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What Are the Skills of an Instructional Designer?

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Editor's Note

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As Instructional Design and Technology (ID&T) educators, we have made considerable effort in understanding the specific multimedia production knowledge and skills required of entry-level professionals. Our previous studies (Sugar, Brown, & Daniels, 2009) documented specific multimedia production skills, knowledge and software applications (e.g., Flash) that ID&T students and subsequent graduates need to exhibit. As a result of these efforts, differences can be readily distinguished between instructional designers working in corporate settings and those working in higher education settings (Sugar, Hoard,Brown, & Daniels, 2011). Kirschner, van Merrienboer, Sloep, and Carr (2002) observed that instructional designers at higher education settings focus on identifying alternative solutions for a particular course whereas instructional designers within a corporate training setting are more customer-oriented. Larson and Lockee (2009) concurred with this assessment by noting "differences in the requirements listed for business and industry versus higher education jobs" (p. 2). Essentially, the organizational culture (e.g., shared beliefs and values) within a corporation is radically different than that which is found within a college or university setting. Since over 89% of our initial survey respondents (e.g., Sugar, Brown, & Daniels, 2009) worked in colleges or universities, we decided to concentrate our efforts exclusively on the multimedia production knowledge and skills of instructional designers working within higher education.

The role of the instructional designer, instructional technologist, and instructional technology consultant within a higher education setting has been well established. Recent studies have documented several quality instructional technology-related projects within higher education settings (e.g., Renes & Strange, 2011). As one might expect, teaching online has been emphasized during the past fifteen years (e.g., Barczyk, Buckenmeyer, & Feldman, 2010), as well as mobile learning technologies (e.g., El-Hussein & Cronje, 2010) and online student response systems (e.g., Stav, Nielsen, Hansen-Nygård & Thorseth, 2010). Other innovative technologies, such as interactive white boards (e.g., Al-Qirim, 2011), social networking (e.g., Conole, Galley, & Culver, 2011), Web 2.0 tools (e.g., Kear, Woodthorpe, Robertson, & Hutchison, 2010), and 21st century tools for teacher educators (e.g., Archambault, Wetzel, Foulger, & Williams, 2010) have been integrated in higher education classrooms. Several case studies document the inclusion of instructional technologies

into content-specific higher education courses, such as art and design education (e.g., Delacruz, 2009), engineering (e.g., Dinsmore, Alexander, & Loughlin, 2008), and nursing (e.g., Donato, Hudyma, & Carter, 2010). “Soft” technologies, such as mentoring circles (Darwin & Palmer, 2009) also have been successfully integrated in higher education settings.

The prominence of the instructional designer within higher education settings also has been well documented (Shibley, Amaral, Shank, & Shibley, 2011). Incorporating a continuous improvement process (Wolf, 2007), encouraging higher education faculty with innovative reward and recognition structures (Bluteau & Krumins, 2008), and the importance of interacting with faculty peers (Nicolle & Lou, 2008) are examples of current best practices in facilitating successful technology adoption and integration. Considerable effort in understanding how higher education faculty adopt e-Learning activities (e.g., MacKeogh &Fox, 2009), Web 2.0 technologies (e.g., Samarawickrema, Benson, & Brack, 2010), as well as faculty members’ perceptions of roles of Learning Content Management Systems (LCMS) (e.g., Steel, 2009) have been recently initiated as well.

Purpose of Study

The intent of this study is to better comprehend the instructional designer’s role in higher education settings. Specifically, we sought to interpret multimedia production knowledge and skills required of Instructional Design and Technology professionals working in higher education. In addition, since we noted a definite interrelationship between multimedia production and instructional design skills in earlier studies (Sugar, Brown, & Daniels, 2009), we also sought to understand the relationship between these two skill sets. To accomplish this goal, we conducted a Delphi study, seeking the opinions and consensus of experienced instructional designers who work in higher education.

Method

We determined that a Delphi research methodology was the best approach to address our questions. In the early 1950’s, “Project Delphi” was developed from an Air Force-sponsored Rand Corporation study. This study sought to “obtain the most reliable consensus of opinion of a group of experts . . . by a series of intensive questionnaires interspersed with controlled opinion feedback” (Linstone & Turoff, 2002, p. 10). Delphi panelists remain anonymous to each other in order to avoid the “bandwagon effect” and ensure individual panelists do not dominate a particular decision (Linstone & Turoff, 2002). Ideally, the Delphi panel is heterogeneous; clearly representing a wide selection of the targeted group. Since the inception of Project Delphi, the Delphi technique has been a prescribed methodology for a wide variety of content areas, including government planning, medical issues, and drug abuse-related policy making (Linstone & Turoff, 2002). Several existing Instructional Design and Technology research studies utilized the Delphi method to examine phenomena such as: determining constructivist-based distance learning strategies for school teachers (Herring, 2004); understanding strategies that promote social connectedness in online learning environments (Slagter van Tryon & Bishop, 2006); best practices for using technology in high schools (Clark, 2006); optimal technology integration in adult literacy classrooms (Dillon-Marable & Valentine, 2006); and forecasting how blended learning approaches can be used in computer-supported collaborative learning environments (So & Bonk, 2010). The Delphi method has also been used to identify priorities from a select group of experts on topics that include K–12 distance education research, policies, and practices (Rice, 2009); mobile learning technologies (Kurubacak, 2007); and educational technology research needs (Pollard & Pollard, 2004).

Standards have also been determined from Delphi studies. Researchers used this method to ascertain effective project manager competencies (Brill, Bishop, & Walker, 2006), biotechnology knowledge and skills for technology education teachers (Scott, Washer, & Wright, 2006), and assistive technology knowledge and skills for special education teachers (Smith, Kelley, Maushak, Griffin-Shirley, & Lan, 2009).

This Delphi research method is an established technique to collect a consensus decision among experts about a topic that involves examination of a broad and complex problem that could be potentially subjective (Linstone & Turoff, 1975; Linstone & Turoff, 2002). The question of which multimedia production knowledge and skills are important among

entry-level instructional designers is both complex and subjective; the answer depends on decisions made within organizations and the learner population the organization services.

The Delphi method provides researchers with the ability to systematically evaluate the expert decision-making process within a prescribed set of phases. This process is particularly advantageous for those participants or Delphi panelists who are in separate physical locations (Linstone & Turoff, 1975), as our participants were.

Delphi Panel

For our Delphi study, fourteen Instructional Design and Technology professionals originally agreed to participate. Ultimately, eleven of the fourteen original panelists completed all three data collection phases of the study; three individuals stopped participating for various personal reasons. The overall goal was to gather responses from a heterogeneous grouping of panelists (see Table 1) representing higher education work environments in general. The seven female and four male panelists work in a variety of higher education settings, including two-year colleges, four-year universities, public institutions, and private institutions. Eight of our panelists represent public institutions and three represent private institutions. In addition, two panelists represent two-year community colleges and four represent undergraduate-only institutions. Nine of our panelists work in administrative positions (e.g., Director) and two of our panelists work as instructional designers for their respective institutions. Ten panelists have worked in higher education setting for more than ten years. The average amount of higher education work experience was over sixteen years. The panelists are geographically diverse, representing western, mountain west, mid-west, south, southeast, mid-Atlantic, and northeast regions of the United States. One panelist works at a higher education institution in Switzerland.

Table 1. Demographic information of Delphi panelists

Gender	Position	Years in higher education setting	Region	Type of institution
Female	Instructional Designer	10	West	Public; 4-year degree; Undergraduate & graduate
Female	Instructional Designer	12	Mountain West	Public; 4-year degree; Undergraduate & graduate
Female	Coordinator	4	Northeast	Public; 4-year degree; Undergraduate & graduate
Female	Coordinator	27	Southeast	Public; 2-year degree; Undergraduate
Female	Vice Provost	25	South	Public; 4-year degree; Undergraduate & graduate
Male	Director	29	Midwest	Private; 4-year degree; Undergraduate
Male	Chief Academic Officer	20	South	Public; 2-year degree; Undergraduate
Male	Director	19	Southeast	Private; 4-year degree; Undergraduate & graduate
Female	Director	14	Mid-Atlantic	Public; 4-year degree; Undergraduate & graduate
Male	Director	11	Switzerland	Public; 3-year degree; Undergraduate & graduate

Female	Team Leader	13	Northeast	Private; 4-year degree; Undergraduate & graduate

Overview of Delphi Data Collection Phases

Three Delphi data collection phases were completed during this study. During the first round, panelists responded to the following three open-ended questions:

- What multimedia production knowledge do you believe an entry-level Instructional Design and Technology professional needs to know in order to be successful?
- What multimedia production skills do you believe an entry-level Instructional Design and Technology professional must possess in order to be successful?
- What kind of overlap is there between multimedia production knowledge and skills and instructional design knowledge and skills?

The purpose of these questions was to delineate specific multimedia production knowledge and skills, required of these professionals. The questions were open-ended in order to avoid biasing our panelists' responses (Linstone & Turoff, 1975). The panelists responded to these questions via email.

With the intent of identifying emerging and reoccurring themes, three evaluators analyzed the panelists' responses using a category construction data analysis method as outlined by Merriam (2009). Questionable items and themes were discussed among the three evaluators; the evaluators reached consensus on all items. Particular themes from these responses were identified. This initial set of themes was sent to the panelists for their review. Each panelist had the opportunity to respond to the overarching group of themes and the specific themes, and to add additional categories as well. All of these themes were compiled into a summative questionnaire, and this questionnaire was then distributed during the second round.

The intent of the questionnaire was to establish a quantitative appraisal of our panelists' responses about each item and to seek a common set of responses to Instructional Design and Technology graduates' multimedia production knowledge and skills. The panelists rated each questionnaire item with regard to the importance of each identified knowledge or skill, and the panelists' responses were compiled and distributed via email to each panel member. Panelists were then given the opportunity to offer feedback about the questionnaire results and make any corrections, as necessary.

During the third round, the eleven panelists reviewed the Round #2 ratings and were given the opportunity to revise their own ratings. Five of the eleven panelists recommended minor incremental changes to their original rankings. None of the eleven panelists made any suggestions to either add another item or remove an existing item. Given this feedback, we determined that these minor modifications indicated there was an apparent consensus among the panel.

Results

During the initial Delphi phase, the eleven panelists generated 289 unique statements regarding the three aforementioned initial questions. From this first round of responses, 60 distinct multimedia knowledge and skills needed by Instructional Design and Technology graduates were identified and organized into seven primary categories. This list of categories was then sent back to our panelists for confirmation. Eight of the eleven panelists recommended ten additional knowledge and skills for a total of 70 items.

Table 2. Top-ranked items (M ≥ 1.45)

Rank	Item	Category	f	M	SD

1	Communication skills	Communication and collaboration	11	1.91	.30
2	Social skills	Communication and collaboration	11	1.73	.65
3	Web design basics	Production	11	1.64	.51
4	Visual communication	Visual and graphic design	10	1.60	.70
5	Microsoft Office Suite	Applications	11	1.55	.52
6	Online course pedagogy	Instructional design and pedagogy	11	1.55	.69
7	Knowledge of learner	Instructional design and pedagogy	11	1.55	.82
8	Screencasting	Production	11	1.45	.69
9	Pedagogical design expertise	Instructional design and pedagogy	11	1.45	1.21
10	Design multimedia content	Instructional design and pedagogy	11	1.45	.82
11	Articulate advantages & disadvantages of delivering media formats	Delivery and project management	11	1.45	.69
12	Determine delivery venue	Delivery and project management	11	1.45	.52
13	Understanding of how disabilities impact multimedia selection	Delivery and project management	11	1.45	.69
14	LCMS	Online Applicatons	11	1.45	1.21
15	Video production	Production	11	1.45	.52

Responses were rated on a scale of -2 to 2, with -2= unnecessary, -1= not important, 0= somewhat important, 1= important, 2= essential.

Table 3. Bottom-ranked items (M≥.36)

Rank	Item	Category	f	M	SD
60	XML	Online Applications	11	.36	.81
61	Online plug-ins	Online applications	11	.27	1.27
62	Online quiz tools	Online applications	11	.18	1.08
63	Contribute	Online applications	10	.10	1.10
64	Photography	Productions	11	.09	.94

65	Online survey tools	Online applications	11	.09	.94
66	Animation	Production	11	.00	.63
67	Garageband	Applications	11	.00	.63
68	Final Cut Pro Suite	Applications	11	-.09	.94
69	Programming (e.g., Action-script)	Production	10	-.10	1.10
70	Green screen	Applications	10	-.40	1.27

Responses were rated on a scale of -2 to 2, with -2= unnecessary, -1= not important, 0= somewhat important, 1= important, 2= essential.

The panelists also reacted to the seven categories. Four original categories (Visual and Graphic Design, Instructional Design and Pedagogy, Communication and Collaboration, and Delivery and Project Management) did not receive any feedback or edits and were approved. The panelists commented on the three original categories: Basic Production, Specific Software Tool and Online. Upon review of these comments, these categories were renamed Production, Applications, and Online Applications respectively. We distinguished between applications (e.g., Flash) that can create instruction for online settings as well as non-online settings, and applications (e.g., Dreamweaver) that exclusively create instruction for online settings.

In summary, Delphi panelists' responses were organized into seven categories: Production (10 items), Applications (12 items), Online Applications (15 items), Visual and Graphic Design (6 items), Instructional Design and Pedagogy (15 items), Communication and Collaboration (4 items), and Delivery and Project Management (8 items). See Appendix for a listing of these categories and corresponding items.

During the next Delphi phase, our eleven panelists ranked these seventy items on the following scale: Essential, Important, Somewhat important, Not important, Unnecessary. Accordingly, we assigned a 2 to -2 Likert scale for these five items where Essential items received 2 points, Important items received 1 point, Somewhat important items received 0 points, Not important items received -1 point, and Unnecessary items received -2 points. Thus, the top score any item could receive would be 22 points (i.e., all 11 panelists deemed this item to be Essential) and the lowest score that an item could receive would be -22 points (i.e., all 11 panelists deemed this item to be Unnecessary). This rating system also provides the ability to weight and counterweight individual panelists' responses about a particular item. For example, if a panelist rated one item as Important (1 point) and another panelist rated the same item as Not important (-1 point), the item would receive a combined score of zero points and would be considered as Somewhat important.

The average scores for all of the seventy items ranged from M = 1.91 to M = -.4 (see Appendix). The 15 top-ranked items that received a 1.45 average or higher are found in Table 2. The top two items, Communication (M = 1.91, SD = .30) and Social skills (M= 1.73, SD = .65) were within the Communication and Collaboration category. Three production items, Web Design Basics (M = 1.64, SD = .51), Video Production (M = 1.45, SD = .52), and Screencasting (M = 1.45, SD = .69) were including in this top-ranked list. The item, Visual communication and visualization theories (M = 1.60, SD = .70), was the fourth highest-ranked item and Microsoft Office Suite (M = 1.55, SD = .52) was the fifth highest-ranked item. Four of the fifteen Instructional Design and Pedagogy items and three of the eight Delivery and Project Management items also were distributed in this top-ranked listing. Learning Content Management Systems (LCMS) (M = 1.45, SD = 1.21) also was in this top ranking list. The eleven bottom-ranked items that received a .36 average or lower are found in Table 3. Five Online applications (XML, Online quiz tools, Online plug-ins, Contribute, and Google Forms/Survey Monkey) were located in this list of items. Three Production items (Photography, Animation, and Programming) and three Applications items (Garageband, Final Cut Pro, and Green screen) received an average of 0 or lower.

Table 4. Percentage of importance within each category

Category (n)	Unnecessary to Not important -2 ≤ M < -1 %	Not important to Somewhat important -1≤ M < 0 %	Somewhat important to Important 0 ≤ M < 0 %	Important to Essential 1 ≤ M ≤ 2 %
Communication and collaboration (n=4)	0.0	0.0	25.0	75.0
Visual and graphic design (n=6)	0.0	0.0	0.0	100.0
Delivery and project management (n=8)	0.0	0.0	12.0	88.0
Instructional design and pedagogy (n=15)	0.0	0.0	20.0	80.0
Production (n=10)	0.0	10.0	30.0	60.0
Online applications (n=15)	0.0	0.0	66.7	33.3
Applications (n=12)	0.0	16.67	66.66	16.67
Totals (n=70)	0.0	4.3	37.1	58.6

In Table 4, the percentage of importance ratings is listed for each category. Over sixty percent of the items (63.8%) from each of the seven categories received an “Important” (M > 1) to “Essential” (M < 2) ranking. All theVisual and Graphic Design (n=6) items were within this range. Fourteen of the fifteen Instructional Design and Pedagogy items received “Important to Essential” ratings; SCORM received an average score lower than 1 (M = .73, SD = .91). Three of the four Communication and Collaboration items also received “Important to Essential” ratings. Public presentation skills received an average score lower than 1 (M = .91, SD = .94). All but one Delivery and Project Management item (n=7) also received an “Important to Essential” rating; Understanding of budget constraints & funding issues received an average score lower than 1 (M = .64, SD = .81).

Sixty percent of the Production items (n=6) received an “Important” (M > 1) to “Essential” (M < 2) rating (see Table 4). A majority of the Delphi panelists categorized Web design basics (M = 1.64, SD = .51), Video production (M = 1.45, SD = .52), Screencasting (M = 1.45, SD = .69), Audio production (M = 1.36, SD = .67), Images production (M = 1.36, SD = .67), and Basic HTML commands (M = 1.09, SD = 1.10), as “Important” to “Essential” items. (see Table 5). The remaining four Production items either received a “Somewhat important” (M < 0) to “Important” (M < 1) ranking (i.e., Desktop publishing and Photography) or received a “Not important” (M < -1) to “Somewhat important” (M < 0) ranking (i.e., Animation and Programming skills).

Table 5. Production category items

Rank	Production category items	f	M	SD
3	Web design basics	11	1.64	.51
8	Screencasting	11	1.45	.69
15	Video production	11	1.45	.52
16	Audio production	11	1.36	.67

26	Images production	11	1.36	.67
38	Basic HTML commands	11	1.00	1.10
48	Desktop publication	11	.91	.75
64	Photography	11	.09	.94
66	Animation	11	.00	.63
68	Programming skills (e.g., Actionscript)	10	-.10	1.10

Responses were rated on a scale of -2 to 2, with -2= unnecessary, -1= not important, 0= somewhat important, 1= important, 2= essential.

Table 6. Application category items

Rank	Application category items	f	M	SD
5	Microsoft Office suite	11	1.55	.52
33	Adobe software suite	11	1.09	.94
47	Major operating systems	11	.85	1.08
49	Photoshop	11	.82	.87
51	Audacity	11	.73	.79
56	Adobe Flash	11	.64	.93
57	Adobe Acrobat	11	.55	1.04
58	iMovie	11	.55	.82
59	Fireworks	11	.55	.93
67	Garageband	11	.00	.63
68	Final Cut Pro Suite	11	-.09	.94
70	Green screen	10	-.40	1.27

Responses were rated on a scale of -2 to 2, with -2= unnecessary, -1= not important, 0= somewhat important, 1= important, 2= essential.

Only 25% of the Application items (n=3) received an “Important” (M > 1) to “Essential” (M < 2) rating (see Table 6). Two of these three applications are generic applications with regard to multimedia production items. These applications are Microsoft Office suite (M = 1.55, SD = .52) and Major operating systems (M = 1.00, SD = 1.08). The other Application item is the overall Adobe software suite (M = 1.09, SD = .94). The remaining nine Application items either received a “Somewhat important” (M < 0) to “Important” (M < 1) ranking (i.e., Audacity, Flash, Photoshop, Acrobat, iMovie, Fireworks, and Garageband) or received a “Not important” (M < -1) to “Somewhat important” (M < 0) ranking (i.e., Final Cut Pro and Green screen).

There is disagreement among the panelists regarding the importance of specific applications. As depicted in Figure 1, at least 45% of the panelists perceived the importance of the following three applications: Flash, Photoshop, and Fireworks. Six panelists perceived Flash as either an Important or an Essential multimedia production item whereas five panelists perceived Flash as either Somewhat important or Not important. Five panelists perceived both Photoshop and Fireworks as either an Important or an Essential multimedia production item whereas six panelists perceived both Photoshop and Fireworks as either Somewhat important or Not important.

Table 7. Online application category items

Rank	Online application category items		M	SD
14	LCMS	11	1.45	1.21
29	Web 2.0 applications	11	1.27	.79
34	Knowledge of online file structures	11	1.09	.94
39	Camtasia	10	1.00	.82
40	Web page editors	11	1.00	.78
44	Dreamweaver	11	.91	.83
45	CSS	11	.91	.70
50	Wikis	11	.82	.75
53	Captivate	11	.64	.67
55	Blogs	11	.64	.67
60	XML	11	.36	.81
61	Online plug-ins	11	.27	1.27
62	Online quiz tools	11	.18	1.08
63	Contribute	10	.10	1.10
65	Online survey tools	11	.09	.94

Responses were rated on a scale of -2 to 2, with -2= unnecessary, -1= not important, 0= somewhat important, 1= important, 2= essential.

Thirty-three percent of the Online application items (n=5) received an “Important” ($M \geq 1$) to “Essential” ($M \leq 2$) rating (see Table 7). Four of these five applications are generic applications with regard to multimedia production items. These applications are LCMS (M= 1.36, SD= 1.21), Web 2.0 applications (M= 1.27, SD= .79), Knowledge of online file structures (M= 1.09, SD= .94), and Web page editors (M= 1.00, SD= .78). The other Online application item is Camtasia (M= 1.00, SD= .82). The remaining 10 Application items received a “Somewhat important” ($M < 0$) to “Important” ($M < 1$) ranking.

Similar to the Application items, there is disagreement among the panelists regarding the importance of particular online applications. As shown in Figure 2, at least 45% of the panelists perceived the importance of the following two applications: Camtasia and Online plugins. Six panelists perceived Camtasia as either an Important or an Essential multimedia production item whereas five panelists perceived Camtasia as either Somewhat important or Not important.

Five panelists perceived Online plugins as either an Important or an Essential multimedia production item whereas six panelists perceived these tools as either Somewhat important, Not important or Unnecessary.

Discussion

In considering these results, the Delphi panelists identified specific multimedia production skills and knowledge needed by entry-level Instructional Design and Technology (ID&T) professionals who work in higher education settings. These skills and knowledge include the following: generalized multimedia production knowledge and skills, emphasis of online learning skills, and the interrelationship between multimedia production and instructional design skills. After describing these skills and knowledge, we discuss how these results have influenced our own respective curricular practices, as well as anticipate future research studies that would provide additional understanding on how best to educate instructional designers working in higher education settings.

The Delphi panelists undoubtedly came to consensus that ID&T graduates need to be well-versed with a number of general multimedia production skills. Visual design principles, video production and audio production skills all were ranked high and were considered Essential by a majority of the panelists. Conversely, more advanced and specialized technologies (e.g., programming and green screen technology) are not as important and were ranked as Unnecessary. Also, there is a conclusive preference among the panelists regarding online learning applications and skills. Web design basics, online course pedagogy, screen-casting, and LCMS skills all were ranked as Essential. It is interesting to note that no specific computer-based instruction application besides Camtasia and Dreamweaver received an Essential or Important ranking. In fact, Delphi panelists were divided on the importance of specific software applications, including: Flash, Photoshop, Audacity, Fireworks, and Captivate.

In addition to these essential multimedia production skills, the panelists' rankings indicate an inter-relationship between instructional design skills and multimedia production skills. Even though panelists were asked about ID&T graduates' multimedia production knowledge and skills, eighty percent of the items from the Instructional design and pedagogy category (e.g., Knowledge of learner characteristics, Determining the appropriate delivery venue for particular content area, etc.) were ranked as Essential. Furthermore, Communication skills and Social skills were ranked first and second, respectively. This finding implies that ID&T entry-level professionals need a robust combination of general multimedia production skills and knowledge and overall instructional design skills and knowledge.

Implications

As Instructional Design and Technology faculty members, we were intrigued to receive these results from our panelists and are now considering curricular revisions for our respective courses. The results from our study indicate that multimedia production items cannot be taught in isolation and should not be linked to a particular software application. In previous semesters, our respective multimedia production courses were the default software application course (e.g., Flash, Authorware, Director, etc.). Currently, our students now use "lowest common denominator," computer-based instruction applications (e.g., PowerPoint) to teach particular computer-based instruction methodologies (e.g., tutorial). Our respective students are introduced to innovative technologies (e.g., Prezi), but the emphasis is not solely on the particular authoring tool, but on how to integrate this tool into overall, existing instructional modules. To highlight the interrelationship between multimedia production and instructional design skills, our students are now required to complete instructional design reports when creating a multimedia production project. We view these projects as instructional design "experiments" and students complete "lab reports" with each project.

The panelists' respective rankings and results also indicate additional areas to explore with regards to ID&T graduates' overall multimedia production and instructional design skills and knowledge. Inquiry into the changing role of the instructional designer with respect to these two skill sets, such as Schwier and Wilson's (2010) recent study should take place. A more in-depth understanding of what Willis (2009) refers to as process instructional design, such as a study on the best practices involving collaboration between instructional designer and client is encouraged as well. In addition,

case studies on how instructional designers effectively balance multimedia production and instructional design skills should be developed. These case studies could be used as instructional tools to teach novice instructional designers best practices in integrating multimedia production skills within an overall instructional design project.

In summary, the results from this Delphi study indicate that Instructional Design and Technology professionals working in higher education settings need to be educated about overall multimedia production skills and how these skills interrelate to their set of instructional design skills. As Instructional Design and Technology educators, we look forward to considering innovative and effective approaches to our respective curricula and to continuing this dialogue with other Instructional Design and Technology educators.

Application Exercises

- If you were to design a course for students in an instructional design program, what 3-4 areas would you focus on, based on the results of this study?
- Look at the list of skills that were ranked as Important-Essential by the Delphi panelists. Think of one or two of those skills that you could personally develop more in your life, and make plans to do so.
- After seeing the results of the study in this article, evaluate your own progress towards becoming an instructional designer. Do you feel like you are learning the soft and hard skills required for the job? How would you adjust your current plan to better align with what is required in the field?

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