Media Machinations:

Examining the Pedagogical Merits

of an Online Video Database

A report Prepared for CCNMTL

By

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1 The decision by CCNMTL to evaluate the products of its endeavors is a bold one. It is made bolder through extending the invitation to evaluate its labors to the wider Columbia University community. I would like to acknowledge the center’s decision and express gratitude for being given the opportunity to work as part of a multidisciplinary evaluation team on this project.
Executive Summary

This evaluations study was conducted during the Fall 2001 semester in Professor John Broughton’s Aesthetics of Technology class. Using several evaluation methods under the rubric of ethnography, the researcher found the following:

• Most students (58%) reported accessing the Media Machine at least once a week.
• Sessions generally lasted one hour or less.
• Most students reported accessing the Media Machine from a computer lab.
• Most students access only clips assigned for the next class.
• Otherwise, few students venture far beyond assigned clips.
• In classroom discussions, students referenced assigned clips. Before the Media Machine, clips could only be shown in class.
• Students did not access the Media Machine in the classroom. This made for cumbersome presentation of material by the professor.
• The network wiring in the classroom was unpredictable.
  o Class was held in a wired classroom last year.
  o Students were easily distracted by email and the Internet.
• Several students were not aware of additional software needed to view clips.
• Several students found the search features unintuitive. Others found it simple, straightforward, and powerful.
• The database stores a limited number of clips. Students often reported wanting video clips outside of the database.
• Searches yield video clips from multiple classes, as they are stored in the same database with no way to keep them separate.
• Video quality is often less than adequate according to many students. The video window is small and the picture quality is poor.
• The activity of concentrating on a film clip through a different and unintended medium requires the student to connect with the concepts behind the clip differently than if one was experiencing them on a television or movie screen.
• Repetition of viewing that the Media Machine allows facilitates analysis.

Based on these findings, the researcher suggests the following recommendations:

• Bandwidth issues are complex. Clips are already compressed, which affects image quality, but students have difficulty downloading clips from home on low-bandwidth dialup connections.
• Better training and technology instruction would help students become acclimated more quickly to the database.
• Holding the class in a wired classroom would allow the database to be better used as a teaching tool. However, more intimate settings are required due to the small class size.
• Create a formal feedback loop from students through the professor to the Center for adding material to the database.
• Develop a more streamlined and efficient procedure for coordinating the digitizing and uploading of material into the database.
• Create dynamic and possibly randomizing search features that could spark innovative thought on the part of students through exploration.
• Students had bandwidth problems downloading clips over modem connections.
Abstract

The Media Machine is a searchable online database storing video clips associated with several media literacy classes. It was designed to be used as a didactic tool both in and out of the classroom to facilitate discussion and media literacy among students. In this evaluation report, the author discusses the intended and actual uses of the Media Machine in Professor John Broughton’s Fall 2001 Aesthetics of Technology course. Computer technologies both enable and constrain action in institutional settings (Orlikowski 1992 #30). They also have both intended and unintended consequence of their implementation. In this study, the author found that the Media Machine database was used most often as intended, but altered classroom interactions in unanticipated and unintended ways.

Introduction

Most evaluation designs involve pre- and posttests of some validated instruments to ascertain the level of impact a given, but isolated intervention had on its test subjects. In this instance, the intervention, namely the media machine, could not itself be isolated from the other potential interventions. Even if it could, what would the outcome look like? In this evaluation project, I elected a different approach, a more qualitative look at how the classroom technology is used by students. Rather that a pre- and posttest design, I compared the actual uses the students made of the technology to the anticipated uses of early designers as well as the way the professor would intend his students use it. This approach yielded both evaluative and research insights on both technology and pedagogy.

According to CCNMTL, the goal of the Media Machine database is to “create a flexible teaching and learning environment for four cultural studies courses with video segments
situated in a specific context supported by student and teacher generated leading questions, movie descriptions, and commentary, while continuing to populate the database with purposeful content.” In this report, I will discuss the use of the Media Machine database as it relates to this goal.

**Research Design**

My background is in ethnographic studies of organizations, specifically in the use and promotion of information technology in such settings. Ethnography is a loose rubric for a variety of methods, centering on participant observation. Adhering strictly to ethnographic methods became difficult throughout the semester, as will be explained. Because of these difficulties, I assembled several well-tested evaluation methods: focus groups, surveys, observations, and qualitative interviews. In this evaluation project, it was important to assure respondents that it is not *their* performance that is being evaluated. Rather, I required techniques that would elicit information about the technology in question without causing discomfort to participants. As such, I selected a variety of minimally intrusive methods and assembled them to cause as little disruption as possible in the daily lives and routines of people involved. After all, a professor was conducting a class during the time I was evaluating the use of the technology. The class had to occur without significant interruption.
Focus groups

Focus groups are an excellent method of gathering large amounts of impressionistic data from respondents. Since respondents receive questions and answer in groups, the administrator must carefully moderate and facilitate discussion around a grounded topic. The strengths of focus groups include: allowing the researcher to understand the feelings and dynamics of groups and evaluating existing programs with which the group has had interaction. The weaknesses of focus groups include the inability: to track changes over time, to understand the concerns of individuals, and to generalize findings beyond the specific group.

Early in October, I met with the students in the cultural studies class: Aesthetics of Technology to discuss their early impressions of the Media Machine. Professor Broughton introduced me to his class, and then allowed me to speak with them for about a half-hour to 45 minutes. In this time, I introduced myself, the purpose of the study, and facilitated an introductory discussion about the students’ use of the Media Machine. Although the professor was present during the discussion, students were candid about the problems and issues they had with the technology. The purpose of this meeting was twofold: to gather evaluation data and to identify key subject areas on which to focus later efforts. The focus groups were recorded by note taking and later transcribed into computer documents.
Survey

After the focus groups, I spent a few weeks developing a questionnaire to administer in the classroom (see Appendix). The questionnaire asked mostly open-ended questions about the students’ use of the Media Machine. The instrument was administered in November, mid-way through the semester, when the students had ample opportunity to interact with the technology and develop routines around its use. Again, I used the beginning of the class for students to complete the questionnaires. I remained in the class to answer any questions about the instrument to assure more appropriate responses. The professor noted that the class was attended my slightly more than half the registered students the day the questionnaire was administered. In total, I received 12 completed instruments.

Observation

Observation took place in two parts: in the classroom and online. Classroom observation entailed the researcher sitting in on classes and witnessing the interaction among students, noting comments about the Media Machine, as well as concerns that could potentially be addressed by the technology. Participant observation as an evaluation strategy allows the researcher to witness firsthand the processes taking place in a social setting. Through the use of observation at multiple points in time, the researcher can glean insights into processual changes that may have taken place. In the classroom, I was able to witness a natural setting {Schatzman & Strauss 1973 #250}, i.e., people in an ordinary setting conducting themselves as they would in such an environment. I have
little reason to believe that my presence altered the dynamic of the classroom. However, in any participant observation study when the researcher is known by others to be conducting research, there will always be an impact.

Additionally, I observed the database firsthand, as a user. Early in the evaluation process, I was assigned a username and password for the database. On several occasions, I accessed the database, noting my observations based on my knowledge and understanding of interface design, navigability, and sociality with technology.

**Interviews**

With the topics revealed in the focus groups, I conducted several interviews with key informants, including the professor and staff members of CCNMTL. Interviews typically lasted one hour. Follow up questions and clarifications were done by email. I intended to interview students toward the end of the semester, but received no support from them when I called for volunteers.

The interviews followed an “active interview” {Holstein & Gubrium 1995 #90} style. This entailed a loose set of questions designed to cover the basic knowledge the researcher is attempting to uncover. This loose interview schedule is used to co-construct a narrative with the respondent. Rather than simple question and answer format, the active interview resembles a conversation. The advantage to such a method is to put the respondent at ease, an important task in evaluation projects, which may appear as inquisitions to respondents. The researcher took notes during the interviews, but did not
tape record. The interviews were then reconstructed as narratives immediately following the interview meetings.

**Pushback**

In the course of evaluation projects, researchers often encounter resistance to the process. Many constituencies may feel threatened by the possibility of being subjects of inquiry. The researcher combats this attitude as much as possible through a variety of techniques, but remains ultimately at the hands of her constituencies from which she collects her data.

When I attempted to elicit volunteers for meetings outside the classroom, I received no cooperation. I believe this was largely because of poor timing on my part. I requested such volunteers late in the semester, when time constraints are especially pressing for graduate students. The students’ extracurricular lives, however, also played a role, which was outside of my control. Many of the students at Teacher’s College are themselves teachers, meaning that they came to class after their full-time appointments. This would also make them less inclined to spend extra time with a researcher for a project that has no immediate bearing on their classroom experience. In future iterations of such an evaluation project, I would secure volunteers earlier in the semester.

**Caveats**

This report is the result of a semester long research following the techniques described above. As the evaluation project was only one semester long, it is important to note that the findings described below are initial results and may not represent the results of a
longer-term study. The findings, however, indicate that there is much to be learned from the process of evaluation in these settings.

**Technology: The Media Machine**

The Media Machine came about as a collaborative project between Gordon Campbell and Professor John Broughton. Gordon took Broughton’s Aesthetics of Technology course, and enjoyed the material. At the time, Gordon was working for the New Media Center. Noticing the difficulties the professor was having presenting materials in and out of class, Gordon suggested they implement a technological solution: build a database to house the video clips. The intention was to both extend and focus the discussion to make better use of classroom time and better achieve the pedagogical goals of the professor.

The Aesthetics of Technology class relies heavily on video and film materials. It is through the engagement with this material that students can develop media literacy. This media literacy, for Professor John Broughton, is the ability to understand and read media forms as texts unto themselves and the ability to grasp the underlying meanings in media messages. Gordon asked his colleague, Daniel Beeby to sit in on the class. Both impressed by the students’ interactions with the materials. The class did not simply meet to discuss the readings and view the illustrative video clips. Rather, the conversations often extended dynamically beyond the classroom materials. Professor Broughton, to illustrate the concepts about which students read, would bring stacks of videotapes into the classroom. This clumsy method meant that the professor would spend classroom time setting up the audiovisual materials, cuing tapes to specific scenes, and having the
students watch the clips in class. The discussion would begin focused on the clips presented, but would quickly spiral out toward scenes from other movies, television shows, and media forms. Students would then have to describe these scenes to illustrate their points. The conversations these early classes sparked would extend well beyond the class time, as students continued to discuss media.

Daniel and Gordon’s original idea was to put the film clips into a database such that students could view the assigned clips before class. This way, they could begin to think about what they wanted to say, which would lead to more focused conversation. Coupled with Third Space, discussions could extend spatially and temporally beyond the classroom (see Fig. 1), a component that was never fully realized. By allowing the students to view the assigned clips before class, the Media Machine could provoke thought and insight on the part of students. The students would have the time to comprehend the clips, associating them with the readings and the content of the class.

Fig. 1
According to Daniel and Gordon, Professor Broughton “took to it like a fish to water.” In other words, the professor appreciated the new technology and realized its potential right away. In time, however, the professor “fell victim” to the technology, coming to rely too heavily on it. In time, Professor Broughton moved to a wired classroom. The students became easily distracted by the Internet. The class suffered as a result.

The Media Machine developed into a multimedia database with sophisticated search features. Students can access the database in two ways. First, the online version of the syllabus contains links to the clips assigned for each particular week. Clicking the links on the syllabus would allow the clips to be viewed. Second, students could go directly to the database (see Fig. 2) and conduct searches for clips, either directly by the name of the clip, or through various search fields: title/scene, author (director), keywords, and themes.

The key search features are the keywords and themes. They allow users to search for clips using broad topics. Themes are large concepts, like violence. They are defined according to the headings that accompany topics on the course outline. The keywords refine searches according to more detailed concepts or objects, such as guns.
Results

The introduction of the Media Machine to the Aesthetics of Technology class undoubtedly changed interactions in significant ways. In this section, I will discuss the key findings of the evaluation project.

The Media Machine alters the way the class is conducted in many meaningful ways. Most important, it allows the professor to assign video clips as content before class discussion begins. Before the database, students would read the assigned chapters and articles before the class. In the class, they would view the video clips, on a television and VCR. For many students, this would be the first time they would see these film clips. Under such circumstances, students could only reference films they had seen in the past. This presents a problem: the probability of one or more of the students in the class not seeing the movie being referenced was often high.
With the introduction of the Media Machine, students would view the clips before coming to class, giving them the opportunity to associate them with the topics of the assigned readings. In the classroom, this allows for more insightful and thoughtful comments. During classroom observations, I witnessed students making reference to specific clips from the database. Most often, the students would reference assigned clips. The students could now refer to the clips knowing that their classmates, if prepared for class, had also seen the same clips.

The repetition of seeing the clips before and then during the class helps people to see them more analytically, according to Professor Broughton. The logic behind the database for the professor lies in perceptual education. Education is often about getting people to think differently about the things they see, perceptual education is about getting people to see differently.

The technology also allows for comparisons. Using the image sequencer, students can put images and clips side by side, they can make comparisons between them. The comparisons can better allow students to understand the materials as they relate to the readings.

**Access**
Most students reported accessing the Media Machine at least once a week (58%). The remainder of students reported using Media Machine only once a month. Overwhelmingly, students reported Media Machine sessions lasting one hour or less. This is reasonable, considering that the clips in the database are very short (many only several minutes long). Most students simply viewed the clips that were assigned on any given week, looking at about three or four clips in any one session. “I watched required video pieces for class,” one student wrote, “I occasionally watch other pieces or read some of the descriptions of pieces I’ve already seen.” Students claimed to have accessed as many as 10 clips in a session. One student said that they viewed clips, “depend[ing] on how long they took to load.” At times, students would venture beyond just those clips assigned. As one student wrote, “I look at what is assigned and try to view them [the clips]. If I’m feeling frisky, I will continue to view others that catch my attention.”

Students appreciated the ability to download and view clips before the class. As one student noted, “The movie viewings are most helpful. It is an easy way to watch these without having to go rent them.” Another student found, “the convenience of the clips on the computer and accessibility,” most helpful about the technology.

Most students reported accessing the Media Machine from a computer lab, although some accessed it from home and others from work. Students said that they had accessed the Media Machine from school due to bandwidth issues: they could not get the clips to download fast enough on a 56k connection. As one student noted, “when technology fails, i.e., the clip won’t present itself on the computer because of a slow connection—it
seems to create a great personal frustration.” This complaint seems to be unfounded, as many of the clips, even the lengthy ones, are well within reasonable download times for a 56k connection. Students may be using this claim as a way to mask other potential usage problems.

Some students complained about the process of accessing the Media Machine. These students said the username and password process is confusing, suggesting a more streamlined approach, such as using Cunix usernames and passwords.

In the classroom, access is nonexistent. This semester, Professor Broughton was assigned a classroom in TC that he thought was not wired for network access. When he discovered that it was, he ordered computer equipment for the class to show the clips from the database, only to find that the network connection was spotty at best. The computer supplied did not work very well either. Ultimately, it became more time consuming to set up and run the computer than it was to cue and watch videotapes. Thus, the classroom use of the Media Machine was abandoned. On at least one class I observed, the audiovisual staff wheeled a computer cart into the room at the beginning of the class, where it sat untouched until Professor Broughton returned it later in the evening.

The problems with the classroom extend beyond the ken of CCNMTL. However, the problem speaks to the lack of integration among departments at the university. Wired classroom present a new set of opportunities, but they also present a new set of problems.
As informants noted, when the class was moved to a wired classroom, the students quickly became distracted by the Internet. Many students would spend class time reading and writing emails.

**Design**

In an early focus group held with the students, I was surprised to find that some students were unable to access any of the clips in the database and had subsequently become frustrated with the technology. The students, I later discovered, did not have the Real Player required to view the clips installed on their machines. Clicking on the links then simply prompted the students to download files their computers could not identify.

This is an example of how interfaces can be designed by those with high levels of proficiency, to be less functional for those who are less computer savvy. Many interface design flaws are the result of assumptions made on the part of designers as to how the technology will be used, who will use it, and what skills (technical and cognitive) users will possess.

While no students mentioned it as a problem, the “help” section is inadequate. It is likely that students either did not use the link to the help section or did not find it useful enough to comment. A description of the software and hardware requirements to access the site is nowhere to be found on either the opening pages or on the help page.
Although the interface appears straightforward, some students found it unintuitive. The search features and the database functionality are powerful, but not simple to understand for those unacquainted with databases. Those who understood how to operate the search features found them powerful, as the students were easily able to locate the clips required for class.

**Material**

Students found the materials in the database intriguing, but often insufficient. Some said the clips were too short to understand what was being conveyed. This, however, is a feature of the design according to the professor. When I spoke to the professor, he explained that he wanted the clips to only be several seconds long, to stress individual concepts without having them conflated with other ideas.

Some students reported wanting clips that were not available in the database, and had no way of adding them. As one student said, “It is very frustrating to use because I may have an idea about a film that I want to discuss—but the clip I want isn’t the one that is posted. I have to derive my ideas from the clip rather than seeking a clip that illustrates an idea.”

We have to consider the pedagogy of the class when analyzing such an issue. The professor designed the course to facilitate media literacy among teachers, such that they may pass such literacy along to their students. When illustrating specific concepts within
the framework of the class, precision is important. However, a degree of stochastic searching may aid in the spontaneous generation of ideas among students. The search features of the database allow the user to go directly to a clip, searching by name of clip, movie title, or director. Alternatively, students can find clips using several search fields. The clips are identified in these fields using static keywords and themes.

The keywords and themes remain intact from class to class. Since Professor Broughton uses this database to teach several classes, the keywords and themes are not always appropriate to the topics of the class. However, students appreciated having the clips attached to keywords and themes. One student found it useful that the database “is broken up into subject matter. It helps me think of films in different ways.”

Students also complained about the size and quality of the clips. As they are encoded as Real Player clips, the video is small (about three inches by four inches). The compression of the video also reduces its quality, often significantly. As one student commented, “the speed of the clips is sometimes off making viewing the movies fairly annoying.” Another student said, “[the database] can be slow. The picture quality and size is not as good as a TV.” This, of course, must be balanced with the bandwidth constraints as well as the data storage constraints one encounters with the hardware component of any Internet content. Additionally, as members of CCNMTL pointed out, the source materials themselves were often degraded. Professor Broughton suggests that the reduced quality of the clips actually give them their own quality, one that defies a description, but requires a new way of looking at the material. The activity of
concentrating on a film clip through a different and unintended medium requires the student to connect with the concepts behind the clip differently than if one was experiencing them on a television or movie screen.

**Recommendations**

Many of the themes discussed in this report are beyond the ken of CCNMTL. Here, I will outline several recommendations that the center can do to better realize their aims, at least with regard to the technology project discussed here.

According to the web site, the mission of CCNMTL is: “to enhance teaching and learning through the purposeful use of new media. We partner with faculty, providing them with as much support as they need in everything from the construction of course Web sites to the development of more advanced projects. CCNMTL is committed to remaining a leader in the field, engaging with its faculty partners in the reinvention of education for the digital age.” This report makes a contribution to the overall evaluation of how well CCNMTL achieves the goal outlined in this statement.

If students are accessing the Media Machine from the computer lab, they are most often unable to hear the audio that accompanies the clips. To remedy this, students must be able to access the database from home.

Students must receive better instruction from faculty or from the center as to how to use the database. A training session in a lab or even an instruction sheet would provide
students with the skills they will need to begin using the technology more effectively. Students are left to their own devices to figure out the technology. For some the learning curve is steep. While the online syllabus contains directions, many students were unable or unwilling to follow them properly. As such, a lab session to explain the use of the database would go great lengths to helping people use it better.

The process for adding clips to the database should be formalized. While a fully bureaucratic system of paperwork and forms may be avoided, the current system lacks the ability for accountability. Without such a function, it is difficult to determine the weak spots in the process of adding clips to the database. While the professor may claim that it takes upwards of one month to see clips enter the database, the CCNMTL staff assures it takes no more than one week. The purpose of such a process would be to allow CCNMTL staff to track the professor’s requests regarding database updates. It would also add an incentive for the professor to submit clips on a timelier basis.

Finally, while searching the database is straightforward for many students, the power of the interface can become its weakness. The search features allow the student to locate clips quickly and accurately. This however prevents what the professor calls incidental learning, that which comes from stumbling across items. The cognitive dissonance caused by making these associations causes the student to think creatively about what the database is giving her. Using stochastic search functions could spark innovative thought among students. Simply inserting random clips into the search output could allow students to think more creatively about the materials they encounter. Create dynamic and
possibly randomizing search features that could spark innovative thought on the part of students through exploration.
Appendix A: Survey Instrument (Abridged)

**Instructions:** This survey is being administered as part of an evaluation project commissioned by CCNMTL. With your help, we hope to better understand how students use interactive learning technologies developed at Columbia University in and out of the classroom. Your responses will be kept confidential. The only person who will read your survey is the independently appointed evaluator. Please be honest! Your input is important to the evaluation process.

How often do you log onto the Media Machine?
- Once a month
- Once a week
- Several times a week
- Daily

How long do you spend with the Media Machine each time?
- 2 hours or more
- Between one and two hours
- One hour or less

Where do you normally access the Media Machine? (Select as many as appropriate)
- From home
- From work
- At school – library
- At school – computer lab
- Other (please specify) ________________________________

Describe what you typically do during a session with Media Machine?

About how many clips do you watch in a typical session? __________________________

What do you find least useful about the Media Machine? __________________________

If you have any questions or comments about the survey or the overall evaluation, email: pm263@columbia.edu

Thank you for completing this questionnaire. As a continuation of the evaluation process, during the first two weeks of December I would like to hold a focus group with five to seven class participants as well as several one-on-one interviews. The purpose of these meetings would be to gain a deeper understanding of how these classroom technologies were used in the course of the semester. I would appreciate volunteers signing up for either (or both) of these activities:

[ ] I would like to participate in a focus group. Please contact me at (email address) __________________ to schedule a meeting.

[ ] I would like to participate in a one-on-one interview. Please contact me at (email address) __________________ to schedule a meeting.