Tutorial of Software Applications through Macromedia Captivate

Feng Jao Ohio Northern University

Abstract

This paper explores the creation of interactive tutorials using Macromedia Captivate, an instructional design tool that allows educators to create tutorial items for teaching software applications. Using MS Excel as an example, the paper demonstrates how to record all onscreen actions and how to create professional quality Flash simulations in association with text captions, mouse movements, interactivity, audio, and video. In addition, the paper demonstrates to educators how to create assessment items at the end of each tutorial module. The assessment items will help students to build confidence in their skills and ability in using a software application. The developed tutorial items can be published into various formats such as the following: a tutorial CD-Rom, shared files on the university server, MS word compatible format hard copies, and online tutorials. Educators can use the tutorial items as in-class instructional materials or as course supplementary materials. Learners can follow the tutorial items as a step-by-step instruction during and after class period. The application discussed in this paper is advantageous due to its self-paced attributes.

Introduction

With the rapid change of technology, educators are constantly challenged to determine more efficient ways of presenting their course materials. One way is through the utilization of technological tools to aid them in their courses. Papers [1]-[7] reported that those who integrate technology in the learning process believe it will improve learning and better prepare students to effectively participate in the 21st century workplace.

Teaching software applications is a common task in the fields of engineering and engineering technology. Software applications such as MS Excel, Auto-CAD, ProE and many more are often introduced to students especially in a lab setting. One of the primary methods for teaching software applications is instructor-led instruction. Educators often spend an extensive amount of time learning a software application to become experienced with it and to try to stay up to date with the release of a new version. Constantly, as educators, we find that learners have similar questions and concerns on how to perform a certain task when dealing with a software application. Educators are strained to spend time and effort by demonstrating the same task repetitively during and after the class period.

Teaching with multimedia, which is defined by Bates, et al. [8] by Morrison et al. [9] as the integration of video, audio, graphics, text or data, is an alternative method to overcome

repetition. Folkestad and De Miranda [10] have used multimedia through screen-capture to teach students how to use CAD software. Jao and Al-Olimat [11] have reported the use of screen-capture techniques and published a tutorial online for learners. Learners have shown positive attitudes toward the use of such learning experience [11].

This paper explores the instructional design strategies integrated with technical skills used for creating interactive tutorials using Macromedia Captivate. The first section describes various types of tutorial development such as demonstration tutorial, training simulation, and assessment simulation. The second section demonstrates the technical elements for editing the created tutorial units including adding audio, editing slide caption, and creating assessment question. Finally, methods on how to publish the completed tutorials are introduced.

I. Development of Interactive Tutorial

Educators can create the tutorial units by selecting various modes: *demonstration*, *assessment simulation*, or *training simulation*.

Start a new tutorial unit:

Educators can record a new tutorial using several options such as "Application", "Custom Size", or "Full Screen" as shown in Figure 1. Selecting "Application" helps the educator to create a new movie using a variety of recording options. "Custom Size" is recommended if the educator likes to define a precise size and position for the recording window whereas "Full Screen" is selected if recording of the entire contents of the computer screen is desired. Microsoft Excel is used as an example in this paper to demonstrate the teaching of a software application, thus "Application" option is selected.

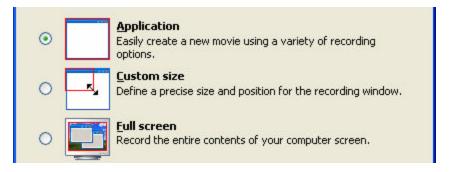


Figure 1 Selection of Recording Options

After selecting "Application" option, a new window will launch which contains a list of applications as shown in Figure 2.

Select the	window you'd like to record	~
Select the	window you'd like to record	
Microsoft E	xcel - Book1	
Document	- Microsoft Word	4

Figure 2 Recording A Specific Window

Proceedings of the 2006 ASEE North Central Conference Copyright © 2006, American Society for Engineering Education

Creating a Demonstration Tutorial:

To start creating a *Demonstration Tutorial*, educators need to check the recording option, and make sure that *Demonstration* is selected in the *Recording Mode* as shown in Figure 3.

Recording Options	Full Motion Recording	Change Recording Keys	
🗹 Enable <u>a</u> uto r	ecording		
Language:	English		~
Recording de <u>f</u> au	lts: 🔲 captivate blu	ue 🔽 🛃	ttings
Recording mode:	Assessment Simul	lation 🛛 🔽 Edit se	tti <u>n</u> gs
Simulation mode	autor Demonstration mpts) Assessment Simul	ation captions ((no limit
Sound	Training Simulation Custom	n	

Figure 3 Selection of Recording Mode

When using *Demonstration Mode* for recording, the system will automatically add *Hint Captions, Highlight Boxes* and show mouse movement. The completed tutorial will appear to the learners as an auto run demonstration. What students need to do is just simply watch the tutorial to learn a certain task. This activity is shown in Figure 4.

			et Figmat Ioc					Contraction and Contraction	tion for help 💡 🗕
)			3, 🍄 🕮 X	🖻 🖪 + 🕩	1-17 - 194 -	- 🤮 Σ - 24 X	1 🌆 🦓 100% ,	0	
			Arial		LO - B	/ U ≣ ≣ ≣	1 1 1 1 1 1	1 🖑 🗄 🛱 🖽 - 🖄	- <u>A</u>
	G15 💌	XV		12	-		(I) 25	W 5250	
	A		-0			D	E	F	G
1	Matharb	and	CDU	CDU an	mahtar	# of DCI Cla		t # of DAM Clot	LICP norte
	Motherb			-	mector			t # of RAM Slot	USB ports
3	1		Pentium Pro	Socket B	8	4	2	4	2
4	2		AMD Athlon	Slot A		5	0	2	1
5	3	-	Pentium 4	Socket 423		· · ·	2	4	4
6	4	Insert F	unction		The Inser	t Fundtion dial	o opens 3	2	1
7	5	Search fo	r a function:				2	3	2
3	6	Count	Ú.			Highlight Box	2	3	4
9	7						2	4	2
D	8		ct a gategory: Mos	t Recently Used		Click the	Go button	4	2
11	9	Select a f	Contraction and Contraction of Contr					3	2
12	10	COUNT					0	4	4
3		NOW				-			
4		AVERA	GE			-			
15		IF HYPER	CINC			~		2 N	
6		COUNTIF(range,criteria)					1	1 USB ports:	=
7	S		the number of cells		at meet the giv	ven condition.	2	2 USB parts:	
В							3	3 USB parts:	
9	1						4	4 USB parts:	1 3
20		Help on th	his function		OK	Cancel	5	5 USB ports:	

Figure 4 Demonstration Mode Example

Creating a Training Simulation tutorial:

To create a *Training Simulation* tutorial, educator needs to check the recording option, and select *Training Simulation* from the *Recording Mode* as shown in Figure 3. When learners move the mouse to the hotspot during the training simulation, Captivate provides the *Hint Caption* in color green. If the learner selects a wrong menu or option, then Captivate provides the *Failure Caption* in color red as shown in Figure 5. Using this type of tutorial, learners can have unlimited number of attempts.

× 1	Microsoft Excel - capti	vate.xls					
1	Eile Edit View Inse	ert F <u>o</u> rmat <u>T</u> oo	ls <u>D</u> ata <u>W</u> indow <u>H</u> elp	Ado <u>b</u> e PDF		Type a quest	ion for help 🛛 👻 🗕
) 💕 🖬 🖪 🔒 🗐 🗐 I	Select the	e Insert menu item	- 🤶 Σ → Δֲ↓ Ζૂ↓	🏨 🐗 100% 📼 🕜	-	
		0010001110		I ∐ ≣ ≣ ≣	as \$ % , *	3 律律 田・👌	• <u>A</u> •
	G16 👻 ;	Select the	e Insert menu item 🗖				
	A			D	E	F	G
1	Motherboard	CPU	CPU connector	# of PCI Slot	# of ISA Slot	# of RAM Slot	USB ports
3	1		Socket 8	4	2	4	2
4	2	AMD Athlon	Slot A	5	0	2	1
5	3	Pentium 4	Socket 423	4	2	4	4
6	4	Pentium MMX	Socket 7	3	3	2	1
7	5	Pentium II	Slot 1	3	2	3	2
8	6	Pentium II	Slot 1	5	2	3	4
9	7	Pentium Pro	Socket 8	4	2	4	2
10	8	AMD KS-2	Super Socket 7	4	3	4	2
11	9	Pentium II	Slot 1	4	3	3	2
12	10	Pentium Pro	Socket 8	5	0	4	4
13							
14 15							
15	· · · · · · · · · · · · · · · · · · ·				1	1 USB ports:	
17					2	2 USB ports:	
18					3	3 USB ports:	
19					4	4 USB ports:	
20					5	5 USB ports:	

Figure 5 Hint and Failure Captions Example

Creating an Assessment Simulation Tutorial:

To create an *Assessment Simulation* tutorial, One needs to check the recording option, and select *Assessment Simulation* from the *Recording Mode* as previously shown in Figure 3. After completing the tutorial using *Assessment Simulation Mode*, Captivate will automatically add a *Failure Caption* in color red to provide learners feedback when learners select a wrong menu or option.

As an example, Figure 6 Clue for Learners provides a "*clue*" to learners to select *Insert Menu* so that they can advance to the next step. During the assessment simulation process, the recorded mouse movement will not appear to learners as a guide; in addition, learners can have unlimited number of attempts to practice the tutorial.

	ana anna a naoirtíochta	a an an					
×	Microsoft Excel - capt	ivate.xls					
8)	Eile Edit View Inst	ert F <u>o</u> rmat <u>T</u> oo	ils <u>D</u> ata <u>W</u> indow <u>H</u> elp	Ado <u>b</u> e PDF		Type a quest	ion for help 🛛 🚽 🗖
D		Select the	e Insert menu item	$ \bigotimes \Sigma \cdot \stackrel{A}{Z} \downarrow \stackrel{Z}{A} \downarrow $	🏨 🦓 100% 🛛 🕡		
				I∐≣≣≣≣	·æ \$ % , 50°.	3] 律律 田 • 🖄	• <u>A</u> •]
	G16 🔹	fx				na konstanti kan	
	A	В	С	D	E	F	G
1							
2	Motherboard	CPU	CPU connector	# of PCI Slot	# of ISA Slot	# of RAM Slot	USB ports
3	1	Pentium Pro	Socket 8	4	2	4	2
4	2	AMD Athlon	Slot A	5	0	2	1
5	3	Pentium 4	Socket 423	4	2	Δ	4

Figure 6 Assistance Capabilities - Clue for Learners

II. Editing Tutorial Units

Recording with Audio:

Regardless the tutorial mode selected, educators can record the tutorial units with audio to assist learners. Before starting recording the tutorial, options are available for teachers to include audio, key strokes and others as shown in Figure 7. Recorded narrations can be edited later after completing the recording process. If a tutorial was created without audio, narration can be added later in the design process.

Recording Options Full	Motion Recording Char					
Enable <u>a</u> uto record	ding					
Language:	English					
Recording de <u>f</u> aults:	🔲 captivate blue					
Recording mode:	Assessment Simulation					
Simulation mode auto	Demonstration					
on click box attempts	Assessment Simulation					
	Training Simulation					
Sound	Custom					
Record narration						
Hear <u>c</u> amera soun	ds during recording					
Record <u>k</u> eystrokes	;					
Hear keyboard tap sounds						

Figure 7 Audio Recording Options

For Audio Options, Figure 8 shows the dialogue window which allows teachers to add and edit audios for a particular slide.

Record Audio - Slide 12	
<u>Vi</u> ew Script <u>⊆aptions</u> <u>⊆ide Notes</u>	<u>N</u>
Options	OK Cancel <u>H</u> elp

Figure 8 Particular Slide Audio Options

Changing Tutorial Steps Sequence:

After recording the tutorial unit, Captivate generates the steps into several slides as shown in Figure 9. Teachers can select the Storyboard Tab to change the sequence of the tutorial steps by drag and drop or double click on the slide for editing.

rytand Edr						
State Teaks Auta Auta Moure Moure Moure Sourd Address Copy tab Copy tab Four stage from diploand in 3		2				
K Dokin Halo Halo See Francisco Francisco Sold ME (15, 1600 me: 1055 (1594)				E.	18	
The ROSS ISSN A		TREAT	B		B	
	16					

Figure 9 Changing Tutorial Sequence through Storyboard

Editing Caption Box:

Teachers can change the view to see each individual slides and edit text in caption boxes. As shown in Figure 10, teachers can use the left panel to select the desired slide which will become available in the right panel of the window. Several editing options are available at this point. For instance, Figure 10 shows two caption boxes, Hint Caption in green and Failure Caption in red. Both caption boxes showed "Click here!" Using "Click here" can be too vague for learners to know exactly what to do. Thus, as a tutorial designers, we can change the text to more specific information such as "Click Cell G16" as illustrated in Figure 11.

	ing the state time too	inale.xis ent figmet joc	ole Diete Window 1940	Addys PDP		Type a gues	iontorhels
		1711 X	23-9-1-	- 👷 E - 👷 👬	🗿 🚯 100% , 👸		
		j Arial	• 1D • 🗷	/ ∐ ≢ ≢ ≇	·····································	当年年日・24	· <u> </u>
		# B		D	E	F	0
1	A	H.	c	0	-	F	G
	Motherboard	CPU	CPU connector	# of PCI Slot	# of ISA Slot	# of RAM Slot	USB ports
3	1	Pentium Pro	Socket 8	4	2	4	2
	2	AND Athlan	Slot A	5	0	2	1
	i 3	Pentium 4	Socket 423	4	2	4	4
6	4	Pentium MNDC	Sachet 7	3	3	2	1
1	5	Pertium I	Slot 1	3	2	3	2
	6	Pentium I.	Slot 1	5	2	3	4
	7	Pentium Pro	Sacket 8	4	2	4	2
3	8	AND KS-2	Super Socket 7	4	3	4	2
1	1 9	Pentium I	Slot 1	4	3	3	2
t	2 10	Pentium Pra	Sacket 8	5	0	4	4
1	3		1000000 A 4001			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
1	4						
	5	-		-	1	1 USB parts:	
1					2	2 USB ports:	
1	8				3	3.USB ports:	Clickhei
1	9				1	4 USB parts:	
2	0				5	5 USB parts:	Clickher
2	1						
4	9						
12/2/2	8						
-	2	-					

Figure 10 Specifications of Edit Caption

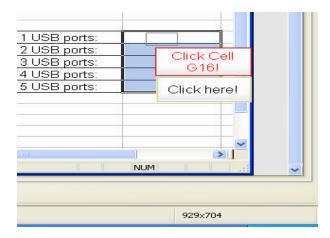


Figure 11 Edit Failure Caption Box

Proceedings of the 2006 ASEE North Central Conference Copyright © 2006, American Society for Engineering Education

Create Assessment Questions:

Teachers can insert an assessment slide at any part of the tutorial. Various types of questions including multiple choices, true or false, fill in the blank, short answer, matching and likert scales can be created to assess learners' comprehension. Using multiple choices as an example, teachers basically type the question and answers, and define the correction answer as shown in Figure 12. Options are available for teachers to decide on the number of attempts, show error messages, grade the answer, slides to navigate to after completing the assessment, etc. After completing "Designing the Assessment", the completed tutorial appears as an interactive slide as shown in Figure 13.

et multiple	hoice Q choice q	uestion uestion prope	rties.					à
Question	Options	Reporting						
Question								
<u>T</u> itle:	_	ltiple choice						
Questi		hat is the cell			colorad a :			1000
	elect corre	ect answers h	ere					>
(A 💿	R2:R13						A	dd
	CO C10							
О В)	G2:G10 pe the ar	swer here	1				De	lete
О В)		nswer here					De	lete
О В)		nswer here						lete e Up
О В)		iswer here					Mov	
О В)		iswer here					Mov	e Up
О В)				Number	ng: A, B	, C	Mov	e Up

Figure 12 Creation of Assessment Questions

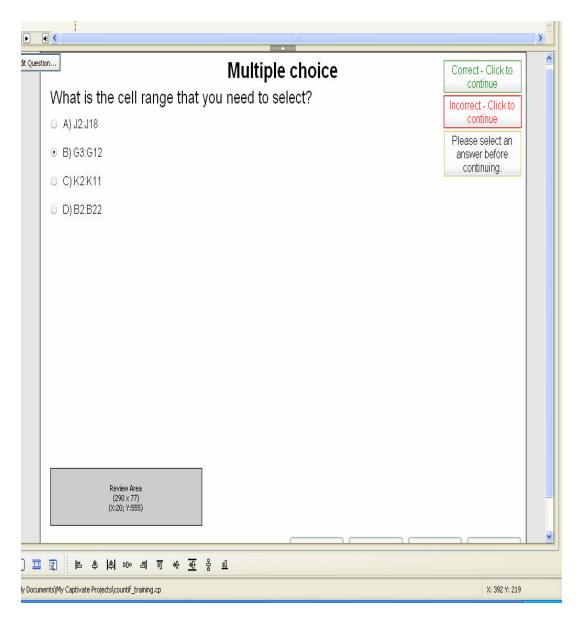


Figure 13 Interactive Assessment Item

III. Publishing Completed Tutorial

When the tutorial design and editing are completed, teachers can publish the file through various formats as shown in Figure 14. To customize the need for instruction, teachers can upload the published flash files and HTML to the World Wide Web. These methods may help teachers create tutorial modules for online (distance learning) classes. CD-ROM can also serve as a teaching aid for either traditional classes or distance learning setting. In addition, instructors can simply email students the tutorial units for skill reinforcement. This method can be done for few students who need extra help or for remedial learning purposes. Finally, teachers can also FTP the completed tutorial to a LAN server where learners have an access to the files either from a local or wide area network.

Publish	
Publish Create a Flash m	novie file (SWF) that can be used independently or included in a
Ø Flash (SWF)	Flash (.swf) options <u>M</u> ovie Title: countif_training
Breeze	F <u>o</u> lder: C:\Documents and Settings\fjao\My Documents\My (
Standalone	Browse
E-Mail	Output Options
Handouts	☐ Zip files ☐ Full screen ✔ Export HTML
FTP	

Figure 14 Publish Tutorial Illustration

Conclusion

Using traditional instruction to teach software applications provides learners an excellent opportunity of interaction with teachers; however, addition assistance is often requested by learners either during or outside of class period. Teaching with technology, interactive multimedia in particular, provides a powerful tool for both teachers and students [12]. Teaching with technology through the creation of tutorials offers some advantages such as the following: it is a completely learner-paced, it can be followed easily, it does not require a great deal of time or effort, and the learner does not have to be at a specific time and place to use it. Since the role of instruction is to provide students with ways to assemble knowledge, educators must find favored strategies that build students' confidence and enhance course relevance. Since this tutorial is an interactive tutorial, the author will demonstrate it during the presentation in the conference.

Bibliography

- [1] S. M. Butzin, "Using instructional technology in transformed learning environments: An evaluation of project child," Journal of Research in Computing Education, 33(4), pp 367-384, 2000.
- [2] M. H. Hopson, R. L. Simms & G. A. Knezek, "Using a technologically enriched environment to improve higher-order thinking skills," Journal of Research on Technology in Education, 34(2), pp 109-119, 2002.
- [3] S. T. Marina, "Facing the challenges, getting the right way with distance learning," Ed at a Distance, 15(30), pp 1-8, 2001.
- [4] R. A. Reiser, "A history of instructional design and technology: Part1: A history of instructional media," Educational Technology Research and Development, 49(1), pp 53-64, 2001.
- [5] K. Njagi, R. Smith & C. Isbell, "Assessing Students' Attitude Toward Web-based Learning Resources," <u>http://naweb.unb.ca/proceedings/2003/PosterNjagiIsbell.html</u>, 2003.
- [6] F. Jao and K. Al-Olimat, "An Investigation of the Attitude of Learners toward Media Based Instructions of PSPICE in Electric Circuits Analysis," Proceedings of ASEE Annual Meeting and Exposition, Salt Lake City, UT, June 2004.
- [7] B. Willis, Distance Education Strategies And Tools, Educational Technology Publications, Inc., pp 169, 1994.
- [8] A. W. Bates, R. Harrington, D. Gilmore & C van Soest, "Compressed video and video-conferencing in open and distance learning: A guide to current developments," The Open Learning Agency, Burnaby, B.C., pp 6, 1992.
- [9] G.R. Morrison, D Lowther & L. DeMeulle, Integrating Computer Technology into the Classroom. New Jersey: 1999.
- [10] J. E. Folkestad & M. A. De Miranda,"Impact of Screen-Capture Based Instruction on Student Comprehension of Computer Aided Design (CAD) Software Principles," Journal of Industrial Technology, 18(1), pp 1-5, Novemebr 2001 to January 2002.
- [11] F. Jao and K. Al-Olimat, "On line Microsoft Project Tutorial for Engineering and Technology Students", proceeding of ASEE Annual meeting and Exposition,
- [12] M. Wild and C. Quinn, "Implication of educational theory for the design of instructional multimedia," British Journal of Educational Technology, 29(1), pp 73-82, 1998.

Author Biography

Dr. Feng Jao obtained her PhD from the University of Toledo in the field of Educational Technology in 2001. Currently she is an assistant professor in the Department of Technological Studies at Ohio Northern University. Her professional interests include integration of instructional technology across curriculum, software training, digital media, and web-based instructional material design and development. Dr. Jao holds several certifications including Microsoft Office XP Word 2002 Expert, Office XP Excel 2002 Expert, Office XP PowerPoint 2002 Comprehensive, Office XP Access 2002 Core, Office XP Outlook 2002 Core, and WebCT. She is an active member in AECT and ITEA professional organizations. Dr. Jao is listed in the International Who's Who in Professional Management.