

Utilizing the Tegrity® WebLearner for Classroom Presentation Capture and Streaming

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Abstract

The Tegrity® Web Learner device makes the capture and distribution of lectures and lessons, easy to accomplish without a huge expenditure in equipment and personnel. After a minimum of training, faculty can easily record their lectures in real-time, or even broadcast their lecture to other computers via the Internet as the lecture is taking place. The captured sessions can then be placed onto a server for on-demand streaming.

This is accomplished using software that is built around Microsoft Windows Media platform. This platform offers many advantages including tools that are freely downloaded from the Microsoft Website.

Permission Statement

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Background

As the cost of technology decreases, and the impact and expectation of professional quality presentations in both business and educational settings increases, a need developed for an easy-to-use product that can enhance the presentation. The Tegrity® system was originally developed as a product to enhance the business Powerpoint presentation. Many businessmen use the Powerpoint software from Microsoft to prepare presentations, which are projected onto a standard whiteboard in offices and boardrooms. During the presentation, additions, annotations, and other markups may be made which assist in the explanation and discussions. Following the presentation, a copy of the Powerpoint presentation might be given to various participants, but the annotations would not be included because they are left on the whiteboard.

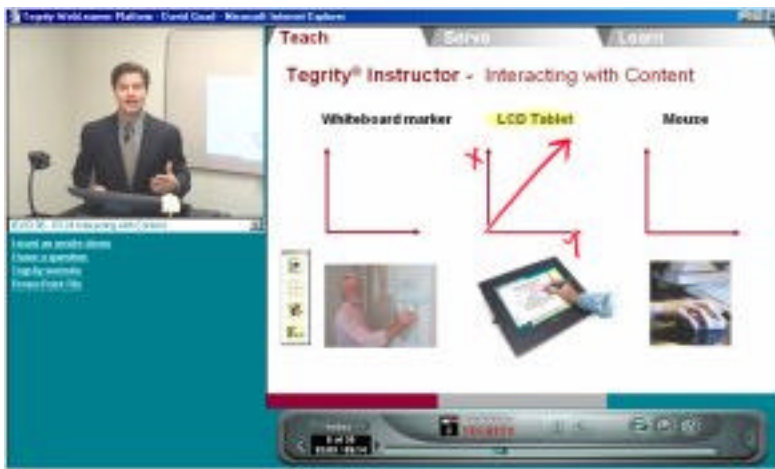
The original Tegrity® system was designed to capture the whiteboard annotations and record them so businessmen could distribute their Powerpoint modules after a presentation and retain any additional markups. Since educators also make extensive use of Powerpoint presentations, and have the need to capture potential additions to their slides, the Tegrity® WebLearner cart was developed.

Tegrity® WebLearner



The WebLearner cart system, consists of a mobile cart, a computer, keyboard, mouse, network card, a video projector, a wireless microphone, a document capture camera, a video capture camera mounted on top of the projector, and a third camera to capture the presenter. Capture, editing and server software are also included. Options include a LCD touchpad and an additional video capture card to allow a fourth camera to be used, possibly to capture the audience.

Ease of Use



The basis of any presentation on the WebLearner is the Powerpoint presentation, which is projected onto a standard whiteboard. This presentation can either be developed on the WebLearner cart using pre-defined templates, or it can be imported to the system via removeable media.

The pre-defined templates include a blank page, a graphing matrix, bulleted notes, and a variety of

other standard presentation formats. The pre-defined templates can be customized for specific situations.

Once the presentation is projected onto the board, a “virtual” icon pad is also projected in the lower left-hand corner of the Powerpoint window. This icon pad is normally not seen as part of the presentation. The instructor can control the presentation from the board, using the icon pad. The icon pad is used by simply placing the finger over the icon. The shadow is detected by the camera and the action is taken. This control can include changing slides, capturing markings placed on the board using a standard whiteboard dry erase marker, and changing from the Powerpoint mode to a screen capture mode.

The screen capture mode allows the inclusion of any software that can be run on the PC to be included in the presentation. Prior to starting the Powerpoint presentation, the desired software package is started, and the window is minimized. When needed, the package is selected, and replaces the Powerpoint slide in the slide window. This makes it ideal for “how to” training in software packages, and the use of the Internet. This option makes the WebLearner an excellent device to provide faculty and staff training, especially for adjunct faculty who might have only limited accessibility to training options.

Another feature that adds to the versatility of the WebLearner is the ability to utilize the document camera for either full motion or still frame recording. The document camera is attached to a flexible “goose neck” and is easily positioned to capture objects placed on the cart surface. The document camera can also be attached to a microscope or other optical device. When used in full capture mode, the instructor image is replaced in the instructor window with the document camera image and any action taken under the camera is displayed. By tapping either the appropriate place on the touchpad, or the “0” key on the keyboard number pad, the current image is captured and placed in the larger Powerpoint slide window. This is ideal for capturing graphing calculators, or other handheld objects for display to the class.

Another use for the document camera is to capture pages from books or other documents. The ability to move the camera close to the object and still retain focus control assists in bringing extremely small objects to the presentation.

Editing the Captured Video

Once the presentation has been captured, the resulting file may be edited. An editing program is included with the system which allows portions to be cut from the recorded file by marking a starting and ending point. This makes it convenient for the presenter, because if an error is made during the presentation, all that needs to be done is to pause, then start the portion of the presentation again. The point where the error was made can be marked as the starting point and the end of the pause can be marked as the ending point and the error can be deleted from the captured file.

The resulting file is an MPEG compressed file so any third party MPEG editing software can also be used to edit the captured file. Many third party programs also include additional editing features, and if the editor is already familiar with the software, will reduce the time to needed to produce the finished presentation by eliminating the learning curve.

Through the use of MPEG compression and the fact that motion video is confined to a smaller instructor window, the final presentations are small considering the amount of information that they can contain. On the average, a 1 hour presentation can be contained in approx. 120MB, or a little larger than a ZIP disk.

Streaming the Presentation

Included with the WebLearner is server software to allow the presentations to be streamed in either “on demand” or “broadcast” mode. The streaming can also be at different speeds to match the viewer’s Internet connection speed. Viewers with high speed broadband connections such as cable modems, T1 or DSL lines can receive the streams at up to 300kbps. Viewers with only a dialup connection can receive the streams at 28.8kbps. The higher the transmission speeds, the better the quality.

Most classroom and training presentations will be viewed as “on demand” streams. It is possible to set up the server software to provide “broadcast” or real-time reflection of a presentation, while it is being produced. The number of viewers who can participate in this broadcast stream is determined by the number of licenses that are purchased. This is also true for the number of viewers who can view “on demand” presentations at any one time.

No Additional Equipment or Personnel Needed

The Tegrity® WebLearner cart provides a self contained presentation capture and streaming system, which is easy to use and portable. Faculty can operate all of the equipment and software with a minimum of training so a technician is not needed to run the equipment. It can provide a vehicle for real-time multipoint one-way broadcasting from the cart in the classroom, or with an add-on product called Tegrity® Live, it can also provide for two-way interaction via typed messages or microphones with Voice-over-IP.

No additional equipment is required to produce the streams. Lighting can be problem, especially in older interior classrooms, so clip-on lights may be used to improve picture quality.

Although the streams can be broadcast to several points, this technology is not designed to eliminate the interactive distance-education classroom with multiple television monitors and microphones. The distribution points are intended to be individual PCs with the recipient sitting in close proximity to the screen.

Summary

The Tegrity® WebLearner cart provides a realistic alternative to a recording studio for producing streaming video of lectures and certain types of presentations. It allows the instructor to maintain control of the presentation and to present in the style that best suits them, without the need to adapt to the recording environment.

Faculty who either feel that a particular subject or lecture does not lend itself to distance education, or who feel that lecture is needed for clarification can now produce those lectures with a minimum of problems. Lab instructors, who have a difficult time demonstrating techniques for large classes, can demonstrate the labs visually and have the students preview the lab before reporting to class. Training on software packages or “how to” training such as how to use hand-held devices can be made available as needed eliminating the need to repeat the sessions, and insuring a consistency of instruction, because everyone is receiving the same content.

References

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Tegrity Software Weblearner User's Guide, Version 5.1, retrieved 3/17/03 from
<http://sessions.tegrityonline.com/resources/Support/Manuals/WebLearner51Final.pdf>