Development and formative evaluation of multimedia case studies for Instructional Design and Technology students

By William Sugar, East Carolina University

Abstract

This study describes the development of three case studies that included a combination of multimedia production and instructional design skills within a particular setting. These case studies incorporated real-life incidents from 47 professional instructional designers. These instructional designers described a total of 146 activities involving instructional design and/or multimedia production activities. Employing an emergent theme analysis approach, nine distinct themes developed from these activities and were included in the case studies. These themes included: *Collaboration*; *Diffusion of Innovations*; *Formative Evaluation*; *Instructional Design*; *Interactive Instruction*; *Learner Analysis*; *Online Instruction*; *Technical Infrastructure*; and *Video Solutions*. Fifty-seven Instructional Design and Technology graduate students evaluated the effectiveness of these case studies and considered the case studies as being valuable in furthering their understanding of related multimedia production and instructional design activities. The intent of these case studies was to enable Instructional Design and Technology students to comprehend the relationship between multimedia production and instructional design activities.

Keywords: Case studies; Instructional design; Instructional designers; Multimedia production

Through recent research, my colleagues and I have found that the everyday practice of multimedia production skills is not applied in isolation within professional settings (Sugar, Brown, Daniels, & Hoard, 2011; Sugar, Hoard, Brown & Daniels, 2012). Instructional designers do not simply complete straightforward multimedia production tasks (e.g., edit a streaming video), but complete these activities that are contingent upon an overall instructional design project and specific client requirements. For instance, 80% (n=487) of recent Instructional Design and Technology job postings required a combination of *both* instructional design and multimedia production skills for one job posting (Sugar, Hoard, Brown & Daniels, 2012). An instructional designer must balance these demands and apply appropriate multimedia production skills in order to complete an effective project. Instructional Design and Technology faculty members need to be cognizant of this intersection of multimedia production and instructional design's common practices in order to effectively educate their respective students about this relationship prior to entering the profession.

A pedagogical approach that can guide novice instructional designers' development is the use of case studies. Instructional case studies have been in existence for more than an hundred years starting with Harvard University's Law School (Austin & Packard, 2009). Case studies have enabled students to transfer their knowledge of a particular topic to a related instructional setting (Fitzgerald et al., 2011). More importantly, a case study approach and corresponding analysis can enhance students' awareness of the instructional design process (Bennett, 2010). Ertmer and Russell (1995) found that case studies could empower instructional design students to think and respond as an actual instructional designer by participating "in real or hypothetical problem

situations, reflecting the kind of experiences naturally encountered in the discipline under study" (p. 24). Case studies offer students the opportunity to engage in real world situations where they need to make decisions using contextual clues described in the specific case. By reading and interpreting these clues, students gain insights into the particular context of a setting and are able to bridge the gap between theory and practice. Students' participation in a particular case study helps them construct situational knowledge and develop "practice wisdom" (Austin & Packard, 2009; Bennett, 2010).

The purpose of this project was to provide "practice wisdom" case studies of professional instructional designers incorporating a combination of multimedia production and instructional design skills within a particular setting. The intent of these case studies was to serve as exemplars for multimedia production courses within an Instructional Design and Technology graduate program. These case studies attempted to incorporate the real-life context of instructional designers who currently work in a professional setting. Below is a description of the development of these case studies.

Development of Case Studies

To develop these case studies, professional instructional designers were queried about their respective multimedia production and instructional design activities. It was anticipated that the development of each case study most likely would be a compilation of several individuals' multimedia production and instructional design experiences. That is, one overall case study could be based upon several respondents' recent experiences. These individual responses can be interweaved into one overall case study. This compilation also would ensure the anonymity of each respondent and would not focus on an individual instructional designer's experiences, but encompass several respondents' experiences.

To identify potential scenarios for these case studies, a total of 117 professional instructional designers were invited to complete a questionnaire that documented how these individuals apply multimedia production and instructional design skills. The list of instructional designers was derived from an alumni list of an Instructional Design and Technology graduate program, an email invitation to the New Media Consortium listserv, and recommendations of individuals from other professional instructional designers. The questionnaire employed Flanagan's (1954) Critical Incident method to gather information about respondents' recent experiences. Respondents identified and discussed memorable events involving multimedia production and instructional design processes in their current work setting. Specifically, they responded to the following three open-ended questions:

- Within the past six months, describe an instructional design and/or multimedia production activity that you completed and that you deem *particularly effective*.
- Within the past six months, describe an instructional design and/or multimedia production activity that you completed and that you deem *particularly ineffective*.
- Within the past six months, describe an instructional design and/or multimedia production activity that you completed and that you deem *extraordinary*.

The emphasis on *effective, ineffective, and extraordinary* activities is directly derived from Flanagan's Critical Incident method. This method enabled the researcher to collect memorable aspects of an event or experience from the participants' perspective (Radford, 2006). Asking respondents to report on effective, ineffective, and extraordinary multimedia production and instructional design activities can provide insight into key aspects of these respective activities, as well as an understanding of how an instructional designer's multimedia production activities intersect with instructional design activities. An emergent theme analysis approach was used to analyze each of respondents' statements; each described activity was the unit of analysis. The author identified specific themes that emerged from this analysis using a constant-comparative technique (Creswell, 2009).

Forty-seven respondents completed the initial questionnaire (40% return rate). Thirty-seven respondents reported that they complete instructional design activities in their current job at least once per week or more. Twenty-nine respondents reported that they complete multimedia production activities in their current job at least every other week or more and six respondents complete multimedia production activities at least monthly. These individuals worked in either a corporate training (n=6, 13%), higher education (n=31, 66%), or in a military training setting (n=7, 15%). Two respondents were independent consultants and one respondent worked in a K-12 school setting. Twenty respondents had more than seven years of professional experience, ten respondents had between than three and seven years of professional experience and fifteen respondents had between one and three years of professional experience.

	Community College case study	Corporate Training case study	Military Base case study
Collaboration		•	•
Diffusion of innovations	•		
Formative evaluation		•	
Instructional design	•	•	•
Interactive instruction		•	•
Learner analysis			•
Online instruction			•
Technical infrastructure	•		
Video use	•		

Figure 1.

Overall, the respondents described a total of 146 activities involving instructional design and/or multimedia production activities. Twelve distinct themes emerged from these activities including: *Collaboration*; *Diffusion of Innovations*; *Formative Evaluation*; *Instructional Design*; *Interactive Instruction*; *Interface Design*; *Learner Analysis*; *Learning Theories*; *Online Instruction*; *Technical Infrastructure*; *Training*; and *Video Use. Respondents referred to ten media formats*. Video, eLearning, and learning management systems were the top three media formats referenced in the questionnaires.

Based on these questionnaire results, three case studies were developed, namely: *Integrating video instruction in a community college (Community College* case study) (Sugar, 2013a); *Transforming tedious instruction in a corporate training setting (Corporate Training* case study) (Sugar, 2013b); *and Enhancing learner interaction on a military base (Military Base* case study) (Sugar, 2013c). The three case studies focused on the top three media formats cited in the questionnaires. That is, the *Community College* case study focused on video applications, the *Corporate Training* case study emphasized eLearning applications, and the *Military Base* case study concentrated on learning management systems. In summary, nine of the twelve major themes were discussed in the three case studies (see Figure 1). The Instructional Design theme was prevalent in all three case studies. Collaboration and Interactive Instruction themes were present in two case studies. All of the themes presented in each of these case studies were based on actual experiences of professional instructional designers described in the questionnaire results. The following three tables (see Table 1, Table 2, and Table 3 on the following pages) identify each theme described in a specific case study that originated from the questionnaire responses. A synopsis of each case study is described in the next three sections.

Community College case study

Susan Flanagan, a fictional learning technologist, encountered three main challenges in a community college setting: determining specific best practices for a variety of video formats, creating a presentation and job aid that summarizes these best practices, and anticipating the various interests of the key community college stakeholders, including, her immediate supervisor, the Director of Academic Success Division, the Academic Core Standards committee chair, the community college President, and the Board of Trustees chair.

Corporate Training case study

The intent of this case study is to make an Internet streaming company's eLearning and corresponding online instruction modules more interactive for its employees. Shelley Springer, a hypothetical Training & eLearning Director, and her staff faced three main tasks. They first needed to determine how to improve upon the current and boring online orientation modules and its corresponding PowerPoint presentations. To accomplish this task, they had to examine and consider the various current and emerging multimedia technologies that could

Table 1. Themes incorporated into Community College case study.

Theme	*Respondent*
Diffusion of innovations	
Converting a face-to-face course to online with "an instructor who had never taught online would present unique challenges."	Instructional designer
"The training course was six modules long, online and self-paced for instructors to complete within six weeks. Each module contained lesson pages, video testimonies, video tutorials and handouts, sample files with instructions and assessments."	Trainer
In a professional development activity, faculty members "learn how to search, analyze, evaluate and use multimedia resources to create video mashups, glogsters, interactive timelines, and voicethread projects."	Instructional designer
Technical infrastructure	
"Stores had various Internet speeds from low end (128k) to 12mb per sec download." Very difficult to deliver videos on low bandwidth	Instructional designer
"I created a series of video tutorials for using a test converter application. This project was not at first successful because I failed to recognize the need for a video on setting up the application to connect to the viewers online classes."	Trainer
Learners had issues with online videos. "The big problem here is the network. Playing these videos on the [learners] computers is very slow."	Administrator
Video solution	
"One-minute" video introductions of instructors	Instructional designer
Video introductions of faculty, administrators, and staff on interactive website	Technology analyst
Created video clips that "introduce leaders of the organization and basic strategies of the company" on web page.	Administrator
Created module that included video testimonies and video tutorials.	Instructor
Theatre arts course "videos were used to teach good and not-so-good techniques" to students.	Instructional designer
Created a video that demonstrated the benefits of using clickers that was based on a parody of a television show.	Administrator

potentially improve the existing instructional modules. Then, an implementation plan that incorporates some or all of the technologies needed to be proposed to the company's senior management team, including the senior vice-president of Organizational Development.

As illustrated in Table 2 on the following pages, three main themes examined in the *Corporate Training case study were Collaboration, Formative Evaluation, and Interactive Instruction*. Several respondents detailed how they interacted with instructors, other instructional designers, or subject-matter experts in creating effective instruction. In this case study, collaboration was emphasized as the critical component in revising this instruction. Respondents' formative evaluation practices also were interwoven into this case study. One higher education administrator noticed how survey feedback from an online course "indicated that learners wanted more interactive elements" in a Moodle course.

All of the interactive instruction themes either included best practices or non-examples. For instance, an instructional designer from the corporate setting and an instructional designer from the higher education setting both individually discussed how they transformed "long and boring, legalese infused PowerPoint into something engaging, relevant, and useful to employees". Innovative instructional strategies and multimedia production tools were listed in the case study, including a Flash stop motion animation, Articulate Engage Tabs, Glogster, Voicethread, and Second Life. Responses from individual respondents on how they used blogs, podcasts, and mobile learning technologies (e.g., iPad) also were incorporated into the case study. The case study also included an instructional designer's description on how her

Table 1. (cont.) Themes incorporated into Community College case study.

Theme	*Respondent*
Created a video that focused on helping "users understand changes to financial disclosures. The video contrasted the old and new forms."	Administrator
Creation of short videos/screencasts for specific targeted instructional goals. Some of these videos were "produced quick-and-dirty in that they can be created in less than 30 minutes."	Instructional designer
Created short videos that illustrated "real-life scenarios that were filmed in real-life locations."	Instructional designer
Created Language arts multimedia projects which effectively combined audio and video	Administrator
Successfully set up videoconferencing units that are located on five community college campuses across the state	Technology analyst
An instructor gave video cameras to her students and they recorded themselves. Later "in the term they did the project again and the students reflected on how they had improved.	Administrator
Digital video production best practices that include basic information about preparing for video projects.	Administrator
Created a course that required learner to "create a set of videos and to share the videos on VoiceThread."	Instructional designer
Promoted creating video mashups with faculty and students	Administrator
Frequent use of "talking head" lecture video by online instructors (non-example)	Administrator
"Video products on the wrong topic" are particularly ineffective.	Instructional designer
Video recorded an entire semester of lectures of a particular course	Instructional designer
Ineffective video due to the fact that subject-matter experts did not completely understand the changes between the current version and the upgrade	Administrator
There was an "intense learning curve [with video terminology] that was problematic."	Instructional designer

company created an ethics character (or avatar) to instruct their employees about their Code of Conduct instructional modules. The sole non-example described an ineffective PowerPoint presentation where an instructor would "present 2-3 slides of information from the PowerPoint presentation, and then draw an image on the dry erase board that was related to the topics covered". According to the respondent, "the presentation was very slow and lacked the interaction that is often needed to maintain the attention of students."

Military Base case study

The primary emphasis of this case study was to consider how to effectively enhance learner interaction within a learning management system while at the same time considering effective ways on how to conduct learner analysis. Specifically, the main character, Ron Linrock, an instructional systems specialist, confronted three challenges. He needed to interpret existing literature and best practices of online course development and interactive multimedia instruction. He also had to evaluate existing learner analyses, content analysis and survey results. Then, based on existing research and best practices, Ron had to propose a solution within the existing military base's course management system.

As displayed in Table 3 on the following page, this Military Base case study focused

Table 2. Themes incorporated into Corporate Training case study

Theme	*Respondent*
Collaboration	
"I designed in collaboration with [instructor] a set of brief, interactive tutorials and a graded quiz."	Instructional designer
Developed a special education graduate course with another instructional designer. "We analyzed all the course content, interviewed the instructor, and held biweekly meetings that included the teaching assistant."	Instructional designer
[Our new] "Training System was developed with the assistance of a cross functional team, and we used a variety of media and job aids to deliver the training, considering learning needs and availability of computer resources to the learners."	Administrator
Formative evaluation	
In creating an iPad application for sales staff, conducted a formative evaluation. Results "indicated that those who participated achieved the learning goals and felt comfortable enough with the material presented to use it to train others and to use it in sales settings as a job aid."	Administrator
"Survey feedback from a student orientation to Moodle course indicated that they wanted more interactive elements."	Administrator
Interactive instruction	
Utilizing instructional design activities using the ADDIE process and ARCS model of motivational design every day.	Instructional designer
Redesigned eLearning module; Changed rather "long and boring, legalese infused PowerPoint into something engaging, relevant, and useful to employees."	Instructional designer
Redesigned a PowerPoint presentation. "Working with subject matter experts, we enhanced many elements of the training subject matter using short videos to show real-life scenarios" with actual employees.	Instructional designer
Developed a module "using Flash stop motion animation and simply interactivity such as roll overs, click to reveal. An activity was added at the end of the presentation where the learner could complete an online self-evaluation."	Instructional designer
Created an interactive module where learners can click on parts of the human eye. "When the mouse hovered over a feature, a pop-up window provided detailed information about the function of the eye." Also included an interactive quiz.	Instructor

on four main themes, including collaboration, interactive instruction, learner analysis, and online instruction. Interactive instruction issues highlighted the importance of the US Army's (2013) Learning Concept for 2015 and US Department of Defense's (2013) Interactive Multimedia Instruction handbook within military training settings. The case study also discussed interactive instruction best practices and the importance of having interactive instruction in online courses. Learner analysis themes consisted of informal learner analyses methods, the role of learner analysis in designing effective instruction, and the results of a learner analysis that indicated that students did not feel connected with their respective online instructor. Non-examples of learner analysis highlighted the ramifications when one does not complete an effective learner analysis. For example, a respondent observed how a Powerpoint job aid "was particularly ineffective because insufficient and incomplete pre-analyses were performed prior to beginning the project to even determine if the

Table 2 (cont.) . Themes incorporated into Corporate Training case study

Theme	*Respondent*
Created an Articulate Engage Tabs interaction for each identified competency. "The Engage interaction concisely chunked the content for increased ease of use and learner absorption." Also included a graded quiz given at the end of review of the interactions.	Instructional designer
Helped faculty learn how to "search, analyze, evaluate and use multimedia resources to create video mashups, Glogster, interactive timelines, and Voicethread projects."	Instructional designer
Created a blog that provides continual professional development support for faculty who attended a face-to-face workshop.	Trainer
"Used Second Life to build the scenarios, taking screenshots of specific situations, almost like a comic strip design with dialogue and used Articulate to create quizzes and power the presentation."	Instructional designer
Created an "ethics" character on the companies' Code of Conduct policies.	Instructional designer
"I received very positive feedback when I added a weekly podcast to my online course."	Administrator
Development of an iPad application activity that allowed for communication via two-way camera conversation between sales staff and trainers.	Administrator
Instructor would "present 2-3 slides of information from the PowerPoint presentation, and then draw an image on the dry erase board that was related to the topics covered. The presentation was very slow and lacked the interaction that is often needed to maintain the attention of students."	Instructor

method and media chosen would be effective in achieving the learning goals". The case study also described how an instructional designer revised an existing online course that consisted of a series of videotaped PowerPoint "lectures".

Formative Evaluation of Multimedia Case Studies

To provide insight into the effectiveness of these three case studies, 128 students from eight multimedia production courses offered at six Instructional Design and Technology graduate programs were invited to evaluate the effectiveness of the case studies. These students accessed each of the case studies as a PDF file. Both of the Community College case study and the Military Base case study were 10 pages and the Corporate Training case study was 13 pages. Via a Qualtrics online survey, the students responded to demographic questions and indicated their experience in instructional design and multimedia production. In addition, the students rated the overall effectiveness of the case studies and valuable skills derived from individual case studies. They also evaluated the case studies' ability to synthesize ideas and information presented in their respective multimedia production course, to solve real world problems in an Instructional Design and Technology setting, and to reflect upon their own practice as an instructional designer. Analysis of students' responses also employed a constant-comparative technique (Creswell, 2009) and specific themes emerged from this analysis. See the Appendix for the actual survey and corresponding results.

Seventy-two students (56% return rate) evaluated at least one of the case studies. The students had a wide range of Instructional Design and Technology experience ranging from 0 to 28 years; the average amount of work experience was 3.92 years. A majority of the respondents (n=32; 45%) rated their experience in using case studies in instruction as "little experience (less than five cases)" and 27% of the respondents (n=19) had no experience in using case studies in instruction. A majority of the respondents (n=31; 43%) indicated that they were "somewhat confident" in solving instructional design problems and 38% of the respondents (n=27) said that they were "confident" in solving instructional design problems. The students, who participated in the formative evaluation sessions, did not read all of the case studies. Fifty-three percent of the respondents (n=38) read the *Community College* case study, sixty-seven

Table 3. Themes incorporated into Military Base case study

Theme	*Respondent*
Collaboration	
Designing a course was only possible because I could consult with a Subject Matter Expert when I had questions and had access to the contractor source files."	Instructional designer
Interactive instruction "The Army Learning Concept for 2015 has generated a great deal of workload for my division. This overriding concept encourages the use of Interactive Multimedia Instruction (IMI), mobile applicatins, and serious gaming as a replacement for boring PowerPoint slides."	Instructional designer
Using PowerPoint presentations in a "show and tell" by focusing on key parts or components of a computer.	Instructor
"I tried to engage students in a discussion about the prior week's topic that helped me gauge or measure to a degree if the presentation or lecture was effective or if they had remembered what was discussed before."	Instructor
Survey feedback from an orientation course indicated that learners wanted more interactive elements.	Administrator
Learner analysis	
"I typically do a quick analysis with the instructor and several of the students if necessary."	Instructional designer
"Based on learner analysis and the critical need for staff buy-in, which could be facilitated by interaction and storytelling", a webinar was selected as the appropriate delivery method.	Administrator
Collaborated with a Subject Matter Expert and created "in-depth, probing personal journal questions that challenged the learners to pull together the content, the discussion, and potential attitudinal change."	Instructional designer
Developed an assessment that showed whether an online instructor understood the basics of the College's LMS. This assessment involved eight tasks that the learner must do to show basic competence in the LMS.	Instructional designer
An informal survey of students in a completely online program indicated a common thread of feedback concerning a disconnect between the students and their respective instructor."	Instructional designer

percent (n=48) read the *Corporate Training* case study, and sixty-one percent of the respondents (n=44) read the *Military Base* case study.

As illustrated in Table 4 on the following pages and in the Appendix, a majority of the respondents agreed to each of the statements posed in the survey with regards to the individual case study. A majority of the respondents agreed that the three case studies helped synthesize ideas and information presented in their respective course (Community College, n=30, 79%; Corporate Training, n=35, 73%; Military Base, n=30, 68%), as well as increased their confidence to solve real world problems in an Instructional Design and Technology setting (Community College, n=31, 82%; Corporate Training, n=33, 69%; Military Base, n=26, 59%). In addition, a majority of the respondents found each of the case studies to be effective in facilitating their understanding of the Instructional Design and Technology discipline (*Community College, n=30, 81%; Corporate Training, n=35,*

Table 3 (cont.). Themes incorporated into Military Base case study

Theme	*Respondent*
Worked with an instructor to "reorganize the course topics to make the course content "self-paced" while reinforcing learning by having students focus on asynchronous discussions based on ALL topics."	Instructional designer
A Powerpoint job training aid "was particularly ineffective because insufficient/incomplete pre analyses were performed prior to beginning the project to even determine if the method and media chosen were would be effective in achieving the learning goals."	Administrator
Consulted with a faculty member in regards to a project: a narrated slideshow. "My involvement was fairly minimal, beyond the initial consultation; I posted some materials in our university's online knowledge base that the students could access anytime while working on the project. This approach proved ineffective in my estimation largely because the students failed to follow through with what was required of them."	Administrator
Tried to develop an interactive multimedia project with a tenured professor but the professor was adamant about learning only the basic Excel and Paint activities. Did not want to know how to make project more interactive.	Technology analyst
Online instruction	
Revised an existing online course that consisted of a series of video taped PowerPoint "lectures". "I added quizzes and set them up so that wrong answers took the student back to the relevant content. I also have a feedback question so I can evolve the course based on the student user experiences. The student comments have been overwhelmingly positive."	Instructional designer
Development of an entire online program was ineffective "because the instructors were really not ready to teach online."	Instructional designer
"The multimedia production components of the course were instructor on-line lectures with slides, audio and headshot video. [There is] no way to build interactivity in without use of a CMS."	Administrator
"Learners are very hands on, so online instruction is not really engaging for them."	Administrator
Learners "had to sit through the videos to get the information they were looking for and couldn't print it out. If we do this again, it will be a combination of shorter video and text with the option to print the information out."	Instructional designer

73%; Military Base, n=24, 55%). One respondent wrote:

> I found all of the aspects of the case studies valuable. It is important to know your client (background information, goals/objectives, their clients), the qualifications of people involved in the instructional process, relevant documents, and the actual components of the case study. It is very valuable to have case study present information in 'chunks.'

Some of the students found that the case studies were helpful in applying their classroom knowledge to a real world setting. Identifying the most valuable aspect of the *Community College* case study, a respondent commented:

> Reading this made me realize that it's ok to try ideas because they might be really beneficial and no one else will know if it is the 'best' thing to do or not because the IT designer is the expert.

Another student noted, "I haven't done many real life case studies, so this helped with understanding the field and seeing how the skills we learn are actually applied."

The *Corporate Training* case study prompted one respondent to reflect upon his or her own practice as an instructional designer:

> I felt that Shelly had several potential blind spots in her practice--partially due

Table 4. Mean score responses to the case study survey determined from a 5-point Likert scale

Statement	*Mean*	*Median*	*SD*
This case study helped me synthesize ideas and information presented in this course (5=Strongly agree; 1= Strongly disagree).			
Community College (n=38)	3.89	4	.458
Corporate Training (n=48)	3.88	4	.57
Military Base (n=44)	3.73	4	.624
This case study has increased my confidence to solve real world problems in an Instructional Design and Technology setting (5=Strongly agree; 1= Strongly disagree).			
Community College (n=38)	3.95	4	.524
Corporate Training (n=48)	3.79	4	.683
Military Base (n=44)	3.8	4	.668
Overall, how effective was this particular case study in facilitating your understanding of the Instructional Design and Technology discipline? (5=Very effective; 1= Very ineffective)			
Community College (n=37)	3.97	4	.44
Corporate Training (n=48)	3.81	4	.734
Military Base (n=44)	3.84	4	.713
These case studies brought together material that I had learned in several of my Instructional Design and Technology courses (n=54) (5=Strongly agree; 1= Strongly disagree).	4.04	4	.613
These case studies have increased my ability to reflect upon my own practice as an instructional designer and related activities in an Instructional Design and Technology setting (n=54) (5=Strongly agree; 1= Strongly disagree).	3.96	4	.672

> to her adherence to a specific model and her lack of formal training. It helped me to think of my own blind spots and reinforced how I have to remain vigilant to acknowledge what I do not know. I will also make it a point to pay more attention to various details about the organization.

As a result of reading the *Community College* case study, a respondent decided to adopt the "one-minute" video as a solution for his or her job:

> I decided to use the one-minute video idea for my homebound students. The teachers do not know the students who are on homebound all the time, so this would give them an opportunity to put a face with the name.

The emphasis on change management and facilitating stakeholders' adoption of innovations also facilitated respondents' understanding. A student commented, "I really like how the [*Community College]* case study addressed the issue of buy-in in addition to the more obvious multimedia and design challenges. Often, it seems that buy-in is the most difficult part of training." In identifying the most valuable aspect of the *Military Base* case study, a respondent observed, "It is important not to overload faculty when getting them to incorporate video into their online courses. It is better for them to take a route of 'adding to' or continuous improvement." Another respondent also learned after reading the *Military Base* case study that "there are many components to designing the proper instruction. Many people need to be involved and you

definitively have to do the research, consult with others and identify the best strategy." In reflecting on his or her own practice as an instructional designer, a respondent realized:

> The [*Community College*] case study made me realize the importance of working closely with stakeholders, learning as much as you can about the culture you are in, committing yourself wholeheartedly to a project, and involving the people who you are impacting so they are on board with the changes.

In addition to applying knowledge to a practical setting and valuing the importance of facilitating adopting innovations, respondents noted additional benefits from these case studies, such as the importance of the instructional design process and the role of the analysis process. One respondent wrote that the most valuable aspect of these case studies was "the importance of needs analysis, content analysis, interaction during instruction, and multimedia presentation". Other respondents stressed the importance of addressing learners' instructional needs. A respondent noted that the most valuable aspect of the *Military Base* case study was that:

> It showed me how important it is to look at the stakeholders to your training programs and making sure that you are not only reaching the goals of the learners but their employers. Plus, make sure you really are listening to the learners concerns about online courses.

Not only did respondents focus on addressing learners' needs, but also the importance of developing interactive instruction. A respondent wrote that one of the most valuable aspects of the *Corporate Training* case study *was* "the need to engage and interact when training keeps the trainees interest on the subject matter. There are many different multimedia solutions that can be used alone or in conjunction with each other."

The majority of the respondents' improvements concentrated on the construction of the actual case studies. The intent of each case study was to provide a sufficient amount of background information (e.g., specific job descriptions, budgetary information, etc.) in order to provide a context for the actual case study. Several respondents objected to the amount of information. One respondent complained:

> Several pages of the [*Corporate Training*] case study were dedicated to job descriptions of the participants. This was not only a waste of the reader's time, but it provided little or no relevance to the study itself. A brief one-paragraph description or role matrix would have sufficed.

Another respondent offered another critique and wrote that the background information was "quite lengthy. I really had to push myself to focus and absorb all of the information. At times, though, there was too much information." However, some respondents appreciated the amount of background information in each case study. One respondent appreciated the "detailed descriptions of the organizations, backgrounds, and stakeholders…". "Knowing the stakeholders' educational levels and work experience was also helpful." Respondents' comments about including additional data in the *Community College* case study also appeared to be contradictory. One respondent commented that the *Community College* case study:

> Lacks clear metrics. With the addition of a baseline of current class rosters, demographics, and observable data points, the study could have stronger impact of the reader. References to learning theory and correlation to other studies at similar institutions would have provided comparative data to validate the conclusions of the study.

However, another respondent commented, "a lot of information in the [*Community College]* case study seemed extraneous, although I must admit that I have not dealt with case studies in the past, so perhaps it is part of the genre."

Conclusion

The development of the three case studies was entirely based on this real world context and offered Instructional Design and Technology students in multimedia production courses an opportunity to decipher the relationship between multimedia production and instructional design activities. The accounts from the 47 instructional design professionals provide awareness on the specific issues that professional instructional designers encounter in their respective work setting.

Some of these insights from these professional instructional designers were surprising, particularly the prevalent use of video as an instructional tool and the focus on using informal evaluation methods in gathering information from clients. The importance on developing interactive instruction and collaborating with key stakeholders was instructive as well as reflective on current instructional designer professional practices.

The formative evaluation session results also suggested that the three case studies were

beneficial for students. A majority of these participants stated that these case studies were valuable in helping them synthesize course content, increase their ability to solve real world problems, and their capacity to reflect upon related instructional design activities. Revising the amount of background information in each case study should be considered. In considering the development of future Instructional Design and Technology case studies, the amount and type of background information that can successfully affect student learning should be investigated.

These formative evaluation sessions are the first step in understanding the value and influence of these case studies on students' understanding of multimedia production and instructional design activities. Though formative evaluation session participants indicated that these case studies were effective in increasing their confidence in solving real-world problems in an Instructional Design and Technology setting and facilitating their overall understanding of the discipline, more effort should focus on particular "lessons learned" derived from these case studies and other similar case studies. Identifying specific "practice wisdom" heuristics that are realized from a case study can provide guidance to Instructional Design and Technology students as they progress through their respective programs and also, when they become professionals in the discipline.

Future studies also should consider employing the concept maps that Fitzgerald et al. (2011) employed in their respective study. In this study, participants created concept maps during four phases (pre-instruction, post-instruction, and two follow-up sessions). These results gave insight on how students conceived of a particular topic before and after reading a particular case study. Analyzing students' pre-instruction, post-instruction and other follow-up conceptions of the *Community College, Corporate Training,* and *Military Base* case studies would lend further understanding how students' interpret the intersection of instructional design and multimedia production activities. Another approach would ask student to write their own multimedia production and instructional design case studies, similar to Floyd and Bodur's (2005) study. Writing their own case study would give insight on how students currently interpret this interrelationship of these two related activities and will encourage these students to reflect on this relationship. Further assessments on the effectiveness of these case studies and similar case studies should take place.

William Sugar *is an associate professor in the department of Mathematics, Science, and Instructional Technology Education at East Carolina University. His current research interests are examining the interrelationship between multimedia production skills and instructional design skills and investigating professional instructional designers' best practices. Correspondence with regard to this article should be directed to William at (email) sugarw@ecu.edu; (phone) +1 252-328-1546; East Carolina University; Mathematics, Science and Instructional Technology Education, 307 Flanagan MailStop 566; Greensboro, NC 27858.*

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Appendix

Formative evaluation survey and results

1. What Instructional Design and Technology program are you currently in?

Answer	n	%
East Carolina University	15	21%
Emporia State University	20	28%
Morehead State University	15	21%
SUNY - Potsdam	6	8%
UNC - Wilmington	12	17%
University of Georgia	4	6%

2. Is English your first language?

Answer	n	%
Yes	62	86%
No	10	14%

3. What is your gender?

Answer	n	%
Male	29	40%
Female	43	60%

4. What is the highest degree that you have earned?

Answer	n	%
Bachelor's degree	44	61%
Master's degree in Education	19	26%
Master's degree in a discipline other than Education	8	11%
Terminal degree (PhD/EdD) in Education	0	0%
Terminal degree (PhD/EdD) a discipline other than Education	1	1%

5. What Instructional Design and Technology setting(s) are you interested in working in after you receive your degree?

Answer	n	%
K-12 school	30	42%
Corporate	28	39%
Higher education	51	72%
Military	7	10%
Medical	11	15%
Other*	2	3%

*Please note that the two "Other" responses included a government agency and a non-profit agency.

6. How many Instructional Design and Technology courses have you taken prior to this semester? Responses ranged from 0 to 26 courses.

7. How many Instructional Design and Technology courses (including this one) are you taking this semester?

Answer	n	%
1	20	29%
2	30	43%
3	13	19%
4	5	7%
5	1	1%

8. Approximately, how many years of Instructional Design and Technology experience do you have? Responses ranged from 0 to 28 years.

9. How much experience do you have in using case studies in instruction?

Answer	n	%
A lot of experience (more than five case studies)	12	17%
Some experience (five case studies)	8	11%
A little experience (less than five case studies)	32	45%
No experience	19	27%

10. How would you rate your current level of instructional design skills?

Answer	n	%
Expert	0	0%
Advanced	15	21%
Intermediate	36	51%
Novice	11	15%
Beginner	9	13%

11. How would you rate your current level of multimedia production skills?

Answer	n	%
Expert	5	7%
Advanced	19	26%
Intermediate	28	39%
Novice	14	19%
Beginner	6	8%

12. How would your rate your confidence for solving instructional design problems?

Answer	n	%
Very confident	8	11%
Confident	27	38%
Somewhat confident	31	43%
Not confident	6	8%

13. Did you read the Community College case study?

Answer	n	%
Yes	41	59%
No	28	41%

14. Is there anything confusing or unclear about this particular case study? If so, please describe.
Text responses (n=24) varied.

15. This case study helped me synthesize ideas and information presented in this course.

Answer	n	%
Strongly Agree	2	5%
Agree	30	79%
Neither Agree nor Disagree	6	16%
Disagree	0	0%
Strongly Disagree	0	0%

16. This case study has increased my confidence to solve real world problems in an Instructional Design and Technology setting.

Answer	n	%
Strongly Agree	3	8%
Agree	31	82%
Neither Agree nor Disagree	3	8%
Disagree	1	3%
Strongly Disagree	0	0%

17. What are the most valuable skills (if any) that you learned from the case study?
Text responses (n=25) varied.

18. Overall, how effective was this particular case study in facilitating your understanding of the Instructional Design and Technology discipline?

Answer	n	%
Very Effective	3	8%
Effective	30	81%
Neither Effective nor Ineffective	4	11%
Ineffective	0	0%
Very Ineffective	0	0%

19. Other comments about this case study: Text responses (n=8) varied.

20. Did you read the Corporate Training case study?

Answer	n	%
Yes	50	77%
No	15	23%

21. Is there anything confusing or unclear about this particular case study? If so, please describe.
Text responses (n=23) varied.

22. This case study helped me synthesize ideas and information presented in this course.

Answer	n	%
Strongly Agree	4	8%
Agree	35	73%
Neither Agree nor Disagree	8	17%
Disagree	1	2%
Strongly Disagree	0	0%

23. This case study has increased my confidence to solve real world problems in an Instructional Design and Technology setting.

Answer	n	%
Strongly Agree	4	8%
Agree	33	69%
Neither Agree nor Disagree	8	17%
Disagree	3	6%
Strongly Disagree	0	0%

24. What are the most valuable skills (if any) that you learned from the case study?
Text responses (n=25) varied.

25. Overall, how effective was this particular case study in facilitating your understanding of the Instructional Design and Technology discipline?

Answer	n	%
Very Effective	4	8%
Effective	35	73%
Neither Effective nor Ineffective	6	13%
Ineffective	2	4%
Very Ineffective	1	2%

26. Other comments about this case study:
Text responses (n=24) varied.

27. Did you read the Military Base case study?

Answer	n	%
Yes	46	74%
No	16	26%

28. Is there anything confusing or unclear about this particular case study? If so, please describe.
Text responses (n=19) varied.

29. This case study helped me synthesize ideas and information presented in this course.

Answer	n	%
Strongly Agree	2	5%
Agree	30	68%
Neither Agree nor Disagree	10	23%
Disagree	2	5%
Strongly Disagree	0	0%

30. This case study has increased my confidence to solve real world problems in an Instructional Design and Technology setting.

Answer	n	%
Strongly Agree	5	11%
Agree	26	59%
Neither Agree nor Disagree	12	27%
Disagree	1	2%
Strongly Disagree	0	0%

31. What are the most valuable skills (if any) that you learned from the case study?
Text responses (n=23) varied.

32. Overall, how effective was this particular case study in facilitating your understanding of the Instructional Design and Technology discipline?

Answer	n	%
Very Effective	7	16%
Effective	24	55%
Neither Effective nor Ineffective	12	27%
Ineffective	1	2%
Very Ineffective	0	0%

33. Other comments about this case study:
Text responses (n=11) varied.

34. These case studies brought together material that I had learned in several of my Instructional Design and Technology courses.

Answer	n	%
Strongly Agree	11	20%
Agree	34	62%
Neither Agree nor Disagree	10	18%
Disagree	0	0%
Strongly Disagree	0	0%

35. These case studies have increased my ability to reflect upon my own practice as an instructional designer and related activities in an Instructional Design and Technology setting.

Answer	n	%
Strongly Agree	9	16%
Agree	36	65%
Neither Agree nor Disagree	8	15%
Disagree	2	4%
Strongly Disagree	0	0%

36. What aspects of these case studies (if any) did you find most valuable?
Text responses (n=35) varied.

37. What aspects of these case studies (if any) did you find least valuable?
Text responses (n=24) varied.

38. As a result of these case studies, what things (if any) will you do differently or pay more attention to in your own practice/profession as an instructional designer?
Text responses (n=30) varied.

39. Other comments about these case studies:
Text responses (n=10) varied.