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The digital media lab at Bainbridge College

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The principal steps of this project were a literature review, a needs analysis, the equipment selection process, and implementation. The literature review included examples of how video is used in higher education, information about current trends in technology, and faculty development strategies. The needs analysis determined that the facility should support both analog and digital media and that a facility where users could work independently was most practical. A list of equipment, user guidelines, outlines of current workshops, and samples of quick reference materials used in the lab are also included in this report.

THE DIGITAL MEDIA LAB AT BAINBRIDGE COLLEGE

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Abstract

This project describes the development of an audio and video production facility at Bainbridge College, a small community college in Bainbridge, Georgia. The Digital Media Lab provides faculty, staff, and students with the ability to create audio and video resources for classroom use, research, training, and outreach.

The principal steps of this project were a literature review, a needs analysis, the equipment selection process, and implementation. The literature review included examples of how video is used in higher education, information about current trends in technology, and faculty development strategies. The needs analysis determined that the facility should support both analog and digital media and that a facility where users could work independently was most practical. A list of equipment, user guidelines, outlines of current workshops, and samples of quick reference materials used in the lab are also included in this report.

The Digital Media Lab opened in January, 2002, and has been used by faculty, staff, and students for a wide variety of applications. It has also generated publicity for the college. Efforts to promote the lab to potential users and providing training are ongoing.

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Introduction

Background

The Digital Media Lab at Bainbridge College in Bainbridge, Georgia was created to address a need to provide educators with the tools necessary to create video, audio, and multimedia resources to support learning, research, and community outreach. While faculty and staff have been able to check out a camcorder or tape recorder through the library for years, they had neither the tools nor the knowledge to transform the raw video and audio into more effective media, dynamic presentations, and streaming media that could be delivered anywhere in the world.

Bainbridge College is a comprehensive two-year community college located in Bainbridge, Georgia that draws students from Southwest Georgia, the Florida Panhandle, and Southeast Alabama. Programs of study include transfer programs leading to an Associate of Arts degree and vocational-technical programs leading to a certificate or Associate of Science degree. Courses are offered on campus in Bainbridge and at sites in four other Southwest Georgia communities. An increasing number of courses have websites and several are offered entirely online. The college has 110 full-time employees, including 37 with faculty rank. In the Fall, 2002, semester 2047 students were enrolled at Bainbridge College, and nearly two-thirds (1349) were part-time students.

Purpose and Significance

The purpose of this project is to enhance the ability of Bainbridge College faculty, staff, and students to use audio and video to teach, learn, research, and advance the mission of the college. To accomplish this, a multimedia production facility was

developed that gives users the tools to independently create, edit, and distribute audio and video in both analog and digital forms. Appropriate instructional materials and training are being developed or acquired to support users.

Definitions

Analog – signals that are represented through varying electrical or magnetic pulses. Examples include standard television and radio broadcasts, VHS and S-VHS videotape, and audiocassettes.

Aspect ratio – the ratio between picture width and picture height.

Branching – advancing to a particular portion of a laserdisc or DVD based on the viewer's response.

Camcorder – an integrated video camera and videotape recorder.

CD-ROM (Compact Disc Read Only Memory) – an adaptation of the audio CD format that allows 700 megabytes of data to be stored on a disc. CD-RW (Compact Disc Read-Write) is a recordable version of the CD-ROM format.

Compression – the process of reducing redundant or less critical data within digital audio or video signals.

Digital – signals represented as a series of zeroes and ones. Examples include high definition television, Mini-DV videotape, DVD discs, and compact discs.

DVD (Digital Versatile Disc) – a five-inch optical disc that can store high-quality video, multiple tracks of audio, and data. The video and audio signals are compressed.

IEEE 1394 – a protocol for high-speed serial data transmission that is commonly used for digital video camera connections. It is also marketed as Firewire by Apple Computer and I-Link by Sony.

Laserdisc – a twelve-inch optical disc that stores uncompressed video and stereo audio.

Linear editing – the process of creating video programs using two or three videocassette recorders, requiring all work to be done in program order.

MPEG – a set of standards for audio and video compression developed by the Moving Pictures Experts Group. MPEG-1 is used for VideoCD discs, direct broadcast satellite, digital audio recording, and multimedia applications. MPEG-2 is used for DVD discs, direct broadcast satellite, and multimedia applications. The MPEG-1 Layer 3 audio standard is commonly called MP3.

Mini-DV – a consumer digital videotape format used for home, educational, corporate, and documentary work. Tapes are very small, and the cameras can be directly connected to personal computers for editing.

Non-linear editing – allows video production to be done out of sequence and the order of scenes to be easily rearranged.

Rendering – occurs when the computer cannot process video or audio in real-time.

Streaming media – digital audio or video files that are sent out live or begin playing before the entire file is transferred. Common formats include QuickTime, RealMedia, and Windows Media.

VideoCD – a CD-ROM containing highly compressed video and audio that plays on many DVD players.

VHS (Video Home System) – a consumer videotape format using one half-inch wide tape. S-VHS is a higher resolution version using a different tape formulation. Most S-VHS equipment will play and record VHS format tapes.

Methodology

Planning and preparation for the Digital Media Lab at Bainbridge College began in May, 2001. This process included a review of the literature, identifying the needs of potential users and the resources available for the project, selecting appropriate equipment and software, constructing the lab, developing policies, and attracting and training users. The facility opened in January, 2002, but many parts of this process will continue as the needs of users change and technology evolves.

Review of the Literature

A literature review was conducted to learn how video is currently used for instruction, support, and outreach in higher education. The review focused on the following areas: (a) reasons for selecting video as an instructional medium, (b) examples of video usage for instruction, (c) examples of video usage outside the classroom, (d) current technology and trends in video production, and (e) strategies for training faculty and staff how to plan and produce video materials.

It is clear from the literature that the wide use of video is due to its low cost, versatility, convenience, and ubiquity. Nielsen Media Research (2000) reports that 99 percent of all U.S. households have at least one television set and 85 percent have at least one videocassette recorder. DeLuca (1991) attributes video's popularity in the classroom to the ease of starting, stopping, advancing, rewinding, and freezing the picture during playback as compared to film projectors. Willis (1983) points out that television screens do not require a dark classroom and produce little extraneous noise, unlike film.

Kemp and Smellie (1994) believe that video is ideal for educators who wish to produce their own instructional materials. Videotape is inexpensive, reusable, can be

changed quickly, and requires no processing so it can be viewed immediately. The editing process for video is much easier than film, and special effects are easier to incorporate, which make it more practical when educational materials need to be prepared quickly or updated frequently (Taylor, 1988). In addition, the cost of producing educational video is far less than film, as is the cost of acquiring programs commercially (DeLuca, 1991).

Video's strengths include the ability to take viewers to distant places, meet people who might not otherwise be able to visit the classroom, view dangerous or hard to duplicate processes, and to repeat information as many times as needed (DeLuca, 1991). In addition, video cameras can magnify small images and fine details, allowing an entire group to view something that would otherwise be difficult to show from the front of the classroom (Taylor, 1988).

Video does have its disadvantages. Some text, especially small print can be difficult to read on screen, due to video's limited resolution. In addition, some colors do not reproduce well (Taylor, 1988). Video's 4:3 aspect ratio makes some graphics and charts difficult to display in their entirety (Ayers, 1995). Productions that only consist of talking heads are generally not effective (Ridinger, 1998). Today's video editing software makes it tempting to prop up weak material with impressive special effects (Hampe, 2000). While cost is a frequently cited advantage of video as an educational tool, it can also be a serious drawback. DeLuca (1991) warns that complex video productions can be expensive. If the instructor or other staff members produce the video, the cost may involve lost time for other projects and responsibilities. If the project is

contracted out, the cost is higher, plus some staff time may be required for oversight for the project.

Probably the most common use of video in higher education is to present a recorded program during a class. Videotape gives the instructor flexibility to select a single program from a series or a segment from a particular program. The instructor is also freed from the fixed schedules of live television broadcasts (Tennyson and Bruer, 1984).

A study of Kentucky community college instructors indicates that nearly 85 percent use videotapes in their classes (Houston, 2000). The average length is just over 30 minutes, indicating that instructors use short programs or parts of longer ones. Those who do not use video frequently indicated they already have too much to cover in their classes or that their school has few videotapes in their subject area. Very few said that playback equipment was in short supply at their colleges.

Tennyson and Bruer (1984) also suggest using video to demonstrate science experiments that may be impractical or too dangerous to demonstrate in class or a process occurring at a distance from the classroom, such as a factory line. If students are confused about part of the experiment or procedure, the tape can be replayed.

Lipofsky (1993) describes several tutorials created for physics classes at Brevard Community College. The experiments were demonstrated using the same equipment available in the lab and could be viewed at the college library prior to class. Molnar (1995) takes a slightly different approach by creating lab tutorials comprised of short QuickTime files that students can view on computers in the physics labs or instructors can show during lecture.

A third use of video suggested by Tennyson and Bruer (1984) is recording student performance. Students can use videotape to observe themselves speaking, acting, or exercising. The camera presents an objective viewpoint that allows students to critique themselves and instructors to more easily discuss performance problems with students.

Video presentations need not be linear. Gayeski and Williams (1984) describe six levels of interaction between the video presentation and the learner. The most basic levels of interactivity only require a VCR. Level one involves directly addressing the viewer, noting important points and posing questions. Level two adds prompts for the user to stop the tape for questions or discussion. Levels three through six add branching, feedback, and adaptive features. When their chapter was published, laserdiscs were the most common way of accomplishing this. Today, these levels of interactivity could be achieved with a multimedia computer program, a website with streaming media, or using a VideoCD or DVD disc.

Hudson and Holland (1992) compare the outcomes of students in a video production course who used an interactive multimedia system to complete a lesson and those who attended classroom lectures. Students using the interactive video lesson spent less time on instruction than those attending the lecture and had comparable test scores.

Media literacy proponents argue that students should not only be consumers of video, but producers. Tyner (1998) sees video as a "scaffolding medium" that allows students to experiment with visual composition, motion, and sound. She believes that student video productions should emphasize research, writing, planning, and presentation skills over technical quality. Lund (1998) suggests using the help of school media professionals or a video production class to handle the technical details.

News and documentary programs are common classroom video productions. Wallace (1996) and Rostad (1997) both describe the development of school news programs using consumer-level video equipment and student crews in high school settings. Students at Southern Arkansas University produce news stories about the university for a local television station (Reppert, 1992). Beasley (1994) provides suggestions on creating student-produced documentaries and conducting interviews.

Signer (1991) describes projects created in an education course over a three-year period. Most of the students in the course had no prior experience in video production or instructional design, yet were able to design effective interactive video programs. Projects during the first two years were interactive videotapes, and laserdiscs were produced in the third year.

Students at the University of Richmond Writing Center used streaming media to create interactive training for their peers. Their web site allows new tutors to view dramatizations of challenging situations and choose the response they think is appropriate (Essid, 2000; University of Richmond, 2002).

Entire college courses can also be delivered over video. Nearly fifty years ago, institutions, such as the University of Houston, University of Nebraska, and Chicago's TV College, began broadcasting college courses on television. Today, these courses are frequently documentary-style programs produced for a national audience and sold to individual colleges to be broadcast or made available as videotapes (Zigerell, 1991). The 1980s saw the rise of two-way video systems that allowed instructors and learners to communicate in real-time (Office of Technology Assessment, 1989). In the late 1990s it became practical to offer live, low resolution streaming video over the Internet.

Mortenson, Schlieve, and Young (2000) describe how the University of North Texas used streaming video to offer courses at a distance. One course used videotaped lectures converted to streaming media, another used live video streaming with students submitting questions to the instructor by e-mail, and the third used live audio and graphics. Streaming did not always work well because of bandwidth issues, so some of the faculty members started distributing the media files on CD-ROM instead. Internet-delivered video can also be used to provide services to distant students. Worcester Polytechnic Institute has added short video clips to their library web site to teach students how to use the online catalog, databases, and interlibrary loan services (Cox, 2002).

Outside the classroom, video is frequently used to market the college to prospective students, parents, and the community at large. Capital Technical-Community College in Hartford, Connecticut used a storyboard approach in developing their recruitment videotape (Carpenter, 1994). Their target was high school students and recent high school graduates. Several student groups assisted in the preparations. The final product was a storyboard that would be used to create the final production.

Hays (1994) stresses that because prospective students are media-savvy, recruitment videos need high production standards. Video should be well composed with a variety of shots and good lighting. The places and academic programs shown should be those that make the college unique. The situations that college faculty and administrators are shown in provide viewers with cues about the institution's atmosphere. Narration should be recorded in a studio by a professional announcer, and in-camera microphones should be used for capturing ambient sound, not recording dialog from actors. While a modern feel to the video is good, the frenetic pace of music videos should be avoided.

A key consideration in selecting video hardware and software is the format that video will be recorded in and what formats will be used for distribution. According to Nulph (2001), the least expensive and most common video format is VHS videotape. S-VHS is more expensive, but provides a significant improvement in picture quality. S-VHS tapes are the same size as VHS tapes, and S-VHS videocassette recorders can play and record in the VHS format. However, most VHS videocassette recorders cannot play S-VHS tapes. Mini-DV tape combines outstanding picture quality, small tape size, and ease of computer editing. A Mini-DV camcorder converts the video image into a compressed digital format that is recorded onto the tape and can be transferred with no degradation to another Mini-DV recorder for duplication or to a computer with an IEEE 1394 port for editing (Fauer, 2001; Nulph, 2001).

The DVD format combines the high quality video of laserdiscs with the interactivity of CD-ROM. Producers can incorporate multilingual sound tracks and menus with branching ability on standard DVD discs for standalone players or computers with DVD drives. DVD-ROM discs allow both video and computer data to be stored on the disc, allowing even more interaction (Bendetto, 2000).

An inexpensive alternative to DVD is called VideoCD. This format uses standard CD-ROM discs to store compressed video. Each disc holds about seventy minutes of VHS-quality video and supports chapters and branching. Slide show presentations can also be saved on VideoCD discs. These discs can be played back on most DVD players and computers (Starrett, 2001).

Free video editing software is available with many new computers and bundled with IEEE 1394 interface cards. These programs allow for basic editing using cuts and

basic transitions. Titles and still graphics created in other computer programs can also be added. Software such as Adobe Premiere, Apple Final Cut, and Avid Xpress DV cost between $500 and $2000, but allow more complex editing and added control over the creation of streaming media for the Internet. Specialized video editing cards designed for video editing are available to eliminate or reduce rendering times, import older analog tapes, and simplify DVD creation (Fauer, 2001).

Hartman and Truman-Davis (2001) list four stages of faculty adoption of technology. They include having access to the technology, being aware of how it can be used, developing the skills to use the technology, and applying it. Colleges and universities need to address all four stages to successfully integrate technology into the learning environment.

Oringel and Burske (1987) describe three categories of television production training that should be provided for cable television access center volunteers: production in the studio, production in the field, and video editing. In an educational setting, it is important that training demonstrate applications for the technology, in addition to step-by-step technical training (Office of Technology Assessment, 1995).

Instructors, support staff, and students who have never been videotaped are frequently nervous about the video production process. Ayers (1995) provides a detailed guide to teaching on video in a studio environment. The manual written by Rezabek (1990) is shorter and targeted at instructors who use two-way video systems and must control the system themselves. Both provide practical advice on preparing for class, selecting appropriate clothing, and creating visual materials that are effective over television.

The literature indicates there are many uses for video in higher education, both for instruction and to support the operation of the institution. While the most common use is videotape playback, "home grown" video allows instructors to create media that is tightly integrated into their curriculum, gives students an opportunity to observe and express themselves, and provides institutions with a new way of reaching out to the community. The literature also indicates that video production is increasingly done in the digital domain, however, the ability to work with analog sources and output in analog formats is still important.

What appears to be missing in the literature is reports about media facilities at other small colleges and successful strategies to encourage those who are not early-adopters to try creating audio or video resources for their courses. Most of the literature about technology integration and faculty support focused on larger institutions that provide a high level of services, as opposed to smaller institutions where there are fewer support personnel.

Needs Analysis

The first step in the needs analysis was to identify who on campus might use the proposed audio-video production facility and how they would use it. The literature review suggested that faculty and staff members could be expected to use the new facility. Students might use it for class projects or for extracurricular activities. From informal discussions with faculty and staff members, it was obvious that there was interest in developing a video production facility, but due to the limited use of video on campus except for videotape playback, there were not many concrete ideas as to how the technology could be used at Bainbridge College.

Bainbridge College's inventory of audio-video equipment was quite limited outside of television sets, VHS videocassette recorders, and a few laserdisc players when this project began. The library had a VHS camcorder and tripod that could be checked out by faculty and staff. The Educational Technology Services Coordinator had purchased some video equipment two years earlier to do some basic video editing. This included a Mini-DV camcorder, S-VHS videocassette recorder, cassette deck, audio mixer, two microphones, and a Fast DVMaster video capture card that proved to be unreliable. The college also had two interactive video distance learning classrooms that could be used for videotaping. These classrooms contained remote-controlled video cameras, a document camera, videocassette recorder, and a computer scan converter.

The college president, Dr. Clifford Brock, was instrumental in initiating the project and made $25,000 in funds available. This was sufficient to purchase video editing equipment, additional camcorders, and accessories. However, because no additional staff positions were created for the project, the Digital Media Lab would need to be primarily a self-service facility with Technology Services staff and student assistants providing training, project consultation, and technical assistance to users. The primary responsibility for developing and operating the Digital Media Lab was assigned to the Educational Technology Services Coordinator, Neil Griffin, who had previously worked in radio and television.

Equipment Selection

The primary considerations in selecting equipment for the Digital Media Lab were ease of use, versatility, and cost. Users of the Digital Media Lab would have to work independently, so the equipment and software selected needed to be intuitive and

fairly easy for patrons to learn. The needs analysis indicated that projects would likely contain both analog and digital sources and would be distributed using videotape, CD-ROM, and the Internet. Therefore the versatility of the equipment was a key factor, since it would need to support a wide range of media types and formats. Cost was the least important of these three factors. In addition to looking at the initial cost of equipment and software, consideration was also given to the total cost of ownership, including support, maintenance, and training.

The first choice in determining what equipment to purchase was whether to select a tape-based linear editing system or a non-linear digital editing system. A non-linear editing system was determined to be more desirable. Rather than purchase a computer and video editing card separately, a turnkey system assembled by a single vendor was selected. This was a more expensive option, but the turnkey system would be ready to use when it arrived and would have technical support from the vendor. After spending countless hours trying to make a Fast DVMaster card work reliably with several different computers, this approach seemed best.

Considerable research was conducted into which video editing card would be best suited for the needs of the Digital Media Lab. After reading reviews, talking to users and vendors, and reading video production discussion boards on the Internet, the Canopus Storm video editing card was selected. The advantages of the Canopus Storm card over other similarly priced video editing cards included multiple inputs and outputs, a reputation for stability, superior quality of analog to digital signal conversion, and more real-time functionality. The magic of digital video production fades quickly when the user must spend significant time waiting for video to render. The Canopus Storm card

provided real-time previews of titles, transitions and other special effects along with real-time output to Mini-DV tape. The two closest competitors offered more real-time special effects, but not output to Mini-DV in real-time.

The JVC combination Mini-DV and S-VHS VCR was selected to simplify operation of the video editing system. By using a standalone Mini-DV recorder, users would not need to connect camcorders to the editing computer to digitize their tapes. This also would reduce the wear on the camcorders, prolonging their life. An additional convenience of this recorder is that users can press one button to copy Mini-DV tapes directly to VHS or S-VHS.

Because many video and multimedia projects require narration and the addition of music or other prerecorded sounds, a basic audio production system was needed. The audio production system needed to have the ability to digitize voice from a microphone or audio recorded on either cassette tape or compact disc. The system should also allow users to save audio files compatible with the video editing system, create streaming audio, and narrate PowerPoint presentations for distance learning courses. CoolEdit 2000 software was selected because it had been used to create streaming audio for online courses and staff members who had experience with the software were satisfied with its ease of use and functionality.

Field production equipment was needed to give the users the tools to create high-quality audio and video source material. Bainbridge College already owned one Mini-DV camcorder. Additional camcorders would allow multiple users to work on projects. Camcorders similar to the existing camera were chosen to simplify training and so they

can share extra cables, lenses, and batteries. To ensure good pictures and sound, tripods, portable lighting equipment, and microphones would be needed.

Implementation

The first steps in implementing the Digital Media Lab were to secure a location, prepare it for use, and assemble equipment. Space on the Bainbridge College campus was scarce, due to increasing enrollment. The Digital Media Lab was given a long narrow room adjoined by a small closet. The room had been originally designed as a projection room between two larger classrooms, but had been used for storage for many years. During the Fall 2001 semester, the room was cleaned out, recarpeted, and repainted. New telephone and computer network connections were installed and additional electrical outlets were added. Work tables, a magazine rack, and a storage cabinet were ordered, and a desk, chairs, bookshelves, and a filing cabinet were procured from college surplus. Once the physical facilities were ready, the equipment was assembled and the Digital Media Lab was almost ready to use.

Before the lab could be opened, it was necessary to develop some basic guidelines for lab use. These were developed through discussions with faculty, staff, and the Director of Technology Services. It was determined that the Digital Media Lab and its equipment would be available to all faculty and staff to be used for instructional, research, college outreach, and training purposes. Because the lab contains expensive equipment, faculty and staff members must supervise lab use by students and other non-employees. Users would be responsible for developing and creating their own projects, with appropriate training and some assistance available from Technology Services staff. Users could check out equipment and blank tapes for up to five days. Users are also

expected to comply with all applicable college policies and federal laws regarding copyright and intellectual policy. The complete usage guidelines for the Digital Media Lab are located in Appendix A.

Educating users about the Digital Media Lab's capabilities and providing training would be the final step in implementation. Once the center opened, open house days were scheduled where faculty and staff could tour the lab and get a demonstration of the equipment. Two initial topics were identified for instructor-led training: the operation of the digital camcorders and video editing techniques. In addition, books, videotapes, and quick reference guides would be purchased or created to assist users who wished to learn independently.

Project Description

Physical Facilities and Equipment

The Multimedia Lab is located in the Academic Building at Bainbridge College. The main room is approximately 25 feet long by 8 feet wide and houses the video editing system, field production equipment, books, magazines, instructional videotapes, a clip art collection, sound effects and music libraries, and a computer for scriptwriting and presentation development. The second room is 5 feet long by 8 feet wide and serves as an audio production studio. Due to the lack of space on campus, there is not a permanent television studio, so all video recording is done on location.

The video production workstation is a turnkey system built by Core Microsystems that uses a Canopus Storm video capture card. It has dual Pentium II processors operating at 800 megahertz, with 512 megabytes of RAM, and a 150 gigabyte hard drive. A CD-RW drive and Zip drive can be used to save large files.

The video editing system allows the use of both digital and analog sources. A JVC combination Mini-DV and S-VHS VCR, a Panasonic S-VHS VCR, a Pioneer Laserdisc player, and a Panasonic video monitor are the additional equipment that complete the video editing system. The S-VHS VCRs are also compatible with VHS tapes.

Adobe Premiere 6.0 and Canopus Storm Edit are available for video editing. Adobe After Effects 5.0 can be used to produce specialized effects. Media Cleaner is used to compress files for streaming and to convert media files from one format to the other. The video editing system has approximately seven hours of video storage space, allowing multiple projects to be in progress. Finished projects can be recorded to VHS

tape, S-VHS tape, Mini-DV tape, VideoCD, MPEG-1, MPEG-2, RealMedia, QuickTime, and Windows Media.

The audio production workstation is a Dell Optiplex GX300. CoolEdit 2000 is the audio editing software, and it supports up to four tracks of stereo audio. An audio mixer connects the computer to a microphone and cassette recorder. RealPresenter is also installed to allow users to create streaming PowerPoint presentations with narration.

Three camcorder kits are available for users of the multimedia lab to check out. Each kit is stored in a padded bag and includes the camera, two batteries, AC adaptor, IEEE-1394 cable, and a cable to connect the camcorder to external audio/video devices. If users need an external microphone, they can select between several handheld microphones, a wired lavaliere microphone, and a wireless microphone system. An audio interface and cable kit is available for connecting to a public address system or other audio devices. Three tripods, a tripod dolly, a shoulder brace, and a portable lighting kit are also available for checkout. A complete listing of equipment in the Digital Media Lab, including equipment that can be checked out is located in Appendix B.

The Multimedia Lab has collections of clip art, sound effects, and music that can be used without payment of royalties. These "buy-out" libraries provide risk-free alternatives to using copyrighted images and music. While the fair use provisions of U.S copyright law do allow some classroom uses of copyrighted materials without permission, these conditions may make it difficult to show productions outside of class, transmit them over distance learning systems, stream them over the Internet, or share them with the community or other scholars. The College Relations office is currently

developing a database of photographs and graphics owned by Bainbridge College that will be accessible in the Multimedia Lab.

Training and Support

Two instructor-led workshops have been developed to train faculty and staff to use the Digital Media Lab and field production equipment. The Video Camera Basics workshop is two hours long and teaches participants how to setup a video camera, tripod, microphones, and other accessories. It also covers video production planning, scriptwriting, and composition techniques. An outline of this workshop is located in Appendix C. The Video Editing workshop is four hours long, delivered in two 2-hour sessions. The workshop covers digitizing video clips to the hard drive, arranging clips in script order, adding titles, incorporating still graphics, adding transitions and other special effects, and outputting the finished product to videotape or streaming media. Appendix D contains the outline for this workshop. Since the Digital Media Lab opened, Video Camera Basics has been offered five times and the Video Editing has been offered three times. Workshops are offered on a regular basis, but customized training is also available, tailored to individual faculty or staff members' needs.

In addition to the instructor-led workshops, books and videotapes for self-paced training are available in the Digital Media Lab. Also, quick reference guides covering basic tasks such as digitizing video clips, duplicating videotapes, and creating an image file of a still frame of video are available. These quick reference guides contain step-by-step action and result tables to guide users through each task for the first time or refresh a more experienced user's memory. Examples are included in Appendix E.

Conclusions and Recommendations

In less than one year of operation, Bainbridge College faculty, staff, and students have created a wide variety of audio-video projects in the Digital Media Lab. Approximately fifteen percent of the college's employees have used the lab or attended training workshops.

The cameras and video editing facilities were used to create videotapes of four guest lecturers that can be checked out from the college library. Employee training sessions, a community appreciation ceremony, a Veterans Day poetry reading, and commencement exercises were also videotaped. The main differences between these productions and those recorded in the past is that current videotapes produced by the college have clear, intelligible sound and sharp, steady pictures that allow viewers to focus on the content.

Faculty and staff at Bainbridge College have used the Digital Media Lab in a number of ways. An instructor in the Developmental Studies department videotaped interviews with students as a part of a study on why students have difficulty with the college entrance examination. A political science instructor used the frame capture feature in Storm Video to generate still frames for a presentation about World War II. Students in a speech class used the audio studio to record radio programs featuring news, weather, music, and commercials. The instructor used the assignment to teach the students scriptwriting, proper vocal techniques, and how programming is produced for radio and television. The Director of College Relations has been using the video editing system to compile tapes of television news stories about the college, and several instructors have used the lab to make backup copies of the videotapes they use in class.

The Digital Media Lab has also been useful in community outreach by Bainbridge College. The college has a multimedia touch screen kiosk system that uses pictures, sound, and video to educate area residents about the college and give them an opportunity to take a virtual tour. The equipment has been used to update the narration and create new video clips for the kiosk. The audio studio has been used to create radio commercials for the college. A videotape was produced for the local United Way chapter that included profiles of local non-profit organizations, including two that are affiliated with Bainbridge College. Additionally, equipment from the Digital Media Lab was used to produce an interview of a local city council member for the Georgia Municipal Association.

There has been some publicity regarding the development of Bainbridge College's Digital Media Lab. WALB-TV in Albany, Georgia aired a story about the lab on several newscasts shortly after the lab was opened. The campus newsletter, BC Happenings, also covered the opening of the Digital Media Lab.

The Digital Media Lab is still a new project, so many at Bainbridge College are unaware of how they might use the resources of the lab in their classes, for research, to train employees, or provide service to the community. A videotape and brochure about the lab were produced for faculty orientation. Several showcase projects could be developed that would benefit different areas of the college. Some projects that have been suggested include video field trips to local industries for use in vocational-technical courses, a college recruitment videotape, interactive video training for new employees, and an update to the college's online orientation web site that incorporates streaming media.

The Educational Technology Services Coordinator should continue offering demonstrations and training workshops. Possible topics for new workshops include converting videotapes to streaming media, creating streaming PowerPoint presentations with narration, basic audio production, and integrating student audio and video production into college courses.

Equipment upgrades and additions will be necessary to meet the needs of the users and stay current with changes in technology. These would include hardware and software updates, the addition of a recordable DVD drive, additional video cameras and microphones, and a streaming media server to support online instruction.

Additional suggestions for raising awareness of Bainbridge College's Digital Media Lab include working with the Director of College Relations to facilitate continued media coverage of lab. Possibilities for publicity include articles in area newspapers, and coverage on other local television stations. Future promotion should highlight the projects of faculty members or students so that the Digital Media Lab's purpose and benefit to the college and the community is clear. All video productions should indicate in the credits that they were produced in the Bainbridge College Digital Media Lab.

The Educational Technology Services Coordinator should give presentations about the lab and applications of multimedia in education. A presentation entitled "Bring Digital Video to Your Campus" was presented at the 2002 University System of Georgia Annual Computing Conference in Eatonton, Georgia. Additional possibilities include presentations to local civic groups, local educators, and at library media and educational technology conferences.

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APPENDIX A

DIGITAL MEDIA LAB USAGE GUIDELINES

1. The Digital Media Lab and its facilities are available to all Bainbridge College faculty and staff. Faculty or staff may supervise the use of the Digital Media Lab by students or others not employed by the college. The employee is responsible for ensuring the sponsored users follow all applicable policies.
2. The Digital Media Lab exists to advance the goals and objectives of Bainbridge College. Thus, users are expected to develop media to be used for instruction, research, faculty/staff development, or college outreach. Commercial use is not allowed, unless sponsored by Continuing Education.
3. The Digital Media Lab is a self-service facility. Technology Services staff will train and assist users with their projects, but users should expect to do most of the work.
4. Training will be offered regularly on equipment usage, production techniques, and educational applications for digital audio and video. Individual or custom training can be arranged through Technology Services. A selection of books and videotapes is also available for self-paced instruction.
5. Users are not permitted to make modifications to the equipment without the approval of the Educational Technology Services Coordinator or the Director of Technology Services.
6. Equipment is normally checked out for 1-5 business days. Special arrangements can be made for longer periods with the Educational Technology Services Coordinator or the Director of Technology Services.

7. Users may borrow Mini-DV tapes for recording from the Digital Media Lab or supply their own. Tapes can be purchased on state contract from Video Services of America or locally at K-mart and CVS. Panasonic is the preferred brand, but Fuji, TDK, Maxell, and Sony are fine.
8. Videotapes may be duplicated one at a time when the video editing system is not in use. Compact discs and cassette tapes may be duplicated one at a time when the audio editing system is not in use.
9. Users must comply with all applicable college policies and federal laws regarding intellectual property. Users are responsible for securing permission to use copyrighted resources, if necessary. We have a library of clip art, production music, and sound effects that do not require copyright clearance. Please consult the Regents Guide to Understanding Copyright and Educational Fair Use for guidance (http://www.usg.edu/admin/legal/copyright).
10. Problems with the equipment should be reported to the Educational Technology Services Coordinator or the Director of Technology Services.

APPENDIX B

DIGITAL MEDIA LAB EQUIPMENT LIST

Video Editing System

Core Microsystems video editing workstation

- Dual Pentium III 800 MHz processor
- 512 MB memory
- Floppy disk, CD-ROM, CD-RW, Zip drive, and memory stick reader
- 10 GB system hard drive and 150 GB video hard drive (approximately 7 hours)
- Canopus Storm video editing card

Video equipment

- JVC SR-VS20U combination DV/S-VHS VCR
- Panasonic AG-1980 S-VHS VCR
- Pioneer CLD-V2600 laserdisc player
- Panasonic CT-2068Y color video monitor
- Sony video switch

Software

- Windows 2000 Professional
- Canopus Storm Edit and Adobe Premiere 6.0 for video editing
- Soft Xplode effects for Storm Edit and Premiere
- Adobe After Effects for creating special effects
- Canopus Storm Video and Storm Audio capturing utilities
- Cleaner 5 for converting and encoding streaming media files.

Audio Editing System

Dell Optiplex GX-300 computer

- Pentium III 600 MHz processor
- 256 MB memory
- Floppy disk, CD-ROM, CD-RW, and memory stick reader
- 40 GB hard drive
- SoundBlaster Live sound card

Audio equipment

- Shure SM58 microphone
- Technics cassette recorder
- Mackie 1202-VLZ Pro
- Sennheiser headphones

Software

- Windows 2000 Professional
- CoolEdit 2000 with multitrack plugin
- RealPresenter Pro, RealSlideshow, Windows Media Encoder, and QuickTime Pro for streaming media encoding.
- EasyCD-DA Extractor
- Microsoft PowerPoint
- Hollywood Edge sound effect library
- Davenport production music library

Office Computer

Gateway E-3110

- Pentium II 300 MHz processor
- 64MB RAM
- Floppy disk and CD-ROM
- 6 GB hard drive

Software

- Microsoft Office 2000
- Internet Explorer
- Netscape Communicator

Equipment for Checkout

- Sony DCR-TRV10 camcorder with cables and batteries
- Sony DCR-TRV30 camcorder with cables and batteries
- Sony VX-2000 camcorder with cables and batteries
- Electrovoice 635A microphones with 15' cables (2)
- Audiotechnica lavaliere microphone
- Audiotechnica ATW-100 wireless microphone system
- Studio 1 XLR-Pro audio interface
- Studiomaster portable audio mixer
- Manfrotto fluid head tripods (3)
- Loewll portable light kit
- Blank Mini-DV tapes

APPENDIX C

CAMCORDER BASICS WORKSHOP OUTLINE

This workshop covers the technical aspects of using digital camcorders, techniques for getting high quality pictures and sound, how to plan a video production, and educational applications of video.

Camcorder Basics

I. Introduction

   A. Explain the scope of the workshop

   B. Brief description of Digital Media Lab and its capabilities

II. Setting up the video camera

   A. Power sources

      1. Show batteries and have students install them on cameras

      2. Show AC adapter and have students connect

      3. Batteries recharge when AC adapter is connected and camera turned off

   B. Power switch positions

      1. Camera – camera ready to record video

      2. VCR – camera ready to play tapes

      3. Memory – camera ready to take still pictures

      4. Off

   C. Describe features of Mini-DV tapes

III. Camera operation

A. Demonstrate viewfinder

B. Demonstrate LCD screen

C. Lens Focus

1. Demonstrate automatic

2. Demonstrate manual

3. Ask students why auto-focus does not always produce the best picture

D. Lens Zoom

1. Demonstrate zoom feature and define telephoto and wide angles

2. Demonstrate manual zoom on VX-2000

E. White balance

1. Explain how it helps ensure accurate colors

2. Demonstrate how to manually white balance

F. Have students try each camera and practice

IV. Camera accessories – this section can be shortened if needed

A. Demonstrate how to set up tripod

1. Never move a tripod when a camera is attached

2. Attach and demonstrate the dolly

3. Have students practice setting up the tripod

B. Demonstrate the shoulder-mount camera brace and have students practice

C. Demonstrate and have students try out microphones

1. Handheld microphones
2. Lavaliere
3. Wireless microphone system

V. Shot composition

A. Define shot types and demonstrate with camera connected to TV

1. Long shot (LS)
2. Medium shot (MS)
3. Closeup (CU)
4. Hybrid shots (medium long shot, medium closeup, and extreme closeup)

B. Explain rule of thirds with chalkboard diagrams

C. Explain the need for headroom

D. Students practice composing shots

E. Define camera movements and demonstrate with camera connected to TV

1. Pan
2. Tilt
3. Truck
4. Dolly

F. Students practice camera movements

VI. Planning – ask students why not just go out there and shoot?

A. Discuss scripting techniques and pass out sample script

1. Video – describe shots, camera movements, position of actors, graphics, and titles

2. Audio – dialogue, identify speaker, background music, sound effects

B. Discuss storyboarding

1. Sketch a picture for each shot or scene

2. Stick figures are OK

C. Explain factors to consider when surveying a location for recording

1. Power

2. Adequate space for camera and subjects

3. Lighting conditions

4. Sound environment

VII. Discussion of uses for video in education

A. Provide examples of how video is used at other colleges

B. Ask students how they might use video in their courses or department

APPENDIX D

VIDEO EDITING WORKSHOP OUTLINE

This workshop gives students hands-on experience editing raw video clips into an instructional video. The final product will be saved to videotape and streaming media. It is offered as two two-hour sessions or a single four-hour session. The maximum number of students per session is three, because there is limited space in the Digital Media Lab and plenty of hands-on practice is desired.

Video Editing

I. Introduction

   A. Give students brief tour of the Digital Media Lab

   B. Identify each part of the video editing system and explain the editing process

   C. Have students turn on computer, video monitor, and JVC VCR

II. Digitizing video

   A. Review script

   B. Have students start Storm Video, load Mini-DV tape, and select correct input for digitizing

   C. Demonstrate by cueing up the first clip and digitizing it.

   D. Students take turns digitizing the remaining 12 video clips

III. Editing video

A. Importing video clips

1. Start Storm Edit and demonstrate how to import video clips and arrange on timeline

2. Have students import and arrange the remaining clips

B. Trimming video clips

1. Demonstrate how to trim video clips

2. Have students trim the remaining video clips

C. Adding color clips and still images

1. Demonstrate how to add a color clip and still graphic to the timeline

2. Have students add the remaining color clips and still graphics

D. Importing audio clips

1. Demonstrate how to import an audio clip and place it on an audio track

2. Have students add the remaining audio clips

E. Adding transitions

1. Demonstrate how to add a transition between video clips

2. Have students decide on appropriate transitions and add them

F. Adding titles

1. Demonstrate how to create a title and place it on the title track

2. Have students decide on the best font, size, and layout for the titles and then create them.

3. Make sure students add their name to the credits

G. Have students review production and make final changes

IV. Outputting video

A. Walk a student through transferring the video production to Mini-DV tape

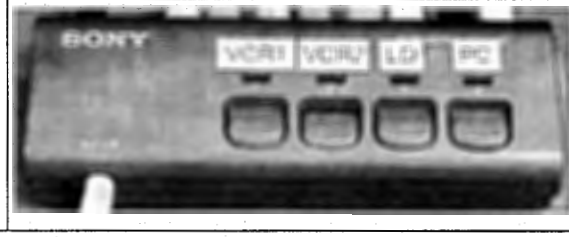
B. Walk a student through transferring the video production to VHS tape

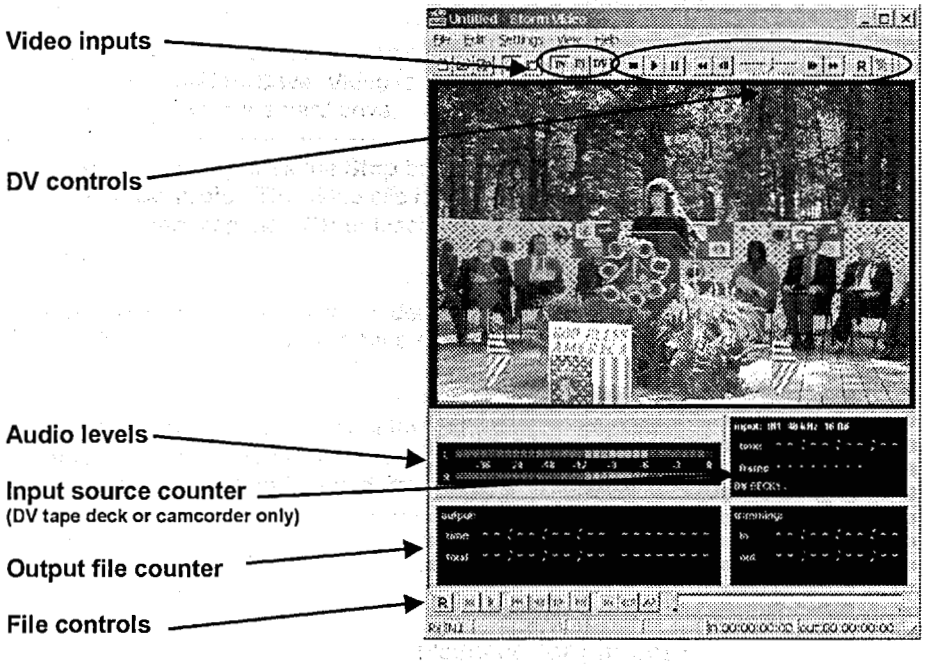
C. Walk a student through transferring the video production to a streaming media file.

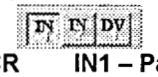
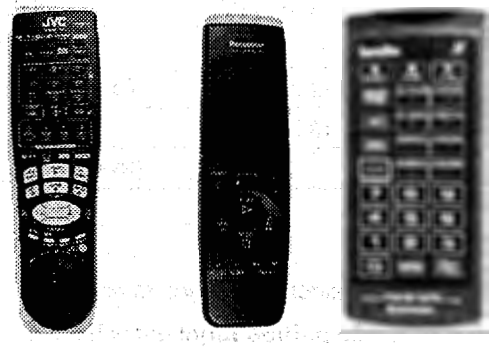
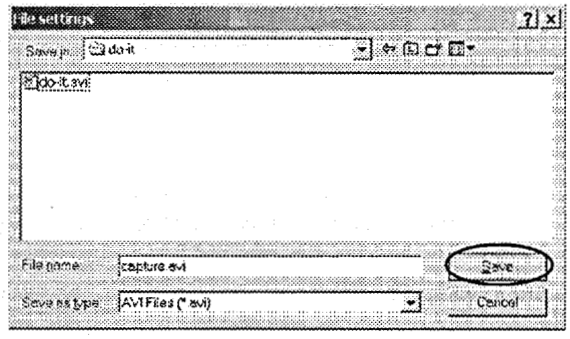
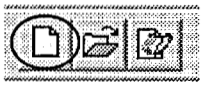
APPENDIX E

Quick Reference Guide Samples

CAPTURING VIDEO TO THE HARD DRIVE

ACTION	VIEW
1. Double-click on the **Storm Video** icon.	
2. Turn on the device you wish to capture from and the video monitor. The monitor should say **VIDEO1** after it is turned on. If not, press the **INPUT** button until **VIDEO1** is displayed.	
3. The video switch selects which device is displayed on the video monitor. Choose **PC** to view and hear what is being captured on the computer.	



ACTION	VIEW
4. Select the correct input for the device you wish to capture video from.	 **DV1 – JVC VCR IN1 – Panasonic VCR IN2 – Pioneer LaserDisc**
5. Using the appropriate remote control, locate the point on the tape or disc you want to start capturing from and press the **Pause** button. Make sure there are several seconds of lead time before the action or dialog begins. This allows the picture to stabilize and makes editing easier.	
6. Press  (the **Record** button in the file controls) and select the name and location where the video file should be saved. **All audio and video should be saved to the D: drive only.** Don't press **Save** yet! Note: If you are starting a new project, create a folder to save all of the files associated with it.	
7. Press **Play** on the VCR or laserdisc player quickly followed by **Save**. Video is now being captured to the hard drive.	
8. To stop capturing, click the **Stop** button on the **File Controls**. The video clip has been saved. Then stop the VCR or laser disc player.	
9. If you wish to capture another video clip, click **New**. Then, go back to Step 4 and repeat the process.	
10. When you are finished, select **File**, **Exit**. Video clips are saved as AVI files and are ready for use in StormEdit and Premiere.	

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COPYING VIDEOTAPES AND LASERDISCS

	Play From	Record To	Input Setting
VHS -> VHS	VCR1 (S-VHS)	VCR2	Channel A2
VHS -> DV	VCR1 (S-VHS)	VCR1 (DV)	←
LD -> VHS	LD	VCR1 (S-VHS)	Channel LI
LD -> DV	LD	VCR1 (DV)	Channel LI
DV -> VHS	VCR1 (DV)	VCR1 (S-VHS)	→

1. Select the appropriate source listed in the **Record To** column on the video monitor switch.
2. Set the channel selector on the recording VCR as indicated in the **Input Setting** column. If ←or → are listed, press the appropriate button on the left side of VCR1 instead.
3. Load the tape to be duplicated.
4. Press **Play** on the playback device to make sure that you have the correct input. If you see color shifts, picture rolls, or blue screens every few seconds, the tape has been copy protected.
5. Rewind and cue this tape.
6. Put a blank tape in the recording VCR.
7. Press **Play** on the playback device, followed by the **Record** button on the recording VCR. If you used the ←or → buttons on VCR1 to set the input, press the Dub button instead to start duplicating.
8. When you are finished, stop and rewind both devices. You may want to check the quality of the copy by playing it.
9. To prevent the new copy from being accidentally recorded over, remove the protection tab.

Notes:

To make two VHS copies of a DV tape, laserdisc, or video from the computer, insert the second tape into VCR2 and set it to Channel A2.

Please make sure that your copying is legal. The Regents Guide to Understanding Copyright and Educational Fair Use (**http://www.usg.edu/admin/legal/copyright/copy.html**) provides information on what is legal and what is not. All of the computers in the Digital Media Lab have this link bookmarked. The Digital Media Lab does not have equipment to remove copy protection from videotapes.

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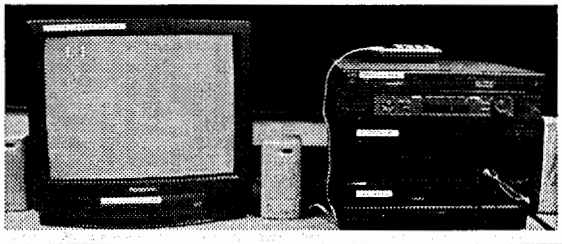
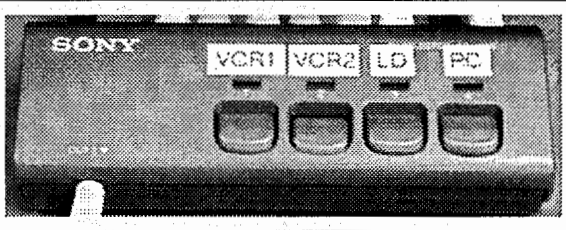
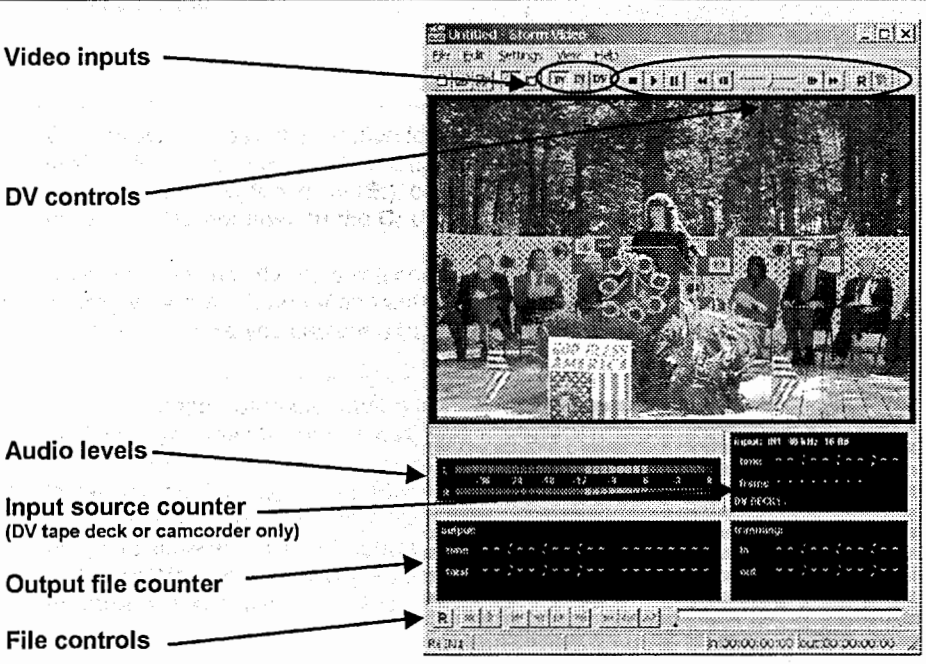
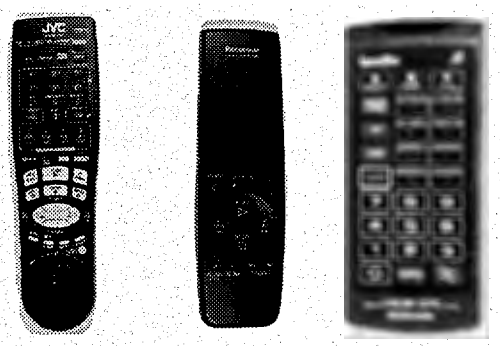
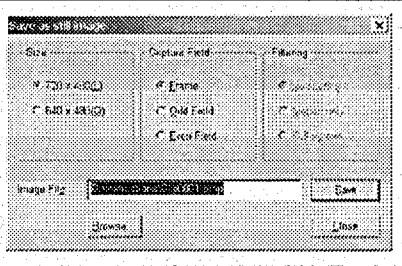
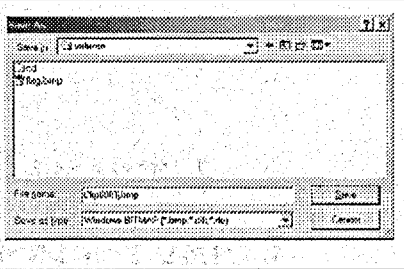
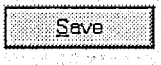
CAPTURING STILL IMAGES FROM VIDEO

ACTION	VIEW
1. Double-click on the **Storm Video** icon.	
2. Turn on the device you wish to capture from and the video monitor. The monitor should say **VIDEO1** after it is turned on. If not, press the **INPUT** button until **VIDEO1** is displayed.	
3. The video switch selects which device is displayed on the video monitor. Choose **PC** to view and hear what is being captured on the computer.	



ACTION	VIEW
4. Select the correct input for the device you wish to capture still images from.	 **DV1 – JVC VCR IN1 – Panasonic VCR IN2 – Pioneer LaserDisc**
5. Using the appropriate remote control, locate the point on the tape or disc you want to start capturing from and press the **Pause** button. Make sure there are several seconds of lead time before the action or dialog begins. This allows the picture to stabilize and makes editing easier. Note: If you are capturing from a DV tape you can use the **DV Controls** to operate the tape deck.	
6. Click the **Still Frame** button. The **Still Frame** window will appear. Select **720x480** if the still will should be used in a video editing project. Otherwise select **640x480**.	
7. Click **Browse** to select a location for the graphic file. You may save to the floppy disk drive (A:), CD-RW drive (E:), or Zip drive (F:). **Do not save to the C: drive.** Note: You may use the default filename or specify your own. Storm Video will add a number each time you capture a frame.	
8. Play your video. Click the **Save** button each time you want to capture a still frame.	
9. When you are finished, select **File**, **Exit**. The images are saved as .BMP files which are compatible with many programs, including Word, WordPerfect, PowerPoint, FrontPage, Paint, and Photoshop.	

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