Subject: Teaching IDL Courses
Posted by David Fanning on Thu, 18 Aug 2011 15:25:47 GMT
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Folks,

I've been teaching IDL courses for a long time. When I started, no one had a projector you could connect a computer to. You just worked everything out on a black board or (sometimes) a white board. Students had to put up with fuzzy thinking and even poorer handwriting. Sometimes there were lots of arrows drawn to show you how to insert code bits here and there. Basically, it was chaos.

Now, of course, everything is done on the computer and the instructor's code is projected onto a screen. It's neater, the code is in a straight line, it is easier for the class to see, many of the lectures are canned, etc.

The strange thing is, I think people learned more when the course content was a mess than they learn today. Sometimes I'll lecture for three days and then ask a class to write a short program without my help. Fewer and fewer people, it seems to me, are up to the challenge.

Now, I have confirmation of my theory that chaos and confusion actually promotes learning!

Greg Wilson, over at Software Carpentry, has posted a short summary of some work Eric Mazur, an expert on physics education, has been doing.

http://software-carpentry.org/2011/08/demos-reinforce-errors -and-confusion-is-good/

Here are his main points:

1. Giving people a demo of something actually results in them understanding it less well, because they fit what they?ve seen into their preconceptions (which are then reinforced). Guzdial interprets this to mean that CS educators need to do more live coding.

2. Students like teachers who clarify things, but students who are confused are actually more likely to learn and understand.

3. Students? self-reported understanding of a topic has no
   relation to their actual understanding of it (which
   highlights once again the fact that self-assessment
   is useless).

Maybe the old ways ARE best! :-)

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Teaching IDL Courses
Posted by Craig Markwardt on Sun, 21 Aug 2011 19:49:25 GMT
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On Aug 18, 11:25 am, David Fanning <n...@idlcoyote.com> wrote:
> The strange thing is, I think people learned more
> when the course content was a mess than they learn
> today. Sometimes I'll lecture for three days and then
> ask a class to write a short program without my help.
> Fewer and fewer people, it seems to me, are up to the
> challenge.

I used to attend seminars and take notes. The purpose of notes was mostly to keep me awake and mentally engaged -- I never go back and referred to the notes again.

Once I was taking notes at a talk and the speaker noticed this. He made a point of announcing it to the rest of the audience, and made a big production of handing me a preprint of his recent paper so that I wouldn't have to take notes anymore. Sorry dude, that's not why I'm taking notes. [That, and coffee doesn't help me stay awake.]

I think seeing something develop slowly - organically - on a black/white board can help a listener learn and remember something. The content is revealed at human speed. As opposed to projected slides - where "everything" is already there on the screen and the audience just views it passively.

Craig

Subject: Re: Teaching IDL Courses
Posted by Michael Galloy on Mon, 22 Aug 2011 17:02:37 GMT
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On 8/21/11 1:49 PM, Craig Markwardt wrote:
> I think seeing something develop slowly - organically - on a black/
> white board can help a listener learn and remember something. The
> content is revealed at human speed. As opposed to projected slides -
> where "everything" is already there on the screen and the audience
> just views it passively.

I agree. I never used slides for lectures, only hand written on a board or typed in at a computer real-time. This makes for occasional gaffes, but that's part of the process as well. Of course, convincing the students of this is another matter.

Mike
--
Michael Galloy
www.michaelgalloy.com
Modern IDL, A Guide to Learning IDL: http://modernidl.idldev.com
Research Mathematician
Tech-X Corporation

Subject: Re: Teaching IDL Courses
Posted by Paul Van Delst[1] on Mon, 22 Aug 2011 22:34:59 GMT
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Craig Markwardt wrote:
> I think seeing something develop slowly - organically - on a black/
> white board can help a listener learn and remember something. The
> content is revealed at human speed. As opposed to projected slides -
> where "everything" is already there on the screen and the audience
> just views it passively.

Doesn't that depend on how a presenter puts together, and uses, the slides?

I don't claim to be a great teacher/communicator by any means, but I've used the animation feature of powerpoint[*] to
(what I think of as) pretty good effect: highlighting inconsistencies in the prepared slides after people in the
audience have expressed confusion, or introducing subtopics slowly (at human-speed, if consecutive mouse-clicks count as
such).

As such, I don't think projected slides (with everything at once) are the problem - it's the speed of introduction, as

you point out. Most people (myself included) pack waaaaay too much in their presentations. Less is more I reckon. But
then it becomes a balancing act between covering the material contained in a few slides to fuller effect, and keeping
people interested over several months because that's how long the course will take to complete.

cheers,

paulv

[*] The more subtle animation features only.

Subject: Re: Teaching IDL Courses
Posted by David Fanning on Mon, 22 Aug 2011 23:06:39 GMT
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Paul van Delst writes:

> Most people (myself included) pack waaaaay too much in their
> presentations. Less is more I reckon. But then it becomes a
> balancing act between covering the material contained in
> a few slides to fuller effect, and keeping people interested
> over several months because that's how long the course will
> take to complete.

I used to go to great effort to keep myself "technically
naive". This was quite a bit harder than you might think
it would be! But, I thought I was a much better teacher,
especially of the introductory material, if I didn't know
too much.

Over the years, of course, I learned more about IDL in
spite of my very best efforts. Then, I went through
a period of several years where I knew *everything*
about, say, contour plots, and I would take two days
to cover the material!

It took me quite a bit longer than you might imagine
to realize that the blank looks I was getting were
because NOBODY CARES! I backed way off, and cover
considerably less material now. (Although anyone who
is interested can read my book, where I spew forth
everything I know about the subject!)

I'm happier with the classes now. I don't cover as
much material as I used to, but I do think what I do
cover sinks in (more or less). And I still write

programs on the fly, trying to get people to type
them with me. Making and fixing mistakes is *still*
the best way I know to learn a programming language,
and God knows most people make plenty of mistakes
if you make them type something! :-)

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
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