Instructional Videos With Purpose: Compensate, Support and Challenge Students’ Learning

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It started with...

Instructor’s desire to enhance students’ academic experience & performance.
Identify Needs To Address

Major Worked Examples

Prior Knowledge/Skills

Open-ended Applications

Compensate Support Challenge
Why Instructional Videos?

Multimodal instructional environment (text/audio/video);

Able to convey instructor’s perspectives in a focused manner;

User-friendly video software available;
Startup Production Strategy

How?

• decide on the focal topic;
• select the material to include;

• create a protocol to present the selected material;
• record the audio associated with the selected material;
Startup Production Strategy

How?

• convert the material in images;
• integrate images and audio (Camtasia Studio 6);
• include animated pointers & highlights to guide the viewer;
• set the length of the video between 7 and 10 minutes;
Startup Production Strategy

Why image-based videos?

- gives the instructor the ownership of the material of the video;
- allows for split of responsibilities yet keeps a nice flow of the teamwork;
- gives flexibility on the recording of the audio;
- decreases the size of the final output;
Startup Production Strategy

Why image-based videos?

- allows for a mix of various materials
Startup Production Strategy

Why image-based videos?

• allows instructor to maintain focus on those parts of the image that are important;

• allows for animation to became effective guide of students’ attention
5) You can use Mathcad to solve a given problem (for example, using Maple). For example, suppose you want to calculate the derivative of \( f(x) = \ln(x) \) with respect to \( x \).

\[
\frac{d^2}{dx^2} \ln(x)
\]

In Mathcad, after entering the function, click on the derivative operator and choose the variable \( x \). Fill in the blank space by leaving the space (you must be at the end of the expression) choose Symbols > evaluate > symbolic.
Video is Done...Now What?

You can easily make it available in Blackboard;
Video is Done...Now What?

...but it will be more effective if:

• you create a task that requires students to use the video;
• when appropriate provide a text/slides version of the content;
• get students’ perceptions on these videos at midterm and end of the semester;
The end of the video can include a transfer task...

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**Homework**

- **Rework part one** of this problem **assuming** that the steam at 15 bar is wet \((x=0.992)\). Write your own MathCad Program.

- **Rework part one** of this problem **but use** steam at 18 bar to fill the tank. Write your own MathCad Program.

- **Convince yourself** that the potential and kinetic energy of the streams are small compared to either their internal energy or enthalpy.
What we have so far?

Three short compensatory videos

• one related to calculus;
  • created from scratch, outside the classroom, mostly with handwritten materials

• two related to Mathcad;
  • audio for the first one recorded in the course combined with screenshots;
  • audio for the second one recorded mostly outside the class;
What we have so far?

One supporting video

- a major worked example introduced in the classroom;
- audio recorded in classroom for reference;
- final audio recorded outside the classroom;
- slides converted to images and overlapped on the audio;
Here they are!

...at least at the time of this presentation

Calculus Video

Mathcad Video

Worked Example
Why it worked out?

- The instructional designer added value in selecting the topic and in using of the videos but...

- The instructor had full ownership of the content and focus of these videos;

- Significant time was saved by using an effective and productive division of labor;
Contact Information

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