



Questions



Academic Instruction through Captioned and Interactive Videos: Usability Testing of ACTIV 1.0

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Questions





Questions

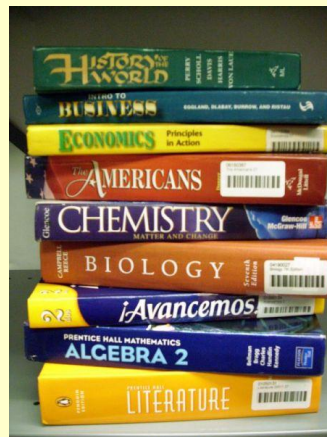


Technology in the Classroom

Increase in video use in general ed.



Evidence-based strategies for academic education for students with disabilities



Age appropriate technology





Questions



Literature: Video Meta-Analysis

- Videos effectively present academic content to ALL students
- Teaching functional, social, and behavioral skills to students with intellectual disabilities;
- May have to be adapted for cognitive needs





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Literature: Adaptations Meta-Analyses

- Closed captioning



- Highlighted text

Welcome to **Closing** the Gap

- Picture symbols



- Interaction





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Initial Research Study

- 11 students with intellectual disabilities from the Mason LIFE program at GMU
- Repeatedly watched regular and adapted videos (1,5-2 minutes long)
- Answered 3 factual and 3 inferential questions about the video



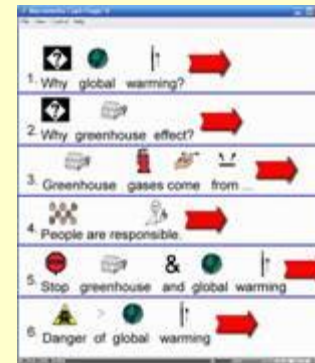
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Video Materials

- Editable videos from *Unitedstreaming* aligned with VA SOLs
- Comprehension questions asked by the researcher



- Altered narration via natural synthesized voice
- Video with highlighted text captions
- Video with picture/word-based captions
- Prompted interactive video searching for answers



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Study Results

- Significantly improved factual comprehension
- Significant improvements in both factual and inferential comprehension after searching the video for answers
- No difference between highlighted text captions and picture-symbol based captions;
- Students **LOVED** adapted videos!





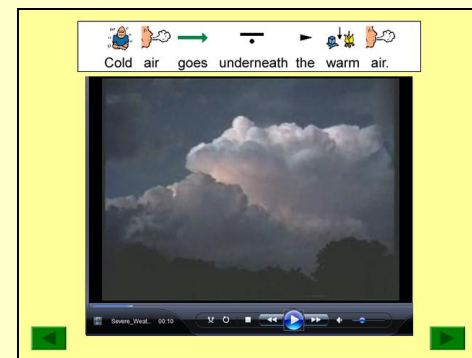
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Practical Ideas

- Access to videos aligned with curriculum standards (e.g., Unitedstreaming)
- Videos with regular closed captioning (e.g., CNN)
- Video ‘chunking’/stopping for discussion or narrating;
- Hyperlinks to segments corresponding to comprehension questions with *MovieMaker*
- Video chunks with picture symbol-based captions embedded into *PowerPoint*





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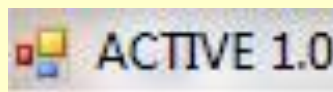


Practical Implications

- Too time consuming and labor intensive to adapt existing videos with various adaptations
- VIDEO ENHANCEMENT PROGRAM IS NEEDED!

2008-2010 Steppingstones of Technology Innovation for Children with Disabilities grant:

**Adapted Captions through Interactive Video (ACTIV)
Innovative Overlay Program**



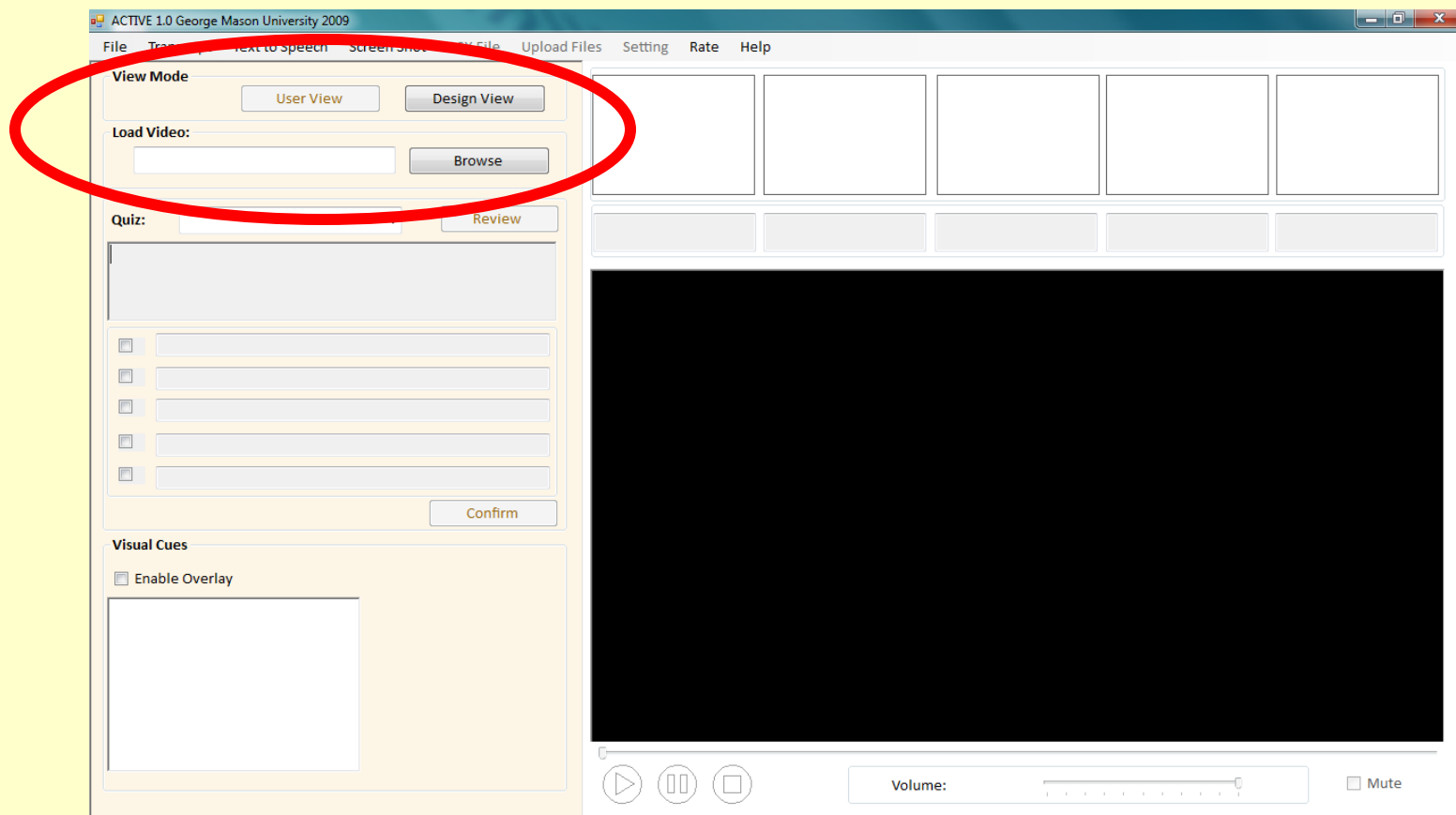


Questions



What can ACTIV 1.0 do? (1)

- Upload any existing video (.wmv; .avi) in the user or design view





Questions



What can ACTIV 1.0 do? (2)

- Automatically create video transcript by converting speech to text and adding time stamps to each word in the video (providing regular captions)

ACTIVE 1.0 George Mason University 2009

File Transcript Text to Speech Screen Shot ASX File Upload Files Setting Rate Help

View Mode
User View Design View

Load Video:
An_Internet_E_mail_Scam.wmv Browse

Transcript
Create Transcript Show/Hide Time Stamps
Upload Transcript Save Changes

Captions
 Text Only Captions
 Highlighted Text Captions
 Picture Symbols Text Captions
 Picture Symbols Highlighted Text Captions

Quiz
Edit Quiz

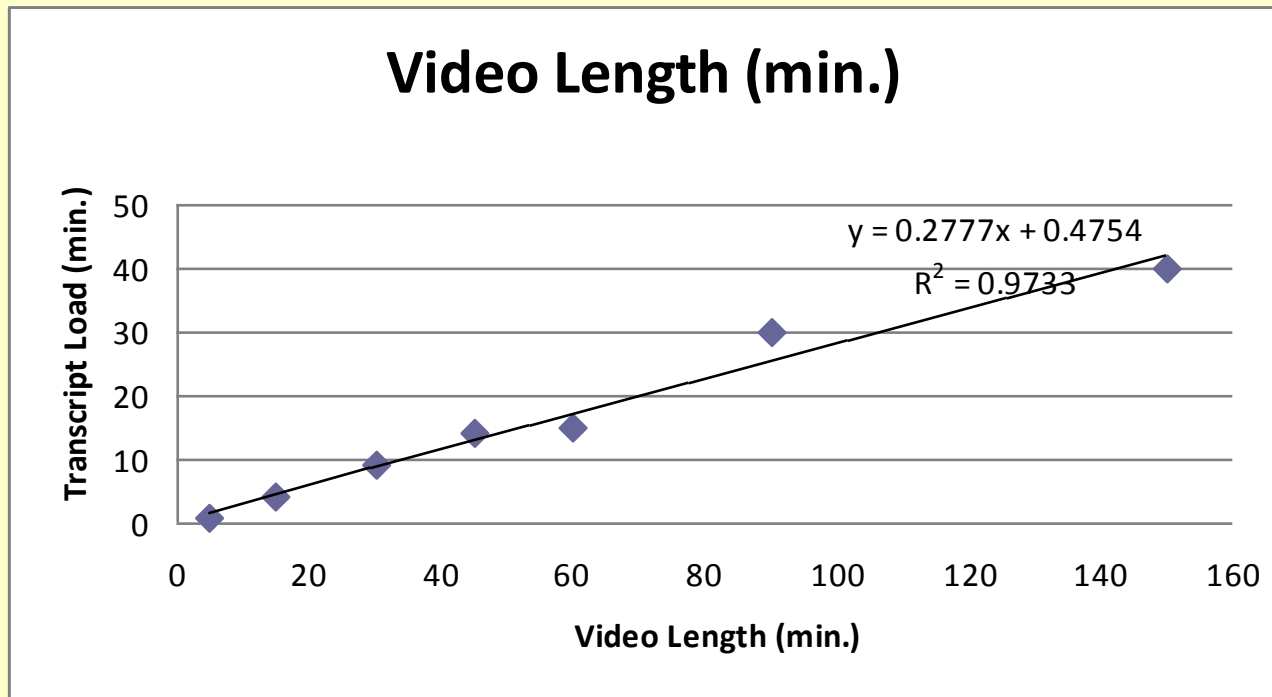
Visual Cues
 Enable Overlay
Load Visual Cue
Place into Video
Preview
Save Visual Cues

Volume: Mute

[00:00:02] Some Internet criminals specialize in another kind of scam. This is so called fishing and emails to unsuspecting victims to st
[00:00:13] credit card information and other private data that allow them to walk off with their victims money and personal identity i
[00:00:31] they also contain statements that urgently and for you to act immediately [00:00:35]
[00:00:36] that generally have a link that supposed to be a legitimate web site that will clear up the problem but the site is freight alt
[00:00:56] to which you ever get an e-mail like this the best thing for you to do is delete it [00:01:01]

ACTIV 1.0 Efficiency

- It does not take long to create a transcript from the video.





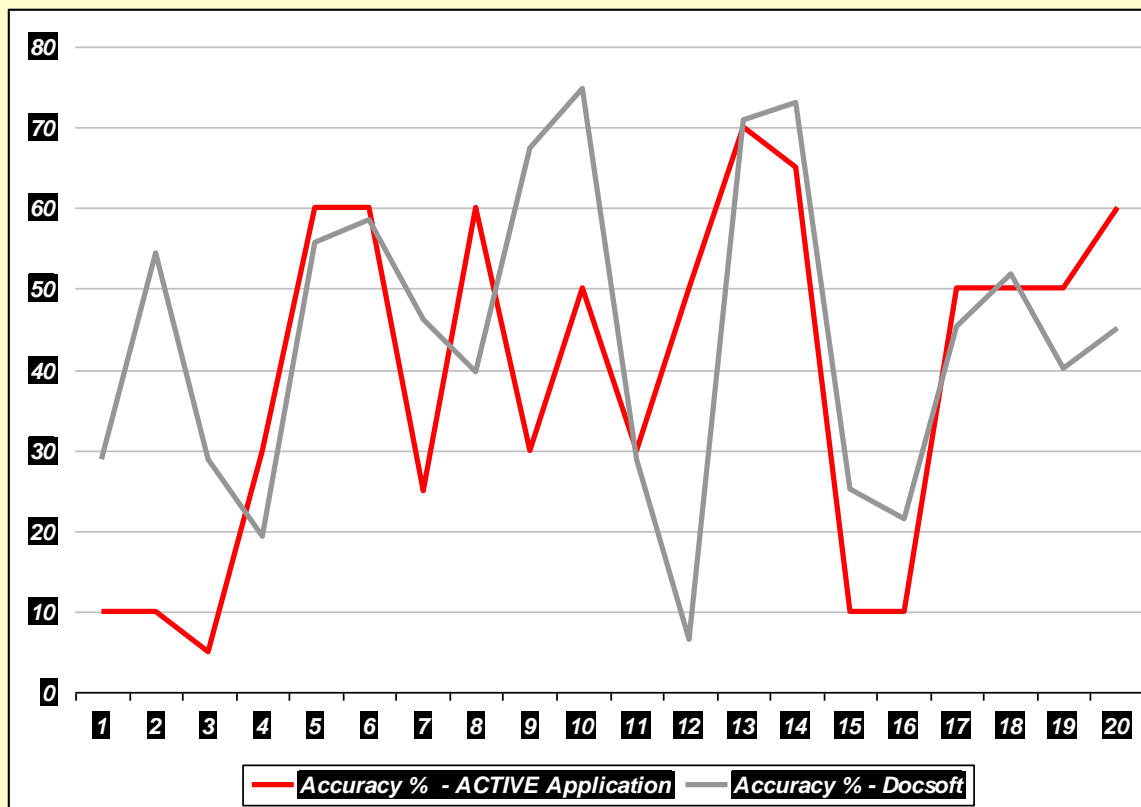
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Questions



ACTIV 1.0 Accuracy

- ACTIV speech-to-text accuracy keep increasing.





Questions



What can ACTIVE 1.0 do? (3)

- Text in the transcript (right in the transcript or through the advanced screen) can be edited while maintaining time stamps (improving accuracy and creating key word captions)

The screenshot displays the ACTIVE 1.0 software interface. A central window titled "DBTranscript" is open, showing a transcript editing interface. The transcript text reads: "Some Internet criminals specialize in another kind of scam. This is so called fishing and emails to unsuspecting victims to steal Social Security numbers". Below the text is a table with columns: ID, Text, Time Offset, Time Length, Symbol, and Visible. The table contains 14 rows of data. A red oval highlights the first row of the table. The interface also includes a menu bar (File, Transcript, Text to Speech, Screen Shot, ASX File, Upload Files, Setting, Rate, Help), a "View Mode" section (User View, Design View), and a "Caption" section with radio buttons for "Text Only Captions", "Highlighted Text C", "Picture Symbol", and "Picture Symbols H".

ID	Text	Time Offset	Time Length	Symbol	Visible
0		1610	300	C:\ACTIV_bin_100CT11\...	True
1	Internet	1930	460	C:\ACTIV_bin_100CT11\...	True
2	criminals	2390	650	C:\ACTIV_bin_100CT11\...	True
3	specialize	3040	780	C:\ACTIV_bin_100CT11\...	True
4	in	3820	280	C:\ACTIV_bin_100CT11\...	True
5	another	4130	580	C:\ACTIV_bin_100CT11\...	True
6	kind	4710	260	C:\ACTIV_bin_100CT11\...	True
7	of	4970	110	C:\ACTIV_bin_100CT11\...	True
8	scam.	5080	950	C:\ACTIV_bin_100CT11\...	True
9	This	6030	300	C:\ACTIV_bin_100CT11\...	True
10	is	6330	200	C:\ACTIV_bin_100CT11\...	True
11	so	6530	230	C:\ACTIV_bin_100CT11\...	True
12	called	6760	450	C:\ACTIV_bin_100CT11\...	True
13	fishing	7210	410	C:\ACTIV_bin_100CT11\...	True
14	and	7620	270	C:\ACTIV_bin_100CT11\...	True



Questions



What can ACTIV 1.0 do? (4)

- Each word in the text-based captions is automatically highlighted as it is spoken out (can turn this feature off).

ACTIVE 1.0 George Mason University 2009

File Transcript Text to Speech Screen Shot ASX File Upload Files Setting Rate Help

View Mode
User View Design View

Load Video:
An_Internet_E_mail_Scam.wmv Browse

Transcript
Create Transcript Show/Hide Time Stamps
Upload Transcript Save Changes

Captions
 Text Only Captions
 Highlighted Text Captions
 Picture Symbols Text Captions
 Picture Symbols Highlighted Text Captions

Quiz
Edit Quiz

Visual Cues
 Enable Overlay
Load Visual Cue Place into Video Preview Save Visual Cues

credit card **information** and other

Some Internet criminals specialize in another kind of scam. This is so called fishing and emails to unsuspecting victims to steal Social credit card information and other private data that allow them to walk off with their victims money and personal identity is more oft they also contain statements that urgently and for you to act immediately that generally have a link that supposed to be a legitimate web site that will clear up the problem but the site is freight although it m to which you ever get an e-mail like this the best thing for you to do is delete it



What can ACTIV 1.0 do? (5)

- Picture symbols from Symbolstix are automatically added to each word in the captions (can turn this feature off)

ACTIVE 1.0 George Mason University 2009

File Transcript Text to Speech Screen Shot ASX File Upload Files Setting Rate Help

View Mode

Load Video: An_Internet_E_mail_Scam.wmv

Transcript

Captions Text Only Captions Highlighted Text Captions Picture Symbols Text Captions Picture Symbols Highlighted Text Captions

Quiz

Visual Cues Enable Overlay

credit card information and other

Some Internet criminals specialize in another kind of scam. This is so called fishing and emails to unsuspecting victims to steal Social credit card information and other private data that allow them to walk off with their victims money and personal identity is more oft they also contain statements that urgently and for you to act immediately that generally have a link that supposed to be a legitimate web site that will clear up the problem but the site is freight although it m to which you ever get an e-mail like this the best thing for you to do is delete it



Questions



GEORGE MASON UNIVERSITY LIFE Program

LIGHTS. CAMERA. CAPTIONS!

GEORGE MASON UNIVERSITY

What can ACTIV 1.0 do? (6)

- Graphics can be added to the video (as the overlay) to focus user's attention on important stimuli.

ACTIVE 1.0 George Mason University 2009

File Transcript Text to Speech Screen Shot ASX File Upload Files Setting Rate Help

View Mode

Load Video:
 An_Internet_E_mail_Scam.wmv

Transcript

Captions
 Text Only Captions
 Highlighted Text Captions
 Picture Symbols Text Captions
 Picture Symbols Highlighted Text Captions

Quiz

Visual Cues
 Enable Overlay

CREDIT CARD
 1234 5678 9123 4567
 JOHN DOE 04/08

credit card information and other

Volume: Mute

Some Internet criminals specialize in another kind of scam. This is so called fishing and emails to unsuspecting victims to steal Social credit card information and other private data that allow them to walk off with their victims money and personal identity is more often they also contain statements that urgently and for you to act immediately that generally have a link that supposed to be a legitimate web site that will clear up the problem but the site is freight although it m to which you ever get an e-mail like this the best thing for you to do is delete it



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Questions



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What can ACTIV 1.0 do? (7)

- Teachers can mute the video, narrate, or use text-to-speech feature.

ACTIVE 1.0 George Mason University 2009

File Transcription **Text to Speech** Screen Shot ASX File Upload Files Setting Rate Help

View Mode: User View Design View

Load Video: An_Internet_E_mail_Scam.wmv Browse

Quiz: q2 Review

fff

Visual Cues: Enable Overlay

credit card information and other

Volume: [Slider] **Mute**



Questions



What can ACTIV 1.0 do? (8)

- Multiple-choice quizzes can be easily created to test user's comprehension of the video content.

The screenshot displays the ACTIV 1.0 software interface. The main window is titled "ACTIVE 1.0 George Mason University 2009". The interface is divided into several sections:

- View Mode:** Includes "User View" and "Design View" buttons.
- Load Video:** Shows a video file named "An_Internet_E_mail_Scam.wmv" and a "Browse" button.
- Transcript:** Features buttons for "Create Transcript", "Show/Hide Time Stamps", "Upload Transcript", and "Save Changes".
- Captions:** Offers options for "Text Only Captions", "Highlighted Text Captions", "Picture Symbols Text Captions", and "Picture Symbols Highlighted Text Captions".
- Quiz:** Includes a "Back to Transcript" button.
- Visual Cues:** Has an "Enable Overlay" checkbox and buttons for "Load Visual Cue", "Place into Video", "Preview", and "Save Visual Cues".

The central video player shows a scene with a person wearing a black balaclava and sunglasses, holding a laptop with an "@" symbol. The video player controls include a play button, a volume slider, and a "Mute" checkbox. Below the video player, a quiz creation tool is visible, featuring a "New" button, a "Name" field (set to "Who?"), a "Problem" field (containing "Who specialize in another kind of scan?"), and a "Create Multiple Choices" section with a list of options: "Internet buyers", "Prisoners", "Internet criminals" (checked), and "Friends". Each option has a "Delete" button. There is also a "Mark Video" section with "From" and "To" time fields (set to 00:00:00 and 00:00:06) and "Save" and "Delete" buttons.



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What can ACTIV 1.0 do? (9)

- Each question can be tagged in the video, so that the user can preview/watch a segment containing the correct answer before or after answering each question.

The screenshot displays the ACTIV 1.0 interface. At the top, there is a menu bar with options: File, Transcript, Text to Speech, Screen Shot, ASX File, Upload Files, Setting, Rate, Help. Below the menu bar, there are two tabs: "User View" and "Design View". The "Load Video:" section shows a video file named "An_Internet_E_mail_Scam.wmv" and a "Browse" button, which is circled in red. The "Quiz:" section shows "Question 1" and a "Review" button. The question text is "Who specializes in another kind of scam?". Below the question, there are four radio button options: "internet criminals", "bank robbers", "policemen", and an empty field. A "Confirm" button is located below the options. The "Visual Cues" section has an "Enable Overlay" checkbox and a large empty text area. The video player shows a scene with a person in a black balaclava and sunglasses holding a sign with an "@" symbol. The word "Phishing" is written vertically on the left. A "CONFIDENTIAL" stamp is visible on a document in the background. The video player controls at the bottom include play, pause, and volume buttons.



Questions



What can ACTIV 1.0 do? (10)

- Each question and answer choice can be read out loud to the student

The screenshot displays the ACTIV 1.0 software interface. At the top, there is a menu bar with options: File, Transcript, Text to Speech, Screen Shot, ASX File, Upload Files, Setting, Rate, and Help. Below the menu, the 'View Mode' section includes 'User View' and 'Design View' buttons. The 'Load Video' section shows a video file named 'An_Internet_E_mail_Scam.wmv' and a 'Browse' button. A 'Quiz' section is active, showing 'Question 1' with a red circle around a speaker icon and a 'Review' button. The question text is 'Who specializes in another kind of scam?'. Below the question are five radio button options: 'internet criminals', 'bank robbers', 'policemen', and two empty options. A red circle highlights the speaker icons for each option. At the bottom of the question area is a 'Confirm' button. The 'Visual Cues' section has an 'Enable Overlay' checkbox. The main content area shows a video player with a video of a person in a black balaclava holding a sign with an '@' symbol and a California ID card. The video player has a volume control slider and a 'Mute' button. The video player also displays the text 'P-f-i-s-h-i-n-g' vertically on the left side of the video frame.

- ACTIV 1.0 collects mouse clicks data



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DEMONSTRATION





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Questions



Usability Testing Expert Panel

Questionnaires, observations, and interviews with 6 experts in

- teaching students with intellectual disabilities
 - instructional design/assistive technology
 - content instruction for students with disabilities
- Functional changes
 - E.g., Be able to edit text within transcript window
 - Interface changes
 - E.g., Increase captioning font and decrease words per line





Usability Testing Classroom Research

- Three single-subject research studies in:

- Middle school science classroom
- Middle school history classroom
- High school transition classroom



- 4 students with intellectual disabilities in each classroom



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Conditions

Baseline

Treatment

Regular videos



Alternate between highlighted verbatim captions vs. highlighted key idea captions

Regular videos



Alternate between picture-symbol verbatim vs. picture-symbol key idea captions



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Each Session

1. Students watched 3-5 minutes videos (regular or adapted) from Unitedstreaming
2. Students answered 6 factual questions embedded in the video
3. In treatment condition, students could review the video for answers to adjust their original responses

Quiz: What? Review

What do criminals NOT steal from unsuspected victims?

- Social Security numbers
- Credit card information
- Cars
- Private data
-

Confirm



Questions



Results

- No functional relation between watching videos adapted with captions and factual comprehension
- Similar performance with verbatim and key word captions
- Significantly increased factual comprehension of the video content after reviewing/searching captioned clips for answers
- Students loved the videos but did not look at the captions because “they were small and moving too fast”



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Future Developments

- Improving transcript accuracy
- Creating multiple text options for each picture symbol
- Synchronizing text-to-speech option to slow down the narration speed
- Exploring ways to automatically adjust transcript's readability levels





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Conclusions

Adapted and interactive videos offer innovative, universally designed solutions that can be used effectively for teaching academic content to students of all abilities, including those with disabilities.

