

Running Head: TECHNOLOGY MARKET STUDY

IDT 606 (ID Technology Research):

Technology Market Study

Submitted in partial fulfillment of the requirements for the degree of
Master of Science in Instructional Design and Technology (MSIDT)

Pre

By

Jeanne R. Perrone

On

December 3, 2018

To

Dr. Lisa Johnson

Presentation Technology

Selection

Stephanie's article (2011) on evaluating technology tools provided a list of criteria that to assist in choosing technology tools for the learning environment. The criteria investigate these questions:

1. What do your students need to learn?
2. Does it encourage higher order thinking skills?
3. Does it follow Universal Learning Design principles?
4. Is the software easy to learn and user-friendly? How much can the software expand with increased use and access? Does it integrate with other tools?
5. What is the cost?
6. What are the user ratings? Who do you contact with questions? What is the user-interface with customer support?
7. Can projects be shared? How does sharing occur? Is it easy for the receiver to open files and make comments?

The chosen presentation technology will be used for the project's online course. The three technologies reviewed for this assignment are Preziⁱ, Emazeⁱⁱ, and iSpringⁱⁱⁱ. The first criteria from the above list were user-friendliness. User-friendliness was defined as how much time would it take to learn the software. All three were easy to learn with little training time required.

For the project, all but Prezi allow the integration of previous PowerPoint slides. Reuse of materials will save valuable development time. Emaze (2018) is a cloud-based program, and PowerPoint slides can be uploaded into a new template. In Emaze there were also templates for

web pages, infographics, blogs, ecards, and photo albums. These added templates expand the use of the materials. The presentations could be published and shared for collaborative projects.

ISpring was chosen because it fit well into the eLearning component of the project. ISpring (2018) sells eLearning software that develops educational content which can be later published to an LMS. Incidentally, the company also has an available LMS. ISpring downloads as an add-on into PowerPoint. This integration allowed for increased ease-of-use expending less time becoming learning the software. ISpring was used to make the online content slides for IDT 604 final project.

The most important criteria for the software is the ability to make the content interactive. Medical procedures are best taught using particular methods, i.e., dental x-ray positioning training has better outcomes when taught hands-on. Other parts of the project such as the online portion will need a balance of auditory, visual, and interactive. Interactivity in an online venue can be close to hands-on.

Evaluation

Sullivan's article (2015) examines instructional strategies used to improve skill retention. Video and eLearning were found to be beneficial for the initial attainment of skills. In the online course, audiovisual components will stimulate the lower order teaching levels of Remembering and Understanding. In the revised Bloom's Taxonomy, learners move into higher order thinking as difficulty increases (Krathwohl, 2002). Though the online course for this project will be an introduction, interaction with the material will start to move into the Apply level.

In Garrett's article (2016) on the use of PowerPoint in academia noted that 93% of undergraduate students are in a class where PowerPoint is used in some capacity. That percentage is naturally higher in online environments. Slide presentations have best practices.

Best practices have standard requirements across the board such as keeping slides simple, but the learning experience can be individualized to the objective of the course and the needs of the learner.

Garrett looks at how learners experience a presentation using Mayer's multimedia learning theory. The theory presents a cognitive model for learning when combining words with pictures (Mayer, 2008). The critical finding in multimedia research is the management of redundancy such as when words are read off the slide. This practice causes harm to the learner by violating the three Coherence principles: 1) avoid e-lessons with extraneous audio, 2) avoid e-lessons with extraneous graphics, and 3) avoid e-lessons with extraneous words (Liu, n.d.).

What is interesting in Garrett's article is the point that universal design principles suggest that words should be spoken and read. In contrast, Mayer's experimental work showed that the redundancy of reading and speaking reduced learning (Garrett, p. 368). It is better to exchange full sentences on a slide to short phrases. Garrett mentions Sweller and Chandler's paper on Cognitive Load Theory and finds that short phrases don't overload short-term memory (Sweller, 1994).

The online course teaches the essential baseline knowledge to move into the face-to-face portion of the course: oral anatomy, the use of the dental chart, radiographic equipment essentials and radiation safety. The LMS will allow for participants to access the course from either a desktop computer or a handheld device. The units will need to be easily accessible and completed in a short period to keep the participant focused on the course. That focus will come from providing basic information as a must-learn and providing an interactive component for adding challenge and engaging higher order thinking skills. The interactive element will be questions asked during the unit presentations and an assessment at the end of each unit.

The iSpring program has interactive slide templates using a variety of modalities. There is also a dialog feature called TalkMaster that sets up a scenario for the participant, and they answer questions based on the situation. Lastly, assessments can be made and added to the presentation.

Cost Estimation

Table 1
Delivery Analysis

Delivery Method	Days/Hours
Virtual Classroom/Learning Environment– LMS, LCMS Online Pre-Coursework The pre-course work prepares the participant for the face-to-face in-clinic training. Total number of units covered – 5 units Total class time – 7 hours	Home Page Orientation One hour of class time = 1 hour Unit 1 – Two Sections Each section is one hour of class time = 2 hours Unit 2 – Two Sections Each section is one hour of class time = 2 hours Unit 3 – One Section One hour of class time = 1 hour Unit 4 – One Section One hour of class time = 1 hour Total class time = 7 hours Chapman Alliance Level 1 Basic ratio = 79:1 Total Development Time = 553 hours/8 hours/day = 69 days

Cost-Benefit Analysis

The scenario for this cost estimation covers training time to learn the technology plus the designing time for making six thirty-minute ISpring presentations. The total presentation time would be 3 hours.

	Percentage of Time	Hours
Needs Assessment	3%	4.86
Prepare Project Plan	2%	3.24
Conduct Course Content/Learning Analysis	5%	8.1

Develop Instructional Media Design Package	10%	16.2	
Develop Prototype Lesson	5%	8.1	
Develop Flowcharts	3%	4.86	
Develop Script/Storyboards	19%	30.78	
Produce/Acquire Media (Photos, audio, video)	13%	21.06	
Author Course	30%	48.6	
Evaluate the Course (In-Process Reviews)	10%	16.2	
			Total Hours to create course
	100%	162	

Instructor Prep Time 4.5 hours

	Labor Cost	
Instructional Designer labor cost	\$4,672.08	
Instructor labor cost	\$173.04	
Learner's wages	\$150.00	
Travel costs	\$0.00	
	\$4,995.12	Total

Misc Costs:	\$1,000.00	
	(eLearning software that works, 2018)	
Equipment	\$0.00	
Outside vendor	\$0.00	
Consultant	\$0.00	
Video	\$600.00	
Other	\$0.00	

Grand Total
\$6,626.12

Prerequisite Skills

Once the subscription is purchased, training is available through the iSpring website. There are video tutorials attached to each component of the software. Secondly, iSpring holds regular live webinars on Wednesday that are free of cost with a paid subscription. Webinars are recorded and can be watched later. It is recommended that the stakeholders walk through the software add-in in PowerPoint and then pick and choose the webinars that would be the most beneficial.

Potential Challenges and Solutions

Table 2

Inherent Challenges and Solutions with iSpring

Challenge	Solution
Older versions of PowerPoint	Check with iSpring to find out what version works best so the course can have the correct version. Technical specs will need to be listed on the course to be sure participants are up-to-date.
Software upgrades and support are free for one year standard	Purchase an extended maintenance plan for an added fee.
Technical issues	Technical support can be reached immediately by phone or chat. There is also a discussion board to post questions (iSpring Community, 2018)

Graphics Technology

Selection

The three graphics technologies reviewed are *TechSmith SnagIt*^{iv}, *Sparkol VideoScribe*^v, and *Movavi Screen Capture*^{vi}. The software application for this project would be in the online pre-course. All three of these programs provide the ability to make short video presentations. *SnagIt* and *Movavi* have screen capture capabilities that would be useful for the online portion of this project for making short, focused presentations to introduce each course unit. The integration of a hotspot, video tutorial or demonstration adds another level of engagement for the participant. The user interface of *SnagIt* and *Movavi* are similar. The user chooses a portion or all of their screen and can record a voice-over presentation. The presentation in both programs can be saved as an mP4 and reused. The speaker can also add a voice-over recording. Voice-over recordings engage the learner connecting the learner to the presenter (Chen, 2015). That connection will be developed in the project since participants will have access to the course facilitator to ask questions.

VideoScribe uses a whiteboard format with more animation capabilities. *VideoScribe* gives you a whiteboard and components for the presentation are placed on the whiteboard. One can insert graphics, text, or video clips. The elements can be arranged in a specific order and appear in a particular area of the whiteboard. The recording moves around the whiteboard to the graphics you have placed in the chosen order. The drawback to this program is the lack of tools to use the graphics interactively. The presentation video clip saves on their cloud for use during the building of a current project or use on a future project. A disadvantage of using a cloud service is the loss of the project if the subscription is discontinued.

If the user can record a video clip, build a hyperlink, or drag and drop graphics, all three programs are easy to use. If the user is new to video production or working with hyperlinks and graphics, tutorials are available through each company's website. The cost for a license in *SnagIt* or *Movavi* is in the \$50-\$60.00 range. *VideoScibe* is a yearly subscription at \$144. All three programs offer an educational discount for multiuser and single-user licenses or subscriptions. Since this project is for educational purposes, the discount would benefit the project by decreasing project costs.

The best choice for the project is a close tie between *SnagIt* and *Movavi*. *SnagIt* was the best choice for the project due to ease of use, price and customer support. *SnagIt* has a simple, intuitive user interface to make short, focused video clips such as infographics. Future use for this program could be video demonstrations of radiographic positioning. The educational discount made the program the most affordable of the three tested. Lastly, the TechSmith website provides webinars and tutorials to learn the features of the software. An advantage to manufacturer-created tutorials is access for large teams to become familiar with the features of the software.

Evaluation

According to Pettit (2018), vodcasts or videocasts are gaining popularity in medical education. She goes on to say that vodcasts only provide passive learning because students cannot physically interact with the material. Pettit noted that learners had a presentation preference that includes clear explanations, well organized and concise information that is relevant to their study needs as medical students (p. 536). In her article, she offers tips to increase engagement to stimulate active learning. Adding interactive components motivate learners. These components can include using pauses to allow for activities such as reviewing tables and figures, answering

practice questions or studying hyperlinked locations. According to Pettit, the use of graphics within the presentation motivates the learner with visual stimulation and connects the learner with the material.

For this project, the content within the screen presentations needs to be well organized, clear and relevant to the needs of the participant. Adding animation to the videos requires alignment with the content to avoid cognitive overload (Morrison, 2013). Cognitive overload occurs when there is an overuse of animation to define a point in the presentation. The learner will not take in the knowledge the animation is trying to express if there are too many examples or it is not relevant to the topic. Animation should elaborate the point being made. For this project, animated components would be in the form of arrows pointing to an area being explained or a link for further information. Pettit's assertion (2018) that learners need clear explanations and materials that align concisely with the lesson connects with Morrison's (2013) point regarding the benefits of well-designed interactive animation to accentuate essential points in the project's lesson.

The "R" in Keller's ARCS Model of Motivational Design (1999) is relevance or how does the information fit to the current situation. The guiding strategies for relevance are 1) familiarity, 2) goals and 3) motives. Veterinary clinics have full body radiograph units on which all medical staff has been trained to use. This example represents familiarity as many of the techniques are similar to dental radiographs. The goal strategy is described by the breakdown of the training into goals or steps. Each step or goal must be achieved before moving on to the next one. The breakdown of training into steps is consistent with Reigeluth's (1999) Elaboration Theory that stresses the importance of holistic sequencing of instruction which increases meaning and motivation. Using this type of sequencing will cause the project participant to

follow a learning path that starts from their prior knowledge on full-body x-ray units, transfers them to dental x-ray and builds problem-solving skills as they learn each step.

The motive strategy is represented when we look at the staff members that have been involved in the decision making for the purchase of the dental radiograph unit. Learning how to use the dental unit and integrate it into the dental service is a prime motivator. The topics of the vodcasts must teach content that assists the participant to reach the objectives designed to achieve the training goals discovered during the needs analysis. The use of graphics, video, and live simulations in the online and face-to-face training demonstrates that learning occurs when the instruction couples with active learning. Stapleton and Hirumi (2014) introduce the InterPlay Model which uses live simulation or games in a play-based environment that is similar to real-world conditions. In this project, the knowledge gained from the video demonstrations in the online course transfer to the hands-on activities during the face-to-face training. The skills learned from the video demonstration is now prior knowledge for the participant and becomes the foundation as they negotiate the change to a live simulation. The participant is now engaged and motivated as new problem-solving skills are enhanced.

Cost Estimation

The scenario for this cost estimation covers training time to learn the technology plus the designing time for making six ten-minute screen capture presentation. The total presentation time would be 60 minutes. The addition of SnagIt would add \$200 for a subscription for six users including an educational discount.

	Percentage of Time	Hours
Needs Assessment	3%	1.62
Prepare Project Plan	2%	1.08

Conduct Course Content/Learning Analysis	5%	2.7	
Develop Instructional Media Design Package	10%	5.4	
Develop Prototype Lesson	5%	2.7	
Develop Flowcharts	3%	1.62	
Develop Script/Storyboards	19%	10.26	
Produce/Acquire Media (Photos, audio, video)	13%	7.02	
Author Course	30%	16.2	
Evaluate the Course (In-Process Reviews)	10%	5.4	
			Total Hours to create course
	100%	54	
Instructor Prep Time		1.5	hours

	Labor Cost	
Instructional Designer labor cost	\$1,557.36	
Instructor labor cost	\$57.68	
Learner's wages	\$150.00	
Travel costs	\$0.00	
	\$1,765.04	Total
Misc Costs:		
	\$200.00	
	(Snagit Pricing, 2018)	
Equipment	\$0.00	
Outside vendor	\$0.00	
Consultant	\$600.00	
Video	\$0.00	
Other		
	\$2,596.04	Grand Total

Prerequisite Skills

Once the subscription is purchased, *Snagit* training (2018) is available through the TechSmith website. Basic video recording skills are needed to begin using Snagit. Manufacturer generated

tutorials provides access to a wide audience. Learners can access the training on their own time vs. the expense of scheduling a webinar or face-to-face training. There are video tutorials attached to each component of the software. More advanced training is available at the links on the lower half of the webpage. The TechSmith blog (2018) also has additional training articles.

Potential Challenges and Solutions

Table 3
Inherent Challenges and Solutions with Snagit

Challenge	Solution
Older versions of <i>Snagit</i>	Check with TechSmith to see if a product upgrade is available. Upgrades are less expensive than purchasing new download.
Software upgrades and support are free for one-year standard	Purchase an extended maintenance plan for an added fee. The fee is one-time
Technical issues	Support can be reached by chat or by submitting a ticket to their support help page (Support help. Answers, 2018). There are also community forums available. Community forums are visited by real-life users. These forums can help find answers to nonstandard questions.

Video Technology

Selection

The three video technologies reviewed were *Adobe Premiere Pro*^{vii}, *TechSmith Camtasia 2018*^{viii}, and *Microsoft Movie Maker 10*^{ix}. All three programs provide video editing capabilities. The video is made first, and then it is polished using the editing software. In all three programs, graphics, animations, transitions, and music were basic tools. *Camtasia* does record video, allow real-time captioning as well as sound recording editing at a sophisticated level which produces podcast/audio opportunities beyond video. Video editing does take some time to learn. For this project, user-friendliness was crucial. Training time is required to learn any of these programs, so the learning curve needed to be as low as possible. Secondly, could the program record and edit video presentations? Having a video program be dual purpose will save on design and development time as the need to jump from one program to another is removed.

Adobe Premier Pro was highly rated by YouTube videographers for the number of editing tools available. Upon opening the program, it takes you a training tutorial. The tutorial takes the user step-by-step through the basic tools and skills needed to run the program. For the novice, it can be overwhelming, and the user must put in a large amount of training time to feel comfortable. At the other end of the scale, *Movie Maker* was much simpler to operate and learn, but there were no tutorials available in the program. *Camtasia* had the look and feel of a professional video editing program, but the interface was overwhelming. Tutorials were readily available to help a new user walk through the basic steps. Secondly, the program also records video presentation so you can record and edit the video in the same program.

Camtasia was the best program of the three reviewed because it provided training on demand, had an intuitive user interface and saved designing and development time by providing

recording and editing in the same program. The software is an available add-on for PowerPoint. With the added editing features, the interactivity of the presentation increases.

Evaluation

As with graphics technology, video technology as part of training needs to provide active learning. The videos will be the main interaction between the participant and the trainer during the online pre-course.

The effects of different types of video presentations have been studied. Chen's (2015) research looked at three types of video presentation: 1) lecture capture format which records a lecturer's voice, image, and instructional aids at the same time, 2) voice-over presentation type which uses PowerPoint slides with a voice-over explaining the information presented on each slide., and 3) picture-in-picture method which overlays an instructor recorded image with lecture slides. Chen (2015) also gathered data by monitoring the levels of sustained attention, emotion, cognitive load, and learning performance. Chen's research found that video capture and picture-in-picture produced the highest learning performance with video capture and picture-in-picture. The voice over video style produced the poorest results probably due to the overcrowding of the screen with information that did not align with the content of the presentation. This layout caused cognitive overload through the mental stress of reading different areas of the screen (Sweller, 1994). On the other hand, the voice-over presentation did record very high readings in sustained attention.

Voice-over presentation is used extensively in higher education. In Miner's (2018) study, multimedia video is a viable resource to share course materials. Video supplements instruction by expanding the learners understanding of the content and promote observational learning. Secondly, video works best in the eLearning environment because, if designed with clear

information and concise instructions for learner activities, allows for autonomous learning (Pettit, 2018).

For this project, both voice-over and picture-in-picture can produce interactivity through connection with the material and with the instruction. A common use of picture-in-picture is the image of the instructor providing the lecture. Both styles allow the learner to see and hear the instructor which enhances the communication between the online facilitator and the participant.

Next is the alignment of the course content to the multimedia components on the video. The instructional material would be written using concrete, simple language with examples to explain more complex topics to help comprehension to ensure a low cognitive load (Morrison, 2013). A low cognitive load has a positive effect on comprehension and promotes deep learning. Keeping the content, and the multimedia aligned decreases the cognitive load.

According to Sweller, germane is one of the three types of cognitive loads. The other two cognitive loads are extraneous and intrinsic. We construct new schemas into our working memory where it integrates with our previous experiences, and then these will eventually move into our long-term memory. The integration of new schemas is germane load which brings about positive effects on learning (Sweller, 1994) (Malamed, 2011). Germane load becomes prominent when the extraneous materials or distractions are minimized. The added participant focus would bring about the integration of the new schema into long-term memory. For video multimedia projects, it means keeping alignment between the multimedia and the message. In short, the message comes first, and the multimedia gives it impact.

Cost Estimation

The scenario for this cost estimation covers training time to learn the technology plus the designing time for making six thirty-minute video presentations. The total presentation time would be three hours.

	Percentage of Time	Hours	
Needs Assessment	3%	4.86	
Prepare Project Plan	2%	3.24	
Conduct Course Content/Learning Analysis	5%	8.1	
Develop Instructional Media Design			
Package	10%	16.2	
Develop Prototype Lesson	5%	8.1	
Develop Flowcharts	3%	4.86	
Develop Script/Storyboards	19%	30.78	
Produce/Acquire Media (Photos, audio, video)	13%	21.06	
Author Course	30%	48.6	
Evaluate the Course (In-Process Reviews)	10%	16.2	
	100%	162	Total Hours to create course
Instructor Prep Time		4.5	hours

	Labor Cost	
Instructional Designer labor cost	\$4,672.08	
Instructor labor cost	\$173.04	
Learner's wages	\$150.00	
Travel costs	\$0.00	
	\$4,995.12	Total
Misc Costs:		
	\$250.00	
	(TechSmith,	
Equipment	2018)	
Outside vendor	\$0.00	
Consultant	\$0.00	
Video	\$600.00	
Other	\$0.00	

Grand
\$5,876.12 **Total**

Prerequisite Skills

Once the subscription is purchased, training is available through the TechSmith website. Basic video recording skills are needed to begin using *Camtasia*. Manufacturer generated tutorials provides access to a wide audience. There are video tutorials attached to each component of the software. Once the initial training is completed, users can take more advanced training at the links on the lower half of the webpage. The *TechSmith* blog (2018) also has additional training articles.

Potential Challenges and Solutions

Table 4
Inherent Challenges and Solutions with Camtasia

Challenge	Solution
Older versions of Camtasia	Check with <i>TechSmith</i> to see if a product upgrade is available. An upgrade is less expensive than a new version of the software.
Software upgrades and support are free for one-year standard	Purchase an extended maintenance plan for an added fee. The fee is one-time
Technical issues	Support can be reached by chat or by submitting a ticket to their support help page (Support help. Answers, 2018). There are also community forums available. Community forums are visited by real-life

	users. These forums can help find answers to nonstandard questions.
--	---

eLearning Technology

Information and communication tools (ICT) are having an impact on education. In a research study by Lindberg, et al. (2017) high expectations from ICT reform have been expressed but have not been fully realized. Factors include teacher and student digital competence, and the student’s use of ICT outside of the classroom can influence how they feel ICT should be used in the classroom (p. 124). The higher the competency, the increased presence in the classroom.

Tirzu and Vrabie (2015) discuss that the presence of ICT resources is creating new challenges for teachers who will be teaching online. The problem is taking material that was once provided in a face-to-face environment and transfer them to an online environment where physical interaction is removed between the student and the learner. Tirzu and Vrabie’s findings also suggested that when physical interaction is eliminated teacher-learner respect and collaboration opportunities are diminished (p. 376),

Traditionally, the eLearning lecture presents content using PowerPoint slides with the voice-over recorded by the instructor. These presentations, while informative to the student, are categorized as passive learning. With passive learning, when the learner watches the instruction and answers some questions at the end, interaction is minimal. This form of learning can lower learner motivation in some cases (Miner, 2018).

The introduction of the internet to education has expanded online communication and information. Teachers and learners can use this access to share and learn from each other.

Sharing is considered an interaction. The interaction that was lacking in the early days of online learning has now returned. Improvements in technology now allow the user to add interactive exercises. Interaction is key to successful eLearning. In eLearning, interaction is provided through discussion boards, problem-solving projects, and hands-on practice. According to Tirzu and Vrabie (2015) increasing these experiences increase learner engagement and sustained concentration.

The success of eLearning strategies is dependent on the availability of the technology and the support needed for teachers and learners to explore and develop innovative ways to integrate the technology into a learning experience. Pedagogical practices must now include technical proficiency with an technical infrastructure that allows online communication to expand a course's range to use e-learning effectively. Technology brings increased cost, and if instructional technologists are not part of the budget or accessible part-time, teachers must develop skills using eLearning tools, specifically authoring tools to develop online course materials. The following sections of this paper will look at three eLearning authoring tools and choose one of these tools that would be the best fit for the needs of the project.

Selection

As the previously mentioned research has shown, the two most important hurdles when choosing eLearning tools is user-friendliness, and low connectivity and technical challenges as these can have an impact on learning. Anstey and Watson (2018) developed an eLearning technologies rubric. The rubric provides criteria and protocol to assess the suitability of the eLearning technology to help achieve the learning outcome. This rubric will provide the decision-making criteria for choosing the eLearning authoring tool that will be the best fit for the project. The

rubric examines functionality, accessibility, technical, mobile design, privacy data protection, social presence, teaching presence, and cognitive presence.

ELearning Industry (2018) published a list of the highest rated eLearning authoring tools currently on the market. The reviews for the top 10 tools were examined. Three authoring tools were chosen because they had a free trial, had high ratings on ease-of-use and the fewest technical issues. The tools reviewed for use on the project were *IsEazy*^x, *Appitierre Evolve*^{xi}, and *Learnetic mAuthor*^{xii}. In a side-by-side comparison through the Elearning Industry Directory (2018) all three tools had user satisfaction above 93/100% and 4.5-5/5 star ratings for usefulness, usability, customer experience, and a high likelihood to recommend. All three save course projects up in a cloud. Cloud storage is beneficial because it allows access for collaboration with stakeholders and course developers. All three would allow the publication to any Learning Management System (LMS). All three offered online tutorials which allowed for the initial examinations for the projects. A free trial was used to review each tool.

IsEazy. Following the eLearning Tool Evaluation Rubric, IsEazy' rated highly in all criteria. After reviewing the introductory video tutorial, the simplicity of the layout was important for confidence building when working with the program. A basic course could be designed using a blank or template. The program offered interactive features such as discussion boards and assessments to increase collaborative and problem-solving skills. This program would be a good choice for the project because it could integrate the materials that can be used right away from the course. A prototype course could be up and running in a short period. Since the program is cloud-based, collaboration and feedback with the team members and stakeholders could be easily achieved both during

development and the prototype phases. The final product looks polished and professional.

mAuthor and Evolve. Following the eLearning Tool Evaluation Rubric, mAuthor and Evolve also rated highly in all criteria except ease of use as the interface was not intuitive. The interface required multiple steps to achieve one task. In the case of *Evolve*, the choices used a different vocabulary than is commonly seen in other authoring systems like *Captivate* or *iSpring*. Granted, there was an explanation for each term one needed to take time to read and then decide if that was the correct choice. A series of video tutorials is available for both programs but would need to be viewed multiple times. Time would be required to practice each tutorial sufficiently to be able to design the course comfortably.

Both products also offered interactive features such as discussion boards and assessments to increase collaborative and problem-solving skills, the ability for live collaboration during design and testing and would produce a polished and professional course. Unfortunately, the interface of both of these programs would require many hours of training time to overcome the steep learning curve for the user to feel comfortable putting the course together.

Following the rubric and reviewing the products using the free trial. The program that would be the best fit for the project would be *IsEazy*. The more straightforward user interface that requires less time for training will keep the project on schedule. The ability to collaborate with team members will allow for revisions to be made before testing of the course.

Evaluation

An additional descriptive term was noted in the research on authoring tools – rapid eLearning authoring tools. According to Orsborn's (2017) article, rapid e-learning authoring tools are platforms that enhance designers, developers, and educators to create online learning experiences without the need for programming skills. Examples of rapid e-learning authoring tools are Adobe Captivate and Articulate Storyline. Much of this project will be designed and developed by a small group with limited skills building online courses. Orsborn looks at the challenges and opportunities of working with rapid authoring tools with a focus on the increase of interactivity they can provide. Orsborn cites Cosmin and Anca's article (2016) on developing interactive content which notes that making course material interactive can be a challenge. When looking at a piece of course material, one needs to decide the level of interactivity needed to bring about learning and secondly how to make that interactivity translate through the learning tool. Gutierrez (2012) defines four levels of interactivity: 1) passive or no interaction, 2) limited or which allows a student to navigate a site, click on objects or answer simple questions, 3) moderate which has a higher degree of complexity such as animated videos or scenario-based cases, and 4) simulation and game-based learning.

Interactive materials can help learners remember core concepts. Orsborn (2017) further notes what brings about an improved memory of core concepts is presenting the content in multiple ways to suit diverse learning styles. These statements shed light on the challenge for this project. The pre-course must connect the core concepts of dental radiology to provide the base knowledge needed to perform at the face-to-face training that occurs afterward.

Orsborn (2017) then looks at why mastering elearning development skills are beneficial for the teacher. Orsborn (p. 48) notes that many educators are subject matter experts themselves

and are fully capable of researching topics and maintain evidence-based content. Expert knowledge determines the quality of the material being used and the best way to deliver the material to the learner to stimulate learning. Many teachers in the field of veterinary medicine are asked to teach based on their expertise in the course topic.

Other challenges when working with rapid eLearning authoring tools is cost. These tools are commonly available either through a subscription or purchase of a license. A free subscription is an excellent option while learning and troubleshooting the software. When deciding on an authoring tool, finding companies that offer an educational discount or volume discount are a way to save money. The second cost concern according to Orsborn is training time. Live training programs for some software programs can cost from \$600 - \$2500 (p. 49). These additional expenses make options such as video tutorials offered by the platform company or on *YouTube* more attractive.

IsEazy has a free limited subscription for a single author (IsEazy, Account management, 2018). Only three projects are allowed, and they will carry the *IsEazy* watermark. If time passes between logins, *IsEazy* will request to confirm an email address. The confirmation process is quick, and the projects are still intact. The higher-level subscription plans are quoted in euros. The approximate price in US dollars is \$34/ month for a starter single-user subscription. There are also professional and business subscription levels.

Cost Estimation

The scenario for this cost estimation covers training time to learn the eLearning authoring tool plus the designing time to build a course with six units.

	Percentage of Time	Hours
Needs Assessment	3%	9.72

Prepare Project Plan	2%	6.48	
Conduct Course Content/Learning Analysis	5%	16.2	
Develop Instructional Media Design			
Package	10%	32.4	
Develop Prototype Lesson	5%	16.2	
Develop Flowcharts	3%	9.72	
Develop Script/Storyboards	19%	61.56	
Produce/Acquire Media (Photos, audio, video)	13%	42.12	
Author Course	30%	97.2	
Evaluate the Course (In-Process Reviews)	10%	32.4	
			Total
	100%	324	Hours to create a course
Instructor Prep Time		9	hours

	Labor Cost	
Instructional Designer labor cost	\$9,344.16	
Instructor labor cost	\$346.08	
Learner's wages	\$150.00	
Travel costs	\$0.00	
	\$9,840.24	Total
Misc Costs:		
Equipment IsEazy yearly subscription	\$940.00	
Outside vendor	\$0.00	
Consultant	\$0.00	
Video	\$600.00	
Other	\$0.00	
	\$11,411.24	Grand Total

Prerequisite Skills

When working with eLearning platforms, it is essential to have your course designed and developed before you work with the platform. The preparation simplifies the building of the course on the platform. Basic computer experience with uploading and downloading course

files and multimedia components are needed to begin using *IsEazy*. Once the subscription is purchased, training is available through the *IsEazy* website. Manufacturer generated tutorials on the *IsEazy* website (2018b) provides access to a wide audience. Learners can access the training on their own time vs. the expense of scheduling a webinar or face-to-face training. There are video tutorials attached to each component of the software. Once the initial training is completed, users can take more advanced training by reading the support documents on the website or contacting support by email.

Potential Challenges and Solutions

Table 5
Inherent Challenges and Solutions with IsEazy

Challenge	Solution
Older versions of IsEazy	Since <i>IsEazy</i> is cloud-based, software updates will automatically occur through the website.
Software upgrades and support are free for one-year standard	Since <i>IsEazy</i> is cloud-based, software upgrades happen when one purchases a higher-level subscription.
Technical issues	<i>IsEazy</i> offers documentation, webinars and online tutorials (IsEazy, 2018b). Upon examination of the <i>IsEazy</i> website, this amounts to articles and email support. Support can be reached by chat or by submitting an email to their support page.

Website Technology

This section will look at website builders and their role in this project. According to a Huffington Post article, the goal of website building is to insert your business or training where it can be seen and easily accessed. In education, websites are used to provide course information such as assignment instructions and provide opportunities for collaboration through group work. Options for building websites are to hire a professional who builds a website based on client specifications. The benefit of hiring a professional is the website is designed to the client's needs, is well organized and monitored for potential flaws. The downside of hiring a professional website builder is cost and time lags when the website information needs to be updated.

Many free website builders allow the user to design their own. Users can try out these choose which one suits their needs. Basic computer skills are needed to navigate and edit the website such as dragging and dropping, uploading content, and choosing layouts and colors that allow the visitor to read the material comfortably (Cronin, 2009) . Another consideration is the website's ability to transfer from a desktop to mobile devices without taking away readability or navigation capabilities. Once the website builder is chosen and basic design mastery is achieved, software upgrades can be purchased to gain added features. Lastly, to publish the website, a unique domain name needs to be found. Domain names can be bought, or some programs have free subdomains that piggyback off the website builder.

The website builders reviewed for this section were selected on usability, cost, and for its ability to be used as an educational tool (Carmichael, 2018). An initial search was performed to find free website builders for e-commerce and educational applications. For this MSIDT project,

educational website builders were preferred due to the ability for student design and collaborative experiences.

Selection

The three technologies reviewed for this project were *Wix*^{xiii}, *Weebly*^{xiv}, and *Google Sites*^{xv}. These three builder programs were rated highly for education and usability. All three builders had free subscriptions with the ability to upgrade to add features and remove ads. YouTube tutorial videos that presented each builder for general use and educational use were viewed to become familiar with the features.

All three builders provide templates for educational applications, or a blank template could also be used.

The next challenge to overcome is choosing a domain for the website. A domain is an address where the website is located. Domains can be registered through independent providers such as *BlueHost*, *JustHost* or *Web.com* (Natural, 2018). Many of these sites require the purchase of a subscription. *Wix* and *Weebly* have subdomains that piggyback off their main website. Subdomains are free to use, but the address length is longer. Another free option for domain registration is *Wix* and *Google Domains* (Wix, 2018) (Google D. , 2018). The benefit of registering a domain ahead of time is the ability to design your website on any builder and export it to the registered domain.

Deciding which website builder was difficult as each option offered educational templates, the ability to add multimedia content, and available tutorials to learn the features. All three builders rated highly in usability and privacy options were also available to fit the needs of the online class as it evolves. All three have a responsive design which allows easy access and

readability on all mobile devices. Responsive design is key to the online class to allow participants to access the course on their time.

The chosen website builder will be *Google Sites*. *Google Sites* is highly recommended as an educational tool (Bradbury, 2017). For the needs of the project, the simple user interface would allow for iterations to the site as trainers change. The templates and graphics available are limited, but the program allows additional multimedia objects to be saved to the site repository. The site could be interactive with exercise documents developed for students to fill out and upload to the site.

An advantage to *Google Sites* is the readability adjustment function. The software will automatically read the content and adjust to improve readability. The readability adjustment feature guarantees content that will not overwhelm the participant with harsh contrasts between backgrounds and words, and fonts that are the wrong size or type.

Evaluation

At this stage of the project, the use of website technology would be limited to advertising the training program. The website would be the portal for clinics to register and pay for the training. The site would have information about the layout for both the online and face-to-face portion of the training. The information section would share a description of each unit for both course levels, the audience the training would benefit, and the outcome of the training. Scheduling and purchase of the training could be provided through the website.

Plans for the website would be to address the participants needs after the training is completed. Follow-up training in the form of webinars would be advantageous in two ways. For a small subscription fee, participants could attend pre-recorded webinars reviewing skills learned during the training. Live webinars could be provided as a standard post training class. The

clinic members could present their attempt at full-mouth radiographs with feedback after their presentation.

In their eBook on selling online courses, Siozos et al. (2018) note that an online course can be successful if three essential tools are followed: 1) a dedicated website to showcase services and materials, 2) a blog to communicate with your learners, and 3) an active social presence to share content with learners. These three tools provide the opportunity for interaction and engagement between the trainer and the participant. Increased interaction is a goal for the online portion of the training. The increased interaction will bring engagement towards deeper learning. Deeper learning increases the cognitive function and moves the information into long-term memory. The use of the website as a place for extended training would be a source of support providing a way to practice or perfect skills with coaching. Charging a subscription fee would help pay for the added trainer consultation.

Donelan and Kear (2018) study student motivation in an interactive setting. The essential tools needed to increase student motivation is 1) the design of authentic tasks, and 2) skill development relevant to the workplace (p. 37). These tools are the foundation for medical training as many learners take the skills and apply them in the workplace. It would make sense to build a course of study around authentic activities and tasks. Herrington et al. (2004) argue that the value of authentic activity not only lies in real-life practices but could be designed into online education to enhance learning. Transferring situated learning aka learning by doing to the online environment needs to be translated into a method of teaching that could be used in a face-to-face or online classroom. The function of relevance for application in the project is to provide meaning, enable additional collaborative problem-solving between clinic team members and further skills towards the assessment of achievement (p. 6). In this project, the activity if it's

relevant to the workplace is the most important design element for website-based extended coursework.

Cost Estimation

	Percentage of Time	Hours	
Needs Assessment	3%	8.64	
Prepare Project Plan	2%	5.76	
Conduct Course Content/Learning Analysis	5%	14.4	
Develop Instructional Media Design			
Package	10%	28.8	
Develop Prototype Lesson	5%	14.4	
Develop Flowcharts	3%	8.64	
Develop Script/Storyboards	19%	54.72	
Produce/Acquire Media (Photos, audio, video)	13%	37.44	
Author Course	30%	86.4	
Evaluate the Course (In-Process Reviews)	10%	28.8	
	100%	288	Total Hours to create course

Instructor Prep Time 6 hours

	Labor Cost	
Instructional Designer labor cost	\$8,305.92	
Instructor labor cost	\$230.72	
Learner's wages	\$150.00	
Travel costs	\$0.00	
	\$8,686.64	Total

Misc Costs:	
G Suite Subscription for six users/year	\$720.00
Google Domain Yearly Subscription	\$12.00
Yearly Trainer Website Monitoring Fee	\$6,000.00
Video	\$600.00
Yearly Video Chat Subscription	\$180.00

**Grand
Total**
\$16,049.64

Prerequisite Skills

The best place to start is to register a domain name on Google Domains (Google D. , 2018). Establishing a domain will provide a location to publish the website. The next step is to go to Google Sites. Opening the site will allow you to start building and publishing a website for free. If the website is going to use any Google Apps, getting a subscription through GSuite is the best option. There is a help menu on the Google Sites that handles basic questions. For additional information and tutorials, YouTube has some options using the search term “Google Sites tutorials.” Some tutorials range from beginner to advanced.

Templates are available that provide the background for the website that can be tailored to the needs of the course. Multimedia components can be dragged and dropped into each page. A menu of pages allows the user to keep the content organized and updates after each addition. It is important to save the updates as they happen in case there is a glitch in the connection (Bradbury, New Google Sites for beginners, 2018). Each page can be viewed in mobile format along the way. Once the website is finished, it can be published through the domain.

Potential Challenges and Solutions

Table 6
Inherent Challenges and Solutions with Google Sites

Challenge	Solution
<i>Classic Google Sites</i>	The first iteration of Google Sites is now called <i>Classic Google Sites</i> . The current version is <i>New Google Sites</i> . It is recommended that users upgrade to take advantage of all the building features.

<p>Privacy</p>	<p>The user can control whether the site remains private or goes public. For this project, the site would need to be public for exposure to attract clinics to access the information.</p> <p>Access to the training would be once a subscription had been purchased.</p>
<p>Technical issues</p>	<p>Support can be reached clicking on the Help Menu on the left drop-down menu. The help page has a search box to look for answers (Google S. , 2018). Once the search list is opened there is additional access to a help forum. This limited access to help could be a problem if the search does not come up with a solution.</p>

Executive Summary

Introduction. The online course teaches the essential baseline knowledge to move into the face-to-face portion of the course: oral anatomy, the use of the dental chart, radiographic equipment essentials and radiation safety. The course will be presented to the participants in a Learning Management System (LMS). The course content in the LMS will allow for participants to access the course from either a desktop computer or a handheld device. The units will need to be easily accessible and completed in a short period to keep the participant focused on the course. That focus will come from providing basic information as a must-learn and

providing an interactive component for adding challenge and engaging higher order thinking skills. The interactive element will be questions asked during the unit presentations and an assessment at the end of each unit.

The technologies chosen for this project are part of the online course for this project. The most important criteria for the technologies are the abilities to make the content interactive. Medical procedures are best-taught hands on. Dental x-ray positioning training has better outcomes when taught hands-on. Other parts of the project such as the online portion will need a balance of auditory, visual, and interactive. Interactivity in an online venue should be designed to be as close to hands-on as possible.

There is a myriad of products available for each type of technology. The list of products was prioritized starting with a series of basic questions. The list was reprioritized following a rubric that graded the level of each criterion. The technology with the highest grades was the one chosen for the project. The last iteration of the list factored in the cost of the technology.

First Level: Preliminary Questions. Stephanie's article on evaluating technology tools provided a list of criteria that to assist in choosing technology tools for the learning environment (Stephanie, 2011). These were the questions used as part of the decision-making process for choosing the technologies used in this project:

1. What do your students need to learn?
2. Does it encourage higher order thinking skills?
3. Does it follow Universal Learning Design principles?
4. Is the software easy to learn and user-friendly? How much can the software expand with increased use and access? Does it integrate with other tools?
5. What is the cost?

6. What are the user ratings? Who do you contact with questions? What is the user-interface with customer support?
7. Can projects be shared? How does sharing occur? Is it easy for the receiver to open files and make comments?

Second level: analysis using a rubric. Anstey and Watson (2018) developed an eLearning technologies rubric. The rubric provides criteria and protocol for assessing the suitability of the eLearning technology to help achieve the learning outcome. The rubric grades the functionality, accessibility, technical, mobile design, privacy data protection, social presence, teaching presence, and cognitive presence.

Presentation technology: ISpring. ISpring was chosen because it fit well into the eLearning component of the project. ISpring sells eLearning software that develops educational content which can be later published to an LMS (ISpring, 2018). ISpring downloads as an add-on into PowerPoint. As many are familiar with PowerPoint, this integration increased ease-of-use and less time needed to learn the software. The iSpring program has interactive slide templates using a variety of modalities. There is also a dialog feature called TalkMaster that sets up a scenario for the participant, and they answer questions based on the situation. Lastly, assessments can be made and added to the presentation.

The presentations designed for the course will follow Mayer's Multimedia Learning Theory (2008) which looks at how the combination of words and picture affects the ability of the brain to receive the information and store it into long-term memory. The storage of information into long-term memory is found with deep learning. It is better to exchange full sentences on a slide to short phrases and be sure that any graphics align the topic on each

slide. In the revised Bloom's Taxonomy, learners move into higher order thinking as difficulty increases (Krathwohl, 2002). Though the online course for this project will be an introduction, interaction with the material will start to move into the Applying level. Audiovisual components will stimulate the lower order teaching levels of Remembering and Understanding.

Prerequisite skills. Once the subscription is purchased, training is available through the iSpring website. There are video tutorials attached to each component of the software. Secondly, iSpring holds regular live webinars on Wednesday that are free of cost with a paid subscription. Webinars are recorded and can be watched later. It is recommended that the stakeholders walk through the software add-in in PowerPoint and then pick and choose the webinars that would be the most beneficial.

Graphics technology: SnagIt. TechSmith SnagIt was the best choice for the project due to ease of use, price and customer support. SnagIt has a simple, intuitive user interface to make short, focused video clips such as infographics. Future use for this program could be video demonstrations of radiographic positioning. The educational discount made the program the most affordable of the three tested. Lastly, the Camtasia website provides webinars and tutorials to learn the features of the software better.

According to Pettit (2018), video casts or vodcasts are gaining popularity in medical education. Most videocasts only provide passive learning as students cannot physically interact with the material. In her article, Pettit recommended making the videos more interactive by giving auditory instructions throughout the presentation. The instructions can be in the form of games, practice questions, a study guide tool, or hyperlinks to additional

information. These suggestions are ways to accentuate essential points in the video presentation and provide relevance to the learner.

The “R” in Keller’s ARCS Model of Motivational Design is relevance or how does the information fit to the current situation (Keller, 1999). The guiding strategies for relevance are 1) familiarity, 2) goals and 3) motives. Veterinary clinics have full body radiograph units on which all medical staff has been trained to use. This example represents familiarity as many of the techniques of full-body are like dental radiographs. The goal strategy is represented by the breakdown of the training into goals or steps. Each step or goal must be achieved before moving on to the next one. The motive strategy is represented when we look at the staff members that have been involved in the decision making for the purchase of the dental radiograph unit. Learning how to use the unit and integrate it into the dental service is a prime motivator. The topics of the videocasts must teach content that assists the participant to reach the objectives designed to achieve the training goals.

Prerequisite skills. Once the subscription is purchased, training is available through the TechSmith website. Click on the Snagit tutorials button (Trainings and tutorials, 2018). There are video tutorials attached to each component of the software. Once the initial training is completed, users can take more advanced training at the links on the lower half of the webpage. The TechSmith blog also has additional training articles (Techsmith blog, 2018).

Video technology: TechSmith Camtasia 2018. Video editing does take some time to learn. For this project, user-friendliness was crucial. Training time is required to learn any of these programs, so the learning curve needed to be as low as possible. Secondly, could the

program record and edit video presentations? Having a video program be dual purpose will save on design and development time as the need to jump from one program to another is removed. Lastly, could the final project be uploaded into an LMS or even to YouTube?

As with graphics technology, video technology as part of the training, needs to provide active learning. For this project, both voice-over and picture-in-picture can produce interactivity through connection with the material and with the instruction. Picture-in-picture video style overlays secondary videos on the main video. These can be the instructor giving the presentation or a demonstration of a skill. Both styles allow the learner to see and hear the instructor which enhances the communication between the online facilitator and the participant. Voice-over presentation is used extensively in higher education. In Miner's study, the multimedia video is a viable resource to share course materials. Video supplements instruction by expanding the learners understanding of the content and promote observational learning (Miner, 2018). Secondly, video works best in the eLearning environment because, if designed well, allows for autonomous learning.

Prerequisite skills. Once the subscription is purchased, training is available through the TechSmith website. Click on the Camtasia tutorials and trainings (Trainings and tutorials, 2018). There are video tutorials attached to each component of the software. Once the initial training is completed, users can take more advanced training at the links on the lower half of the webpage. The *TechSmith* blog also has additional training articles (Techsmith blog, 2018).

eLearning technology: IsEazy. Following the eLearning Tool Evaluation Rubric, IsEazy' rated highly in all criteria. After reviewing the introductory video tutorial, the simplicity of the layout was important for confidence building when working with the

program. A basic course could be designed using a blank or template. The program offered interactive features such as discussion boards and assessments to increase collaborative and problem-solving skills. This program would be a good choice for the project because it could integrate the materials that can be used right away from the course. A prototype course could be up and running in a short period. Since the program is cloud-based, collaboration and feedback with the team members and stakeholders could be easily achieved both during development and the prototype phases. The final product looks polished and professional.

According to Orsborn's (2017) article, rapid e-learning authoring tools are platforms that enhance designers, developers, and educators to create online learning experiences without the need for programming skills. Rapid e-learning authoring tools are categorized as WSIWYG – What You See Is What You Get. According to the Free Dictionary (2014), WSIWYG is defined as “relating to or being a computer system in which the screen displays text and graphics exactly as they will be printed”. WSIWYG implies the user interface allows the user to view something like the end result while the project is being created.

Examples of rapid e-learning authoring tools are Adobe Captivate and Articulate Storyline. Much of this project will be designed and developed by a small group with limited skills building online courses. The pre-course must connect the core concepts of dental radiology to provide the base knowledge needed to perform at the face-to-face training that occurs afterward. Orsborn then looks at why mastering elearning development skills are beneficial for the teacher. Orsborn (p. 48) notes that many educators are subject matter experts themselves and are fully capable of researching topics and maintain evidence-based content. Expert knowledge determines the quality of the material being used and the best

way to deliver the material to the learner to stimulate learning. Many teachers in the field of veterinary medicine are asked to teach based on their expertise in the course topic.

Prerequisite skills. Once the subscription is purchased, training is available through the *IsEazy* website. Click on the support tab on the *IsEazy* website (2018b). There are video tutorials attached to each component of the software. Once the initial training is completed, users can take more advanced training by reading the support documents on the website or contacting support by email.

Website technology: Google sites. According to a Huffington Post article, the goal of website building is to insert your business or training where it can be seen and easily accessed (Laurinavicus, 2016). In education, websites are used to provide course information such as assignment instructions and provide opportunities for collaboration through group work. Options for building websites are either hire a professional to build the website or build the website yourself. The benefits of hiring a professional are the website is designed to the client's needs, is well organized and monitored for potential flaws. The downside of hiring a professional website builder is cost and time lags when the website information needs to be updated.

Many free website builders allow the user to design their own. Users can try out these choose which one suits their needs. Basic computer skills are needed to navigate and edit the website such as dragging and dropping, uploading content, and choosing layouts and colors that allow the visitor to read the material comfortably (Cronin, 2009). The website builders reviewed for this section were selected on usability, cost, and for its ability to be used as an educational tool (Carmichael, 2018). An initial search was performed to find free website builders for e-commerce and educational applications. For this MSIDT project,

educational website builders were preferred due to the ability for student design and collaborative experiences.

The domain will be chosen through Google Domains. The site name can be tailored to the website, and it could potentially be free. If the domain name is not free, it costs \$12.00/year. The website builder will be Google Sites. Google sites are highly recommended as an educational tool. It allows the uploading of multimedia and interactive content and documents that could be filled out and returned by the participant. Websites built on Google sites can be accessed on any mobile device. The biggest advantage as a website builder is their readability checker. The builder will automatically read the content and adjust to improve readability. This guarantees a site that will not overwhelm the participant.

Uses for a website builder could include collaboration projects where participants build a website as a group after their face-to-face training to show their progress at taking radiographs and the ability to provide a place for follow up mini-courses outside of the training venue. These courses could be accessed by subscription and build revenue for the training program.

Prerequisite skills. Upon registration on the *Google Sites* websites, the user is ready to begin putting together content on the website. Using the search phrase “Google Sites for Education” brought up many free video tutorials on YouTube. This is a good place to start to get familiar with the features of the site. Once building begins, there is a help page that answers many of the common questions and can take you to a help forum (Google, 2018).

Project cost. The cost estimation covers the building of the course content plus the costs of the individual technologies. The cost of the technology includes the subscription and licensing fee per year for six users. All prices include support and training for each user.

	Percentage of Time	Hours	
Needs Assessment	3%	6.48	
Prepare Project Plan	2%	4.32	
Conduct Course Content/Learning Analysis	5%	10.8	
Develop Instructional Media Design Package	10%	21.6	
Develop Prototype Lesson	5%	10.8	
Develop Flowcharts	3%	6.48	
Develop Script/Storyboards	19%	41.04	
Produce/Acquire Media (Photos, audio, video)	13%	28.08	
Author Course	30%	64.8	
Evaluate the Course (In-Process Reviews)	10%	21.6	
	100%	216	Total Hours to create course
Instructor Prep Time		6	hours

	Labor Cost	
Instructional Designer labor cost	\$6,229.44	
Instructor labor cost	\$230.72	
Learner's wages	\$150.00	
Travel costs	\$0.00	
	\$6,610.16	Total

Misc Costs:		
Presentation Software/year	\$1,000.00	
Graphics Software/year	\$200.00	
Video Software/year	\$250.00	
Videotaping	\$600.00	
Elearning Software/year	\$940.00	
Website Techology and Domain Name	\$750.00	
	\$10,350.16	Grand Total

Presentation

https://youtu.be/8P5lO26lN_Q

Reflection

There were two learning moments: 1) alignment of the media with the course content needs to be interactive and direct, and 2) media and graphics on the screen are there to make a point, not give a lecture.

Presentation technology. The presentation technology will be used to design and develop each unit of the online course. The design phase began during IDT 604 with a skeleton framework of each unit using *iSpring*. These skeleton units will be designed further as the project develops. I have intermediate experience working with PowerPoint and since *iSpring* is an add-on to PowerPoint, making further updates to the design should be easily done. I will begin the process of working with *iSpring* by taking the free webinars to become more familiar with the educational components within the software to work on increasing interactivity for the participant.

Graphics technology. The graphics technology will be used to design and record demonstration videos for the dental charting, radiographic equipment, and radiation safety units of the online course. Future uses will include dental x-ray positioning videos. I am a beginner using *Snagit*, and my first real opportunity came with recording the executive summary video. The software has a medium learning curve that I can overcome with the help of the TechSmith tutorials. One feature I found useful in *Snagit* is screen capture. The screen capture images are kept in their editing are for use in different projects.

Video technology. The video technology will be used for recording voice-over lectures that are longer than thirty minutes. I have recorded using an older version of *Camtasia* for my lectures that I share with my nursing students at St. Petersburg College. The benefit of *Camtasia* is their editing feature. With training, I want to become more proficient at editing videos and adding multimedia. At this point in the project, I may be able to get my recording needs done with SnagIt as it also comes with an editor.

eLearning authoring technology. The authoring technology will be used to provide a platform for the online unit. I have experience uploading content into my online course for my regular teaching job. I am a beginner using *IsEazy*, so training is crucial to becoming familiar with the computer skills I will need to upload content. Before I begin training, I want to finish designing all of the units including the multimedia aspects and then add them to the authoring tool. The completed course will then be uploaded to a future LMS.

Website technology. At this point in the project, I have no immediate need for the website technology as the online course will not be featuring collaborative projects or discussions. The use of the website as a place for extended training would be a source of support providing a way to practice or perfect skills with coaching. Charging a subscription fee would help pay for the added trainer consultation. Building websites intrigues me, and I want to try them outside of my coursework as part of my dentistry nursing curriculum. I am a beginner and need some focused time to learn the features, work with readability and look into e-commerce to build my training business.

References

- Anstey, L. (2018, September 10). *A rubric for evaluating e-learning tools in higher education*. Retrieved from Educause Review: <https://er.educause.edu/articles/2018/9/a-rubric-for-evaluating-e-learning-tools-in-higher-education>
- Bradbury, J. (2017, December 18). *The great edtech debate: Google Sites vs Google Classroom vs Blogger*. Retrieved from TeacherCast: <https://www.teachercast.net/blog/the-great-edtech-debate-google-sites-vs-google-classroom-vs-blogger/>
- Bradbury, J. (2018, March 4). *New Google Sites for beginners*. Retrieved from YouTube: <https://www.youtube.com/watch?v=w05NIgHNzWs>
- Carmichael, C. (2018, November 8). *Website builder comparison chart*. Retrieved from Website Builder Expert: <https://www.websitebuilderexpert.com/website-builders/comparisons/>
- Chen, C.-M. W.-H. (2015). Effects of different video lecture types on sustained attention, emotion, cognitive load, and learning performance. *Computers & Education, 80*, 108-121. doi:10.1016/j.compedu.2014.08.015
- Cosmin, H. A. (2016). The development of interactive content. *12th International Scientific Conference eLearning and Software for Education, 3*, pp. 75-78. eLSE. doi: 10.12753/2066-026X-16-187
- Cronin, M. (2009, March 18). *10 principles of readability and web typography*. Retrieved from Smashing Magazine: <https://www.smashingmagazine.com/2009/03/10-principles-for-readable-web-typography/>
- Donelan, H. K. (2018). Creating and collaborating: Students' and tutors' perceptions of an online group project. *International Review of Research in Open and Distributed Learning, 37*-54. Retrieved from <https://eric.ed.gov/?id=EJ1178650>

eLearning software that works. (2018). Retrieved November 5, 2018, from iSpring:

<https://www.ispringsolutions.com/ispring-suite#pricing>

ELearning, I. (2018). *eLearning Authoring Tools*. Retrieved from ELearning Industry:

<https://elearningindustry.com/directory/software-categories/elearning-authoring-tools>

ELearning, I. (2018). *Evolve vs IsEazy vs mAuthor*. Retrieved from ELearning Industry:

<https://elearningindustry.com/directory/compare/elearning-authoring-tools/evolve-vs-iseazy-vs-mauthor>

Emaze. (2018). *Home*. Retrieved from Emaze: <https://www.emaze.com/>

Garrett, N. (2016). How do academic disciplines use PowerPoint. *Innovative Higher Education*, 41, 365-380. doi:10.1007/s10755-016-9381-8

Google, D. (2018). *Google Domains Beta*. Retrieved from Google Domains:

<https://domains.google>

Google, S. (2018). *How can we help you*. Retrieved from Sites Help:

https://support.google.com/sites?usp=sites_home#topic=7184580

Guide, W. (2018). *Best website builders for education, teachers, cl;assroom*. Retrieved from Website Builders: <http://www.webbuildersguide.com/website-builder-categories/best-website-builders-for-education/>

Gutierrez, K. (2012, July 16). *Levels of interactivity in eLearning: Which one do you need*.

Retrieved from Shift Disruptive ELearning:

<https://www.shiftelearning.com/blog/bid/190140/Levels-of-Interactivity-in-eLearning-Which-one-do-you-need>

- Herrington, J. R. (2004). Designing authentic activities in web-based courses. *Journal of Computing in Higher Education*, 3-29. Retrieved from <http://search.proquest.com/docview/2003>
- IsEazy. (2018). *Account management*. Retrieved from IsEazy: <https://iseazy.com/my/project-manager/admin/user-account>
- IsEazy. (2018b). *Frequently asked questions and support*. Retrieved from IsEazy: <https://help-en.iseazy.com/>
- iSpring Community. (2018). Retrieved November 4, 2018, from iSpring: <https://community.ispringsolutions.com/>
- ISpring, S. (2018). *ELearning software that works*. Retrieved from ISpring: <https://www.ispringsolutions.com/>
- Keller, J. (1999). Using the ARCS motivational process in computer-based instruction and distance learning. *New Directions for Teaching and Learning*(78), 37-47.
- Krathwohl, D. (2002). A revision of bloom's taxonomy: An overview. *Theory into Practice*, 41(4), 212-218. doi:10.1207/s15430421tip4104_2
- Lindberg, O. O. (2017). Same but different? An examination of Swedish secondary school teachers' and students' views and the use of ICT in education. *The International Journal of Information and Learning Technology*, 34(2), 122-132. Retrieved from <https://search.proquest.com/docview/1879964541?accountid=32521>
- Liu, P. (n.d.). *Coherence principle*. Retrieved from Cognitive Theory of Multimedia Learning: <https://sites.google.com/site/cognitivetheorymmllearning/coherence-principle>
- Malamed, C. (2011, March 29). *What is cognitive load*. Retrieved from The eLearning Coach: <http://thelearningcoach.com/learning/what-is-cognitive-load/>

- Mayer, R. J. (2008). Revising the redundancy principle in multimedia learning. *Journal of Educational Psychology, 100*(2), 380-386. doi:10.1037/0022-0663.100.2.380
- Miller, M. (2017, January 24). *New Google Sites: 10 things teachers must know*. Retrieved from Ditch That Textbook: <http://ditchthattextbook.com/2017/01/24/new-google-sites-10-things-teachers-must-know/>
- Miner, S. S. (2018). Learning via video in higher education: An exploration of Instructor and student perceptions. *Journal of University Teaching & Learning Practice, 15*(2). Retrieved from <https://ro.uow.edu.au/jutlp/vol15/iss2/2>
- Morrison, G. (2013). Developing Instructional materials. In G. Morrison, *Designing effective instruction* (7th ed., pp. 186-221). Hoboken: John Wiley and Sons.
- Natural, I. (2018). *Top 10 website hosting*. Retrieved from Natural Intelligence: <https://www.top10bestwebsitehosting.com>
- Orsborn, G. (2017). Use of rapid eLearning authoring tools in higher education. *Whitireia Nursing and Health Journal, 24*, 47-51. Retrieved from <http://search.ebscohost.com.proxy-library.ashford.edu/login.aspx?direct=true&db=ccm&AN=126414166&site=eds-live&scope=site>
- Pettit, R. (2018). Ten tips to encourage student interaction with screen-capture type vodcasts. *Advances in Medical Education and Practice, 9*, 535-540. doi: 10.2147/AMEP.S164751
- Reigeluth, C. (1999). The elaboration theory: Guidance for scope and sequence decisions. In C. Reigeluth, *Instructional Design Theories and Models: A New Paradigm of Instructional Theory* (Vol. 2, pp. 425-453). Mahwah, NJ: Routledge.

Siozos, P. M. (2018). *The ultimate guide to selling online courses. I.* London, United Kingdom.

Retrieved November 24, 2018, from [https://learnworlds.us10.list-](https://learnworlds.us10.list-manage.com/track/click?u=f229c4fe2c00ee4033026b2d6&id=17a54b90c5&e=64f0defc7)

[manage.com/track/click?u=f229c4fe2c00ee4033026b2d6&id=17a54b90c5&e=64f0defc7](https://learnworlds.us10.list-manage.com/track/click?u=f229c4fe2c00ee4033026b2d6&id=17a54b90c5&e=64f0defc7)

9

Snagit Pricing. (2018, November 4). Retrieved from TechSmith:

<https://www.techsmith.com/snagit-pricing.html>

Stapleton, C. H. (2014). Designing interplay learning landscapes to evoke emotions, spark the

imagination and promote creative problem solving. In A. Hirumi (Ed.), *Grounded*

Designs for Online and Hybrid Learning: Designs in Action (pp. 159-190). Eugene:

ISTE.

Stephanie. (2011, April 4). *Checklist for evaluating tech tools, apps, software, and hardware.*

Retrieved from TechPudding: [http://techpudding.com/2011/04/04/checklist-for-](http://techpudding.com/2011/04/04/checklist-for-evaluating-technology-software-and-applications/)

[evaluating-technology-software-and-applications/](http://techpudding.com/2011/04/04/checklist-for-evaluating-technology-software-and-applications/)

Sullivan, N. (2015). An integrative review: Instructional strategies to improve nurses' retention

of cardiopulmonary resuscitation priorities. *International Journal of Nursing Education*

Scholarship, 12(1), 1-7.

Support help. Answers. (2018). Retrieved November 5, 2018, from TechSmith:

<https://support.techsmith.com/hc/en-us>

Sweller, J. C. (1994). Why some material is difficult to learn. *Cognition and Instruction*, 12, 185-

233. Retrieved from

[https://www.learnlab.org/research/wiki/images/5/54/Sweller_Chandler_Why_Some_Mat](https://www.learnlab.org/research/wiki/images/5/54/Sweller_Chandler_Why_Some_Material_is_Difficult_to_Learn.pdf)

[erial_is_Difficult_to_Learn.pdf](https://www.learnlab.org/research/wiki/images/5/54/Sweller_Chandler_Why_Some_Material_is_Difficult_to_Learn.pdf)

TechSmith. (2018). *Camtasia 2018 Pricing*. Retrieved November 5, 2018, from TechSmith:

<https://www.techsmith.com/camtasia-pricing.html>

Techsmith blog. (2018). Retrieved November 5, 2018, from TechSmith:

<https://www.techsmith.com/blog/>

Tirziu, A.-M. V. (2015). Education 2.0: E-Learning Methods. *5th World Conference on Learning, Teaching and Educational Leadership, WCLTA 2014*. 186, pp. 376-380.

Procedia - Social and Behavioral Sciences. doi:10.1016/j.sbspro.2015.04.213

Trainings and tutorials. (2018). Retrieved November 5, 2018, from Techsmith:

<https://www.techsmith.com/tutorial.html>

Wix. (2018). *Get your domain and build a free website*. Retrieved from Wix:

<https://www.wix.com/html5us/domain-solutions>

ⁱ Prezi, Inc., <https://prezi.com/product/>

ⁱⁱ Emaze. <https://www.emaze.com/>

ⁱⁱⁱ iSpring Solutions, Inc. <https://www.ispringsolutions.com/>

^{iv} TechSmith SnagIt, Techsmith Corporation <https://www.techsmith.com/screen-capture.html>

^v Sparkol VideoScribe, Sparkol Ltd., <https://www.videoscribe.co/en/>

^{vi} Movavi Screen Capture Studio, Movavi Software Ltd. https://www.movavi.com/screen-recorder/?asrc=main_menu

^{vii} Adobe Premier Pro CC, Adobe. <https://www.adobe.com/products/premiere.html>

^{viii} TechSmith Camtasia 2018, TechSmith Corporation. <https://www.techsmith.com/video-editor.html>

^{ix} Microsoft Movie Maker 10, Microsoft <https://www.microsoft.com/en-us/p/movie-maker-10-tell-your-story/9mvfq4lmz6c9?activetab=pivot%3Aoverviewtab>

^x IsEazy, IsEazy. <https://iseazy.com/en/about-us>

^{xi} Evolve, Apitierre Ltd. <https://www.evolveauthoring.com/>

^{xii} MAuthor, Learnetic SA. <https://www.learnetic.com/mauthor/>

^{xiii} Wix.com, Inc. <https://www.wix.com/>

^{xiv} Square, Inc. <https://www.weebly.com/>

^{xv} Google, Inc. <https://sites.google.com/new>