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IDT 609 (Advanced Instructional Design and Technology I): Alpha Test Report

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

By

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To

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Major Findings

The alpha test was given to four test participants from April 4 – April 12, 2019. Three of the tests were administered the test remotely using a video conferencing program called ZOOM. One participant, who did not have a webcam, filled out the survey on their own with the moderator available by phone if there were questions. Each participant was sent an email with the testing instructions and three links. The three links were: 1) the link to the prototype course, 2) the non-disclosure statement, and 3) the link to the video meeting with the date and time of the test unless they were taking the test on their own.

The testing survey consisted of nine tests with three to nine tasks or instructions per test. Using a method developed by Matthew Weber (2014), information from the survey results was organized into four areas that were repeated throughout the entire survey. The four areas examined in the survey: 1) navigation, 2) tools, 3) presentation, and 4) content.

Navigation

The navigation survey questions mostly examined the user's ability to get around in the prototype online course. Questions covered identifying what part of the course one was in, moving from unit to unit and slide to slide. The questions also covered the user's ability to move to links that held documents and course materials back into the main course.

The testing participants were successful for the most part performing the tasks and following the instructions given to them. There were two problematic areas for the participants: 1) moving from a course link destination back into the course and 2) finding their way within the course when they were given a location.

The layout of the online course required users to leave the course to access documents or links. There was no return button to click on in the course materials to return to the course. The

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user has to click on the course tab at the top of their browser page. The first test that asked the user to find their way back to the course, three of the users needed time to figure out that they had to find the tab and one of the users had to be shown where the tab was. If there were many tabs open, the name of the course was blocked showing only the icon for the course platform. Once they figured out where the course tab was, the users could easily find their way back to the main course.

The second issue came when users were asked to find a specific location in the course. The layout of the online course provided a list of sections the course provided. The location of the list was only labeled with an icon which was not bright and easy to find. Next, the list was numbered but the numbers weren't specifically labeled until the participants started moving from page to page. According to the slide numbering, each number on the course list was a section, and each section had a group of slides. The course was divided using unit numbers which did not correspond to the course list number. This discrepancy was the cause for a lot of the confusion noted by the participants.

Tools

The survey questions that focused on the tools of the prototype examined the buttons and controls the participants used to perform the tasks. The results showed that all the participants could easily find the link buttons and all the link buttons performed as expected. One problem area for one participant was the download button on a slide. The choice of background graphic made it difficult for that participant to see.

The control buttons for the videos were easy to find and use by all the participants. One of the videos used in the test did not come with closed-captioning. The lack of a closed-captioning feature could be problematic if future users had hearing disabilities.

Presentation

The survey questions on presentation examined the layout and functionality of pages and documents in the course. The participants were asked to give their feedback on pages within the course, course documents and the layout of pages that were accessed through destination links.

Course pages. The course pages were praised for their readability and their professional appearance by all the attendants. Two participants made suggestions that a couple of the photographs that were uploaded from personal stock were not as strong and vibrant as the ones that came from online sources. One participant noted that the font color needed to be brighter and larger for easier reading.

Assessments. The assessments used in the test were well received. Some of the participants felt the design was efficient and simple with clear and specific questions. One participant noted that assessment given at the end of the course seemed a little long but appreciated that future users could add comments if they wanted to. Comments were not mandatory. The assessments were found to be easy to fill out and submit. Three of the participants noted that there was too much white space on the document and an unnecessary document flourish that made it appear to have multiple pages.

Quizzes. The course quizzes provided mixed results. The free subscription had expired which caused a temporary loss of access. Due to the loss of access, one of the participants was not able to try the quizzes. The remaining participants found the quiz experience very welcoming because taking the quizzes felt more like playing a game using bright colors and motion graphics. User results were presented in a positive light that focused more on learning from mistakes than chastising them. Participant comments included having feedback included

with all answers right or wrong, numbering the questions, and adding graphics to some of the questions.

Documents. The syllabus document was reviewed by the participant. The course program links documents to Google Docs. When the user opens the document, Google Docs provides the ability to print or download the syllabus. The participants noted that the syllabus had all the information that was needed though one user felt there needed to be more descriptions of the course units. All of the participants felt that having the picture of the instructor provided a connection between student and teacher.

A medical diagram was presented to the participants for their feedback. Half of the participants felt the diagram was difficult to read without some enlargement. The graphic was blurry, and the highlighting over the keywords made the keywords more difficult to read. All the participants felt that the graphic was a necessary adjunct to the unit information and agreed that having the ability to download the diagram would be beneficial.

Videos. The participants were asked to watch two of the videos in the course. One of the videos was a homemade voiceover video presentation, and the other was a professionally done presentation. The homemade video was not scripted, and the professionally made video was scripted. The participants noted that in both videos, the presenter's voice had consistent cadence without being monotone. One of the participants noted the large numbers of “ums” in the unscripted video which were absent in the scripted video. Another participant noted that the homemade video needed an image or a picture-in-picture of the video presenter to connect the user.

Content

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The survey questions on content focused on the role of course components to the subject matter. Course materials were evaluated for their value to the course. Materials were also evaluated for proper placement within the goals and objectives of the course. Materials that were evaluated for content were the syllabus, the syllabus confirmation, the course navigation video, the medical diagram, the unit video, the quizzes, and the course assessment. All the participants felt that each one of the materials played a role in the course.

Areas for change included: 1) more information in the course syllabus that provides quiz and grading information, 2) move the navigation video to the syllabus page, and 3) shortening the course assessment.

Comparison With FEA

The front-end analysis (FEA) was performed in May of 2018. It addressed the development of effective skills and techniques for taking dental radiographs using proper positioning of the digital sensor to improve assessment and diagnosis of pathology. Learning to take dental x-rays in the dog and cat has a steeper learning curve than when learning to take them on people due to differences in oral anatomy.

Training staff to take dental x-rays is currently being taught in four-hour wet labs or as in-clinic training. The goal of the training is to teach the participants enough positioning skills to be able to take dental radiographs. The trainings are always face-to-face and hands-on. The positioning technique is demonstrated, and then each participant repeats the demonstration before we move on to the next position.

A goal sequence was developed to present a program that would cover the training needs of the veterinary staff member. Each goal is a topic in dental radiology that needs to be part of the training to ensure a well-rounded experience for the staff member and provide the skills

needed to perform the tasks successfully. Three of the areas in the goal sequence listed below are the foundation for the coursework used in the prototype. The one addition that was not in the original goal sequence was the unit on the Modified Triadan Numbering System (MTNS). This system has since been added as the computer software that runs the digital sensor records images using this numbering system. There are additional sequences that will be covered in the testing phase that covers the face-to-face training. The testing phase of the face-to-face training will design, develop and review the course materials and assessments that are planned for that half of the course.

Goal sequence

1. The oral anatomy of the dog and cat.

- a. Identifying oral anatomy structures is necessary to learn dental radiography.
- b. Recognizing the oral anatomy of the dog and cat ensures correct placement of the sensor or plate.

2. Components of the dental x-ray generator.

- a. Review generator settings before taking the first image. The manufacturer's instructions come with suggested baseline settings for each type of tooth.
- b. Manipulation of the tube head to adjust the angle using the attached protractor before taking the image.

3. Practice proper dental x-ray safety techniques.

- a. Dental x-ray safety is critical knowledge before a dental radiograph is ever produced. Not practicing dental x-ray safety presents an unnecessary risk to both the operator and other staff members in the clinic.
- b. Review of state regulations will be helpful to handle any questions.

Data Analysis

Implementation

Navigation. The participants had difficulty figuring out how to find locations within the course and with the definitions of the slide numbering system in the program. There are two options: 1) move the entire course to an LMS where navigational needs could be better met, or 2) revise the course list and use the term “section” instead of “unit to standardize the terminology in line to the program layout. The second option would require less downtime as the course was being moved and reconfigured. The directions would also be added to a revised navigational video.

The participants had difficulty finding their way back in the course the first time they had to visit a link. Visiting the link takes them out of the course with no obvious way to return. Once they were shown how to return to the course, they no longer had difficulty. There are two options to fix this issue. The first option would add return buttons to the outside locations that are marked for the participant to return. Adding return buttons may be difficult in a YouTube video and will need to be tested before confirmation of success.

The second option would be to design and record a new navigation video which would explain how to return to the course. The current video was from another LMS program. A revised navigational video could be in the first section before entering the course. Placing the video earlier in the course could decrease the level of difficulty.

Tools. The buttons and links provided no difficulty for the users. There was a download button in Section 6 of the course that one participant had difficulty seeing. The graphic used on the slide partially hid the download button from view. Changing the graphic to having a solid dark color behind the button will make the button stand out more clearly.

Presentation. There were many feedback suggestions for the documents, videos, course assessment, and quizzes.

Documents. The tested document was the course syllabus. One participant felt that the syllabus could have more details in the course outline about what was covered by each unit. Secondly, it was suggested that there would be more information added about how grading would be performed and introducing the user to the CAT assessments. Adding these details to the current syllabus would not be difficult. The course program does bring users to Google Docs when they click on the download link. Two of the participants found that the presence of the Google Docs layout was distracting. Once the course is moved to an LMS, the user will be able to open the link directly into a pdf.

Assessments. According to the participants, the course assessment and syllabus conformation were easy to fill out and submit. The course assessment had too much white space and was presented to look like a stack of pages. These design choices were distracting to the eye. Both issues can easily be changed in the *Jotform* program where the assessment was built.

Videos. The videos viewed by the participants were warmly received in terms of presentation. The presenter was found to have good cadence without going monotone which can cause boredom. One video was unscripted. In the unscripted video, the presenter used too many “ums” which is a sign of nervousness. Replacing the video with a scripted video would remove most of the “ums.”

The second video that was scripted was better received by the participants for improved flow. However, the color scheme used in the video caused the instrument used to point out dental structures to disappear at points. Making a video with better contrast between the visual aid and the presenter would remove the issue with the disappearance of the pointer.

Quizzes. The ending of the free subscription caused the loss of access to the quizzes for one participant. A paid subscription was purchased so the rest of the participants would be able to test the quizzes. Two of the participants noted a need for feedback when the user clicked on an answer. Both participants felt the feedback would give the user another opportunity for learning. Adding pictures to the questions would increase the visual connection between the topic and the user.

Content. The area tested that provided the most feedback on content was the Unit 1 Section 1 anatomy lesson. The participants were asked to review a medical diagram for layout and content. According to the participants, the content of the diagram was helpful, but it needed to play a larger role in the topic. The video in the topic, while it discussed part of the topic did not address the topic entirely and added additional information that would be used in a later unit. Hence, the medical diagram needed to be redesigned to be easier to read, be downloadable so the user could have it close by for reference while watching the video. The video also needs to be redesigned to align better with the unit objectives.

Dissemination

The modifications that will need to be made to the dissemination process will be focused on course navigation and improvements to the course materials.

The syllabus and course navigation tutorial need to be presented together as a unit. This unit will begin the online course, Dental Radiology Training: Part 1. The unit will begin with the course navigation video. The video will explain the content of each course unit and what the user is expected to achieve with each unit. Once the user has viewed the video, they will be asked to submit questions. This addition will confirm that the user has watched the video.

The next section of the navigation unit will be the syllabus. The syllabus will provide the missing information noted earlier in this paper and link the unit descriptions to their placeholders within the course. This revision will allow the user to view each unit before starting the course activities. Once the syllabus has been read, a link will take the user to a syllabus confirmation page. Here they will also be able to ask questions. The questions asked by the user will be sent to the course facilitator. The facilitator will reply to the questions.

Video updates. The videos presented in the course prototype units will need to be more fully designed and recorded. The videos needed will be:

1. Anatomy of the oral cavity of the dog.
2. Anatomy of the oral cavity of the cat.
3. The dental charting system used for the dog.
4. The dental charting system used for the cat
5. The parts and operation of the dental x-ray generator

Content transfer to an LMS. The final modification is the movement of the course to an LMS. A Moodleroom course shell has been set up. Transfer of the slides from IsEazy to Moodleroom could require all or part of the course slides be revised or replaced to fit the specifications of the LMS program.

Diffusion

For the diffusion of the course to occur, the navigation, tools, presentation, and content will need to be in their final form. The areas of the prototype that were not tested in the alpha test will need to be prepared with survey questions and instructions written. A large portion that will need final preparations is the face-to-face course: Dental Radiology Training: Part 2.

The final piece of the project is the development of a facilitator's guide. The guide will standardize the layout both the online course and the training so that multiple facilitators can provide the training using the same mode of delivery. In Malcolm's (2016) article, what makes a successful facilitator guide is context, facilitator expectations, purpose, learning objectives, acceptable activities, and additional resources. Context explains what the program is and why it is relevant for the team. Facilitators expectations are clearly explained for each mode of delivery. A purpose statement allows the facilitator to see what the participant needs to achieve at the end. Learning objectives will need to be specific and clearly defined. Having a list of additional resources will add new dimensions to the topic. Facilitators can add to the list of resources as the needs of the participants become apparent. The addition of a facilitator guide with the final prototype analysis report will give a clearer idea of how the course will run, who it will benefit, and its relevance to the needs of the veterinary profession.

Project Changes

According to Rubin and Chisnell (2008), when you do testing, there will be the areas that were expected to need revisions, but there will also be new questions that come up that that need answers. This observation came true during the prototype testing. These changes may require either new or repeat testing. If testing needs to be performed, the remedies will need to correct the issues and not cause new issues (p. 281). In Table 1, the issues will be listed with a corresponding recommendation.

Table 1

Dental Radiology Training: Part 1: Alpha Test Findings with Revisions

Task	Issue(s)	Recommendations
Return to the main course from an outside course link	The user is unable to quickly deduce that the course link opens in a new window and the main course can be found as one of the tabs in the browser. A user who is new to online learning or has limited computer skills would have difficulty finding their way back to the main course.	<ol style="list-style-type: none">1. Place a return button with a label on all of the pages of the outside course document so the user can easily return to the main course.2. Add a segment in the course navigation video that shows the user the return buttons in the outside documents.
Identify your location in the course by indicators on the slide.	The user is unable to easily figure out where in the course they are by looking at the course slide. If the user wanted to investigate different areas of the course, it would be difficult to ascertain how far backward or forward they needed to go. A user that was new to online learning or had limited computer skills would be impacted the most.	<ol style="list-style-type: none">1. Have the unit numbers correspond with the established numbering of the online course program.2. Add a segment in the course navigation video that shows the user how the units are numbered in the course.
In Section 6, download the Certificate of Completion	The slide with the instruction has a download button. The background graphic occludes part of the download button. The lack of opacity makes the button challenging to see. The issue could impact a user with limited vision.	<ol style="list-style-type: none">1. Remove the background graphic and exchange it for a solid color to improve the contrast of the download button.2. Keep the background graphic but increase the opacity to improve the contrast of the download button.

		<ol style="list-style-type: none">3. Change the background graphic to one that improves the contrast of the download button.
<p>Did the course syllabus cover what you would want to know about the course?</p>	<p>Additional information is needed on the layout of the course, the role of the CATs and the grading information for the unit quizzes. Adding the missing information would provide improved communication with the user and answer frequently asked questions.</p>	<ol style="list-style-type: none">1. Add the missing information to the course syllabus.2. Link the course units to the syllabus so the user can connect the syllabus information to the course unit.3. Add a place for user questions in the syllabus confirmation survey.
<p>Is the medical diagram a usable object?</p>	<p>The diagram was not immediately connected as a learning tool for the unit. The diagram was found to be blurry. The blurriness could cause reading difficulties if the user had vision limitations.</p> <p>The keywords in the diagram were highlighted. The opacity of the highlighting was too little causing a reading difficulty.</p> <p>The diagram in the prototype was not downloadable. Current options for the user are to screenshot or photograph the image on their mobile device.</p>	<ol style="list-style-type: none">1. Add instructions to the unit to help navigate the user to look at and encourage the use of the diagram. The diagram would become an adjunct to the video lesson.2. Add prompts or activities in the video lesson that integrate the diagram.3. Replace the current diagram with a diagram that is easy to read. Remove highlighting and replace with underlines to showcase key terms.

		<ol style="list-style-type: none">4. Provide a way for the diagram to be downloaded. A downloaded copy would be a cleaner image and improve readability.
<p>What did you dislike about the video presentation?</p>	<p>The testers preferred a well-organized video with a smooth flow.</p> <p>Having an image or a screen-in-screen video of the presenter improves the connection to the instructor for the user.</p> <p>The video must provide relevance to the unit objectives and course scope. Having relevance will ensure the user can take the new knowledge gained in the course and apply to their current experience.</p>	<ol style="list-style-type: none">1. Replace non-scripted videos with scripted videos. Scripted videos will improve organization and flow.2. When recording videos, add a screen-in-screen image or video of the presenter.3. When choosing or preparing videos for the unit, make sure they align with the course scope and unit objectives.
<p>What did you dislike about the presentation of the course assessment?</p>	<p>The layout of the page used a graphic that made the assessment look like it had multiple pages. This graphic caused confusion and distraction as the tester thought the added pages should be animated.</p> <p>The page had too much white on white. Too much white on white caused a lack of contrast which caused readability issues.</p> <p>One tester noted that the assessment had too many questions. Too many questions might provide a source of negative feedback.</p>	<ol style="list-style-type: none">1. Remove the graphic and exchange it for a single page layout.2. Add headers to break up the assessment into categories. Add border lines to delineate the categories. The lines should be in a neutral color that matches the course color scheme.3. Review the questions and remove any questions that are repetitious or do not fit with the feedback objectives.

<p>What did you dislike about the quiz presentation?</p>	<p>Instructions needed to be added to the quiz link to share with the user the quiz format and how many questions they would need to answer. This change will ensure the user understands the testing expectations.</p>	<p>1. Add instructions to the quiz section for each appropriate unit. The instructions should have a checkbox that the instructions have been read.</p>
	<p>The quiz answers need feedback whether they are correct or incorrect answers. This change would provide an additional opportunity for learning.</p>	<p>2. Review the current question bank and add feedback to each one that explains why the answer is the right or wrong answer. Feedback should be supported by evidence-based research sources.</p>
	<p>Some of the quiz questions could use pictures as part of the question. The addition of pictures with the question could stimulate the user to improve their results if they bring up a memory from previous experience.</p>	<p>3. Add appropriate photographs or graphics to as many of the questions as possible. The images should be labeled as per the needs of the question.</p>
<hr/> <p>Certificate of Completion</p>	<p>The certificate needs to be added to show proof that the user has completed the course.</p>	<p>1. Research programs that will generate a certificate of completion document.</p>
	<p>Access to the certificate needs to remain locked until the user has completed the course. This addition will ensure the user has completed all the units.</p>	<p>2. Adjust the settings and restrictions in the course, so the units unlock at the end of the previous unit.</p>
	<p>The certificate needs to have a fillable interface so the downloaded copy will have</p>	<p>3. Research that the LMS or the certificate word processing program can make a</p>

their name and date of completion.

certificate that downloads and prints with the user's name.

Resolution Plan

Course Reorganization and Navigation

The target audience for this project will be adult learners. Adult learners will have different experience in managing an online course. Three out of the four testers worked on a computer or a mobile device daily. One of the testers had basic computer skills. According to an article in CourseArc (2016), 35% of adult online learners leave a course due to their initial experience. This statistic is not only a user experience problem but a potential barrier to continuing education. The prototype testing showed that all the testers had difficulty finding their way around the course when given a location to find. A second finding showed testers were unable to find their way back to the main course

Winch and Cahn (2015) found that some adult learners new to online learning might not find the course intuitively navigable. They found that learners that are provided with a course navigation video did better and tended not to leave the course out of frustration. They also found that learners that use a video tutorial do better than those that do not. Beckford (2015) notes that providing an orientation session helps the students feel more connected to the course.

The resolution to the problem found during the alpha testing is a complete reorganization of the course outline with a corresponding navigation tutorial. The user will be able to: 1) use the course outline to move to any part of the course, 2) figure out where they are in the course by their current course location, and 3) be able to easily find their way back to the main course from a link. Dental Radiology Training: Part 1 will begin with Unit 1 which will be the course orientation and move numerically until the last unit which will be the course assessment.

Content

For the prototype course, the content was chosen and written to provide some basic context and relevance to the course. The testers found all the content used in the course to be relevant to the units that were tested. As the project moves into the next phase of testing, the course content will also move to the next level.

The course objectives will begin to appear at the beginning of each unit to remind the user what the expectations will be for that unit. The objectives will be presented either written on the first slide or a short video done by the course presenter. The benefit of the short video is the opportunity for the user to see the course presenter. This addition would personalize the learning. When designing instruction, one needs to examine two tactics: 1) using instructional strategies that best suit the target audience, their knowledge, skills, and abilities (KSAs), the learning environment, and 2) developing features in the content and instruction that interacts with the participant and engages the mind. Interaction can take place on a person to person level, on a person to social media level and a person to technology level. According to Moore (2012), what is vital regarding interaction is the closer the participant is to the content, the more engaged the participant and the deeper the learning experience.

The course activities would be checked and revised to ensure that they align in three areas: 1) the target audience, 2) the user's (KSAs), and 3) their relevance to their daily work environment. Elaboration theory that is used to teach tasks uses a simplifying conditions method (Morrison, p. 130). The simplifying conditions method requires that tasks be taught beginning with the simplest task and incrementally increase the difficulty of the tasks. Simpler tasks are taught early in the sequence and more complex tasks later in the training process. Morrison (2013) further discusses Learning- Related Sequencing. Learning-Related Sequencing is a

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strategy based on five student learning concepts: 1) identifiable prerequisites, 2) familiarity, 3) difficulty, and 5) development. Each task in the course is seen as steps that become more incrementally more difficult. Participants will be more engaged because they have the familiarity of working with full body x-rays and an interest in learning a new skill.

According to Van Merriënboer and Kirschner (2018), updating knowledge, skills, and abilities cause a transfer of learning. In this project, the user will learn the technology behind dental radiology which provides complexity to the experience. The holistic design approach attempts to integrate the potential challenges of the task as each step is taught. The units in Dental Radiology Training: Part 1 will provide the basic steps needed to start completing the objectives that will bring them to the next phase of the training which is face-to-face.

Alignment to Assessments

The prototype course has classroom assessment tests at the beginning and the end of each course activity. The role these assessments play is to gain feedback from the user based on their experience and knowledge of the topic and how that knowledge has changed after the unit activity has been completed. The feedback will provide data that examines if the content aligns to the course objectives and if the objectives are being met by the user. These assessments will be more closely examined when the course is tested to members of the target audience.

Creative Commons Licensing

Creative Commons (n.d.) issues public licenses that provide a standard set of terms and conditions that creators may use to share their original work. The content written for this project will add these licenses to allow the share the content but with certain restrictions.

Cost and Benefits Analysis

The original cost estimation shown in Table 2 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 including support and training for each user. After the alpha test findings, there are no substantial changes that will need to be made to the cost and benefit analysis. Much of the media content was reusable objects, so the funds were held back. The production of the media content costs will now be used as the content is revised.

Table 2

Cost and Benefit Analysis: Dental Radiology Training: Part 1

	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 a 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

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Misc Costs:

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

Organizational Alignment

The project will be supported by the Academy of Veterinary Dental Technicians (AVDT). It will include Veterinary Technician Specialists in Dentistry (VTS-Dent) and external stakeholders chosen by the AVDT. The AVDT (2018) is the organization responsible for educating mentoring and providing a credentialing process for veterinary technicians to obtain their specialty in dentistry. Another facet of the AVDT is the training of veterinary staff in dental skills, predominantly radiology. The goal of dental education is to teach best practices to improve the quality of patient care.

Currently, the members of the organization serve as independent contractors for many of the companies that sell dental equipment, corporate and independent clinic training support. Many of the members are dentistry instructors in veterinary technology programs. Lastly, many of the members are dentistry presenters at veterinary conferences. The AVDT does not as an organization provide dental training, but we aid those that provide training.

If the AVDT wanted to be the source of dental training, AVDT sponsored courses would need to be designed. The members of the AVDT would serve as the course and face-to-training facilitators. The courses would need to be standardized so the trainers would disseminate the same instructions and skills. The instructional design of these programs would need to begin

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with a list of dental skills, prioritized by those most performed in the veterinary clinic. The tasks to perform those skills would be listed. Next, the skills would be developed into a course and a facilitator's guide written. The last step would be for the organization to apply to the American Association of Veterinary State Board's Registry of Approved Continuing Education (RACE) to become a provider. Recognition as a continuing education provider would be an additional benefit to the user.

This MSIDT project provides a prototype course to present to the AVDT as a potential project for the organization. This project would provide the framework to build future courses for the AVDT. The benefits of AVDT designing their own courses are to develop standardization of dental skills and a stream of revenue to provide more scholarships and awards to those technicians that are coming into the specialty program. Hopefully, these new members will become involved in the education program.

Standards of Excellence

According to an article in CourseArc (2017), course design and development must be tested for quality control. Quality control ensures that the learner's needs are being met. With quality control in mind, resources and standards need to be applied. Pappas noted that Gagne's Nine Events provides a quality control framework that can be used as a set of criteria to offer learning experiences that stick. Pappas' (2015) interpretation of Gagne's Nine Events fit well with the standards of this project and are used in standards 2-10 with a summary of how they fit in this project.

Ten Standards of Excellence

1. Investigate the needs for instruction.

Gagne, Briggs, and Wager (1988) explained the derivation on the instructional system. Planning instruction is highly systematic with emphasis placed on the consistency and compatibility of the course goals with the unit objectives. Number one on the list is to perform a needs analysis which determines the goals of the instruction, what resources are needed to meet those goals and the possible issues that arise that could hinder instruction.

2. Create an attention-grabbing introduction.

Providing a course orientation will connect the learner with the course. Be sure the learner has everything they need to feel comfortable navigating around the course, that they are getting their learning needs met, and their questions will be answered.

3. Inform the learners about the objectives of the course.

Course goals will be presented during the course orientation. Each course activity will have a set of clear objectives and why these objectives are necessary for them to learn in their workplace. Learners will be asked if they felt they did or did not meet the objectives.

4. Stimulate recall of prior knowledge.

Assessments will be given at the beginning of each learning activity to examine if the learner has any prior knowledge about the activity. According to Pappas (2015), recalling and applying the knowledge the learner already has helped them to commit the skill to long-term memory. Providing the rationale for the unit learning objective will also allow the learner to know what KSAs they will be applying to the new task.

5. Create goal-centered content.

All the course content and activity should tie to the objectives for that unit and the goals for the course.

6. Provide online guidance.

Provide a way to coach learners, so they avoid discouragement and frustration and have a positive learning experience. The learner will be provided with contact information for the course facilitator. Live meetings can be set up by video chat or telephone. Less immediate contact methods include messaging and email.

7. Practice makes perfect.

Repetition is crucial for retaining skills and knowledge. The learner must have multiple opportunities to apply the knowledge they have learned. Using scenario-based activities can give them a chance to test their new knowledge.

8. Offer timely feedback.

Giving learners timely feedback in testing situations gives them the power to improve their learning behavior and identify weaknesses. In this project, quizzes are given at the end of each activity with feedback planned after every question whether it is right or wrong. Muddiest Point assessments have the learner give feedback on areas where they felt disconnected from the material.

9. Assess early and often.

The assessment examines the progress of the learner and helps define weak spots in the course strategy. In this project, learners will be assessed during every step of the course to measure their experience in the course. An article in Online Learning Consortium (2019) presented five pillars of online quality which are the building blocks of support for online learning. These could also be used in traditional classroom instructional design as

well. The first pillar is the Learning Effectiveness Pillar. This pillar explains that all learners should be provided with a high-quality education. Assessments are a way to measure that the learning being given is effective.

10. Enhance the transfer of knowledge by tying it into real-world situations and applications.

Media content in this project will need to be interactive to provide the learner with real-world scenarios to connect the skill with their workday environment.

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