appeared as a response in a survey on video use conducted by Jane E. Sloan in 2002. It was used with permission in publicity material for the faculty discussion forum.

^{lxxxii} Berg , quoted from the faculty discussion forum.

^{lxxxiii} This testimonial to the use of video in coursework comes from Professor Leslie Fishbein, now Chair of the Department of Women’s and Gender Studies at Rutgers University. She holds appointments in American Studies and Jewish Studies and is an affiliated faculty member of Women's and Gender Studies and Urban Studies. The statement first appeared as a response in a survey on video use conducted by Jane E. Sloan in 2002. It was used with permission in publicity material for the faculty discussion forum.

^{lxxxiv} Berg , quoted from the faculty discussion forum.