Is There Evidence That Students Benefit From It?

Discovery Education streaming is a way for teachers to use computers in their classrooms. See more online networking pictures.

-In the 1980s, not long after comp-ut-ers started playing a role in American schools, a computer station in a classroom was a haven. It was a place for one or two kids to play educational games like "Lemonade Stand" and "The Oregon Trail." Students could also learn the nuts and bolts of programming with languages like Logo and BASIC. For people who were used to the world of books and blackboards with an occasional filmstrip to liven things up, a new Apple IIe could be the most exciting thing in the room.

Today, classroom computers do more than just sit in the corner waiting for a student to be rewarded with some educational game time. And they're not just used in computer courses, either. Computers have broken out of the lab and made their way into classroom-s dedicated to other subjects. Naturally, one result of this is that software developers, publishers and others have tried to come up with new ways for teachers to use computers in the classroom. Launched in 2001 as unitedstreaming, Discovery Education streaming is now used in about half of U.S. schools. That adds up to about 1 million educators and 30 million students [source: Discovery].

The word "streaming" probably brings to mind streaming audio and video files that people can play on demand. But streaming videos are only one component of Discovery Education streaming. The program also includes lesson plans, curriculum materials and other tools for both teache-rs and students.

-So how does Discovery Education streaming work within a classroom? Is there evidence that students benefit from it? And, in a world of financially strapped school systems, how much does it cost? Before we get to all that, let's take a look at the basics.

Discovery Education streaming Basics

Discovery Education streaming includes an interactive atlas.

As its name suggests, Discovery Education streaming has lots of streaming video clips at its core. By the end of 2008, it will have 5,000 full-length videos and 50,000 clips in its basic package [source: Discovery Education streaming]. Discovery Education streaming Plus builds on this collection with a slightly wider selection. It will include 8,700 full-length videos and 87,000 clips by the end of 2008 [source: Discovery Education streaming Plus]. Some of these videos come from Discovery Channel. Other contributors include Scholastic, the BBC, PBS and NASA. All in all, the basic package has content from more than 150 educational producers. With Discovery Education streaming plus, the number goes up to more than 170. A curriculum development team reviews the content to make sure it is accurate, appropriate, high-quality and representative of diversity.

Teachers can search for the videos they need using keywords, grade levels and other search parameters.

The basic package also includes image and audio libraries, an interactive atlas, and encyclopedia articles. There are also addon video libraries, such as a langu-age pack that includes video clips in more than 30 languages. Everything is for educational use only, including in home schools." Fortunately, these videos don't exist in a vacuum. The clips are aligned to K-12 national and state curriculum standards. Many are organized according to themes, and teachers can search for relevant clips by keyword, subject, grade level and curriculum standard. There are also search options for closed-captioned videos and videos in Spanish. In addition, Discovery Education streaming provides a library of lesson plans and suggestions for incorporating the videos into all areas of study.

-There's also more than just video in the Discovery Education streaming package. Some of the other tools include:

Quiz builders: Teachers can create multiple-choice quizzes, which students fill out using a computer. The quizzes are graded automatically, and teachers can view the results, including which answers the students chose.

Writing prompts: As with the quizzes, teachers create the prompts and students complete the assignments using a computer. There's also a library of prompts for a variety of writing styles, from expository to narrative.

Editable videos: Teachers can use video editing software to customize certain clips.

Professional Development: Discovery Education offers a wide array of complimentary professional development options that allow educators to learn more about integrating technology into the classroom.

Discovery Educator Network: A Discovery Education streaming subscription includes an invitation for all educators to join to the Discovery Educator Network (DEN). The DEN currently includes more than 88,000 members nationwide, providing professional development to more than a half a million educators.

In addition, teachers get access to tools to keep things organized, such as a calendar, a grade book and an assignment builder.

-Of course, connecting to all this requires a wired classroom. We'll look at what kind of tech it takes to use Discovery Education streaming in the next section.

Teachers access files from Discovery Education by two primary methods -- streaming and downloading. It's a little like the difference between watching a movie in a theater and buying one on DVD. At a theater, a projector sends a stream of information to a screen. Your eyes

decode this information for you on the fly. Images disappear from the screen after you've seen them. This is basically what happens when a video is streamed to your computer.

If you buy a DVD of the movie, though, it's yours to keep. This is more like what happens when you download a file. With Discovery Education streaming, you can stream videos to a classroom computer on demand. Or, you can download them to a computer to play, insert into a presentation or, in some cases, edit. Your school needs a site license, which gives you the right to view and use the material. And, you need a connection to the location where the files are hosted. Depending on how your subscription is set up, this can be:

Discovery Education streaming servers via the Internet

A network server owned by your school, district or region

There are pros and cons to each of these setups. https://extrememining.org/ Downloading videos from Discovery servers is the least expensive option, but streaming video takes up a lot of bandwidth. A home school can get by with a 56k modem, but public -and private schools need a high-speed connection. Even with broadband, if lots of teachers are streaming videos at the same time, playback can stutter or even stop.

Downloading the files to a server owned by the school instead of streaming them from the Web can help resolve this issue. Some schools use Network Manager software to contact Discovery servers during off-peak Internet hours and download the videos teachers have requested. The school's server then streams the files to classrooms upon request.

For school systems that plan to use Discovery Education streaming extensively, the best option can be to set up a local host. This is a server that contains the entire Discovery Education streaming library. This server can be set up behind the school system's firewall, providing extra security. Teachers connect to this network server rather than to the Internet to get their files. For large-scale use, school districts can purchase a media server that contains all the Discovery Education streaming Plus files directly from Discovery.

Each of these upgrades adds some expense to the overall package. Site licenses range from about $1,500 to $3,000, depending on grade level and whether the license is for the base package or Discovery Education streaming Plus. Network Manager software is around $300, and local host packages range from $3,000 to $6,000, depending on the configuration. A 9-terabyte Discovery media server with all the Discovery Education streaming Plus titles included is more than $10,000. Some schools can qualify for grants or other funds to help cover the expenses. One such resource is funding from the Microsoft class-action settlement -- you can read more at Discovery's page on the Microsoft settlement.

-To a financially strained school system, this can sound like a lot of -money -- so what exactly is the benefit of Discovery Education streaming? We'll answer that question on the next page.

Discovery Education streaming's videos and teacher tools all work to make classrooms more interactive.

Image courtesy Discovery Education streaming

More than a million teachers use the videos, clips, training and tools that are part of Discovery Education streaming -- but does the program work? In addition to anecdotal reports that teachers and students benefit from h-aving Discovery Education streaming's teaching tools and videos, there are two scientific studies that show that the program produces measurable, positive results in student achievement [source: Discovery]. These studies were conducted by an independent third party and compared students who had the videos incorporated into their classes to ones who didn't. The results of the studies were also published in the journal Communication Education. At the time of both experiments, Discovery Education streaming was known as unitedstreaming.

The first study followed third- and eighth-grade students in three school districts in rural Virginia, and their teachers received training on how to use the program. Before the start of the experiment, students in the test groups and control groups took pretests in science and social studies and achieved comparable scores. Over the next month, students in the experimental groups saw at least 30 Discovery Education streaming videos that were related to their lessons. The students in the control groups had similar lessons but without the videos. Both sets of students improved, but on the whole the ones who had seen the videos scored significantly higher than the ones who didn't. The experimental group performed 12.6 percent better on average than the control group. The only experimental group that did not show a significant increase over the control group was the eighth-grade science students. The researchers theorized that this discrepancy may have been because too much time passed between the eighth-grade science teachers' training on using the videos and the beginning of the experiment [source: Boster et al, Virginia].

The second study followed this same basic method to evaluate how the program worked with sixth- and eighth-grade math students in Los Angeles. This study had similar results. Students who had been exposed to unitedstreaming videos that were related to their course work fared better on their posttests than their peers in the control groups. On average, the students in the experimental group scored 3 to 5 percent higher than those in the control, which is statistically significant [source: Boster et al, Los Angeles].

There are a couple of important things to note about the study. First, it examined the unitedstreaming program, which became Discovery Education streaming, exclusively -- it didn't compare the results to other video programs. It also studied specific grade levels and subject areas rather than the entire program. In other words, the results show the success of the program when used in these particular subjects and grade levels.

Stream your way to the next page to learn more about classroom education and on-demand video. Frank J. et al. "2004 unitedstreaming Evaluation: 6th and 8th Grade Mathematics in

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