

Running Head: IDT 604: Project Changes

IDT 604: Assessment of Project Changes

Submitted in partial fulfillment of the requirements for the degree of

Master of Science in Instructional Design and Technology (MSIDT)

By

Jeanne R. Perrone

On

September 10, 2018

To

Dr. Christopher Sorenson

Remember to [update the Table of Contents](#) before each submission of the template for grading.

Table of Contents

Table of Contents 2

Learning and Design Principle Discussion 3

 Interaction and Interactive Principles 7

 Motivational Design Principles 9

Revisions to the ID Process 14

Revisions to Delivery Process 15

Revisions to Project Design 15

Revisions to Instructional Material 16

References 21

Learning and Design Principle Discussion

In IDT 603 we began to look at the components of the design document. There are three components of the design document 1) the content, 2) the organizational impact, and 3) the target audience. The content requires an agreement between the designer and the SMEs and develops out of what is seen as best practices. The designer can retrieve content from many sources. Those sources are chosen by aligning content with the teaching and learning principles that best align with the target audience. Identifying the target audience is the first step.

Target Audience

In this project, the target audience is adult and are between 18-65 years of age. The highest age population surveyed from previous trainings is 25-40 years of age. The educational demographic consists of high-school and college graduates. All the participants are employed by a veterinary clinic either as an assistant, certified assistant or credentialed technician (nurse). Certified assistants and credentialed technicians have completed schooling and licensing in their state. Assistants that have not gone through schooling are trained on their job tasks and skills by members of the staff within the clinic they are employed.

Participants in the dental radiology training can vary in their knowledge of dentistry and dental radiology. Some participants either perform dental procedures or are learning to perform dental procedures. Credentialed technicians have taken classes in dentistry. Certified assistants and non-certified assistants are provided dentistry education on a need-to-know basis from either the veterinarian or an experienced staff member. According to Lobprise, knowledge, skills, and abilities of dental procedures and materials is required if one is to become an effective dental assistant (Lobprise, 2012). The dental procedures commonly performed by staff members are

IDT 604: Project Changes

charting oral exam findings in a dental record, cleaning and polishing the teeth, taking full mouth radiographs, and assisting the doctor with oral surgical procedures. Performing an oral exam, cleaning the teeth and taking full-mouth radiographs requires training.

Organizational Impact

The learning environment is commonly a veterinary clinic, and members of the training are employees of the said clinic. Motivation can be either intrinsic or extrinsic or both. Intrinsic learners are those who enjoy performing dental procedures and see a benefit for the patient by gaining more information about their condition from the radiographic information. Extrinsic learners attend the training either because they are learning a new skill which could mean a bump in job status, or make them more attractive to a potential employer should they leave their current clinic.

Effective skills and techniques for taking dental radiographs using proper positioning of the digital sensor improve assessment and diagnosis of pathology. Historically, many clinics did not have a dental x-ray unit. Due to changes in standard of care, many clinics are acquiring dental x-ray units and want to provide full -mouth radiographs to all their dental patients as quickly as possible. The reason is two-fold: 1) the equipment is expensive and the sooner they start providing dental x-ray services, the sooner they can pay off the unit, 2) the radiographs improve the diagnosis of pathology.

Unfortunately, taking 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. The goal of the training is to teach the participants enough positioning skills to be able to take dental

radiographs. Clinic management wants to get the service up and running smoothly as quickly as possible.

Learning Environment

A common link between the certified/credentialed staff and the clinic trained staff is hands-on training. In veterinary technician and veterinary assistant programs, medical and clinical skills are taught hands-on, and the student must perform the skill hands-on to complete the program (AVMA, 2018). Clinic trained staff are also trained hands-on either by a staff veterinarian, nurse, or veteran staff member. Medical and clinical skills are limited to those procedures performed in that hospital. Hands-on training is the mainstay of learning skills in a veterinary practice.

In the traditional learning environment, the experience is passive when the instructor presents the content, and the student recalls it later. Vakhtina noted that when the experience is active, there is increased interaction between student and teacher (Vakhtina, 2015). In Butler's research, the active training increases audiovisual associative recognition as the student physically interacts with the course content (Butler, 2013).

Environmental factors are taken into consideration when designing the learning environment. An analysis of the learning environment is required to ensure it provides the most benefit to the participant (Morrison G. R., 2012). The training program is a hybrid course combining a self-directed online classes as a preparation for the face-to-face, hands-on class where the experiential learning takes place.

The face-to-face course will take place in the treatment area of the veterinary clinic. The atmosphere in the treatment area can range from being chaotic if the clinic does not close while the training is taken place to quiet and focused if the clinic is closed for the training. When performing the training when the treatment area is active, it is imperative that the trainer keeps the training group together to maintain participant focus. Training equipment needs to be set-up ahead of time and kept close-at-hand to keep the training moving smoothly and efficiently.

The participants will be from the same veterinary clinic. In the clinic setting, it is best not to have one person oversee learning a new skill. If that person becomes sick or leaves the clinic, they will have no one who can perform that skill. Training multiple participants will avoid a disruption to the dental service.

Project Sequencing

Sequencing arranges the content so that the participant can meet the objectives effectively and efficiently. For this project, Elaboration Sequencing Theory aligns well. Elaboration Sequencing Theory arranges the content specifically for learners that are developing skills to learn a task. The process moves in a stair-step motion starting from concrete to abstract as the tasks become more difficult. One can see an example of this concept in the Revised Bloom's Taxonomy which has asserted that teaching happens at both a knowledge and a cognitive level (A model of learning objectives, 2018). Metacognitive Knowledge was added to the levels to recognize the cognitive processes that take place when a learner is performing a task as the steps become more complicated (Krathwohl, 2002) (Owen Wilson, 2016). In the next section on interactive principles, there is a connection between the increase of complexity when learning tasks and the ability to transfer the knowledge to long-term memory.

Interaction and Interactive Principles

When designing instruction, one needs to examine two tactics: 1) using instructional strategies that best suit the target audience, their 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 human to human level, on a human to social media level and a human to technology level. According to Moore, what is important regarding interaction is the closer the participant is to the content, the more engaged the participant and the deeper the learning experience (Moore, 2012).

Van Merriënboer and Merrill took this theory further and found that integrating the participant's knowledge skills and abilities with the skills they are learning during the training will allow the transfer of the new material to new problem situations. When you update knowledge, skills, and abilities, they don't fade away once the learner has completed the training. Updating knowledge, skills, and abilities cause a transfer of learning (Van Merriënboer, 2018). As technology becomes more complex, the related tasks to learn the technology become more complicated. The training increases from just learning the steps to learning how to solve problems and think creatively to adjust to the challenges of the task. Van Merriënboer calls this "complex learning" (Van Merriënboer, 2018, p. 2). The holistic design approach attempts to integrate the potential challenges of the task as each step is taught.

In the presented training project, the needs analysis, previous trainees were unable to carry the skills they had learned past the training. These trainees were either unable to recall the steps of the task or could not troubleshoot a techniques error within an acceptable timeframe

which caused delays in the dental procedure, which produces increased anesthesia time for the patient which can lead to increased risk to the patient. Stress ensues.

A more holistic design approach will facilitate the transfer of learning by integrating the basic steps as the task that form the knowledge base with problem-solving skills to solve the potential technical errors. Table 1 looks at the alignment of the teaching strategies found in InterPLAY and how they affect the interaction of the participant with the content.

Table 1

Teaching Strategies and Participant Interaction

Teaching Strategy - InterPLAY	Interaction	Intended Achievement
Expose The trainer exposes the task to the participant using demonstration.	Trainer ↔ Participant	The participant recalls each of the steps which will establish the knowledge base which is the foundation for each skill. This sets up the desire to learn and stimulates curiosity.
Inquire This strategy validates the success of the demonstration.	Trainer ↔ Participant	The participant asks questions in there are challenges in understanding. The demonstration will stimulate the participant's curiosity by setting up an activity for them to do.
Discover Problem-solving techniques	Participant ↔ Skill ↔ Trainer	Potential challenges within the task are reviewed along with how to resolve the challenge. What constitutes a successful image? What do technique errors look like?
Create Interactive engagement with the subject matter	Participant →Dental X-ray Equipment	This interaction stimulates the participant with physical engagement with the dental x-ray equipment. The trainer provides feedback on participant performance.
Experiment How do we measure success? It is more	Participant ↔Skill ↔ Trainer	The participant assesses the results of their attempt at taking a dental x-ray. The participant must integrate the problem-solving skills and assess the

than being right or wrong.		image. If there are technique errors, how are they resolved? Mistakes can provide valuable feedback and cause the participant to think outside the box and choose alternative approaches.
----------------------------	--	---

Motivational Design Principles

The connection between motivation and learning can only happen within the learner. Motivation is a factor that determines the direction of the learner's aspiration (Gopalan, 2017). The motivation can come from within or from the outside. Whichever direction is chosen, motivation is necessary for a learner to succeed in learning. Learners are more motivated if the subject matter is relevant, meaningful and provides a challenge. Motivation can be stimulated positively by improving one's life situation or negatively as a means of survival. This section will deal with positive motivation.

There are two types of motivation – intrinsic and extrinsic. Intrinsic motivation comes from within the learner. The learner performs to satisfy their need to overcome a challenge, satisfy a curiosity or realize a dream. The intrinsically motivated are deep learners who respond well to problem-solving and complexity.

Extrinsic motivation comes from outside the learner. This learner performs because there is a reward at the end of the line. This type of motivation does not last for long periods as the learner tires of trying to achieve the goal, or once the reward has been achieved, the learner will stop moving forward. There are two types of learners – strategic and surface. Strategic learners tend to be competitive with the goal to be better than the others. These learners do not engage deeply with the subject matter – only enough to get good grades. The best solution in

this situation is to try to appeal to their intrinsic nature by looking for objects to stimulate them. These learners need to avoid activities that require straight memorization but instead should have activities that require them to assess or evaluate objects. Surface learners are like strategic learners in that they do not tend towards deep learning. Instead of these learners being motivated by competition, they are motivated by a fear of failure. Their learners perform the bare minimum to achieve the objective but are not interested in moving out of their comfort zone. Instructors must tailor lessons for these learners that exponentially increase in difficulty as they move from one lesson to the next. These learners must be given positive feedback as often as possible.

A motivational theory like the one found in Keller's ARCS model look at how motivation is linked to behavior and emotions. The goal ultimately is to develop a learner who is extrinsically motivated to be stimulated by the subject matter and become intrinsically motivated. Intrinsically motivated learners are pleasurable to teach since they want to learn vs. have to learn.

The ARCS Theory is an acronym for the four factors of motivation – Attention, Relevance, Confidence, and Satisfaction. Each one of these has guiding strategies which enable the design of each of the four factors (Johnson, 2013). Table 2 discusses the purpose of each factor and how the participant will achieve each one of these motivational factors.

Table 2

ARCS Model Alignment to Project

Factor and Purpose	Guiding Strategies	Participant Achievement of Factor
<p>Attention</p> <p>Attention looks at ways to arouse the learner by stimulating curiosity and memories</p>	<p>Perception</p> <p>Inquiry</p> <p>Variability</p>	<p>Perception: Learning a new medical skill stimulates excitement.</p> <p>Inquiry: Dental radiographs complete the oral exam. The user can see what's going on under the gumline. The diagnostic picture is complete.</p> <p>Variability: Learning a new technical skill breaks the routine. Dental radiograph technique will vary by the variability of the skull anatomy by breed and species.</p>
<p>Relevance</p> <p>How does this information relevant to the current situation?</p>	<p>Familiarity</p> <p>Goals</p> <p>Motives</p>	<p>Familiarity: Veterinary clinics have full body radiograph units which all medical staff has been trained to use. Many of the techniques similar when compared to dental radiographs.</p> <p>Goals: The training provides objectives that break the task down into goals or steps. Each step must be achieved before moving on to the next one.</p> <p>Motives: For the staff members that have been involved in the decision making for the purchase of the unit, learning how to use the unit and integrate it into the clinic's dental service is the prime motivator.</p>
<p>Confidence</p>	<p>Requirements</p>	<p>Requirements: Once they have successfully positioned and</p>

<p>Confidence is the outcome when the learner has overcome a challenge. They have tried and achieved success</p>	<p>Successes Control</p>	<p>shot their dental x-ray, the participant must assess their finished radiograph for completeness. This requires training on recognizing errors and coming up with solutions for reporting the error. The act of assessing a finished image of a dental radiograph.</p> <p>Success: Lecturing and demonstration are the core of the instruction for this project. Participants must learn to correctly position the digital sensor and align the dental x-ray unit with the sensor. The finished image is evaluated for errors.</p> <p>Control: Participants are given feedback after every attempt of the activity. Mistakes are learning opportunities, and the participant may ask questions for clarification and can retake the image.</p>
<p>Satisfaction</p> <p>Satisfaction is the feeling when the learner successfully overcomes the challenge and can overcome the challenge when it repeats.</p>	<p>Consequence Reinforcement Equity</p>	<p>Consequence: The participant must transfer the learning from working with models to working on live patients. The stress of being under a time constraint can be overwhelming.</p> <p>Reinforcement: The training is provided to a group of staff from the same clinic. The training teaches collaboration which provides support from peers. This support means you always have someone to work a challenge with you.</p>

		<p>Equity: The fundamental learning concept when learning how to take dental radiographs is practice. Participants must practice the steps and associated evaluation strategies with the task to increase the speed and consistency of the results.</p>
--	--	---

In Summary

In reviewing learning and design principles for this project, the first goal is to understand the adult learner through the study of andragogy. According to Malcolm Knowles there are six principles of adult learning 1) the role of experience, 2) self-directedness, 3) need to know, 4) readiness to learn, 5) orientation to learning, and 6) intrinsic motivation (Conaway W. Z.-A., The keys to online learning for adults: The six principles of andragogy, 2015). In comparison to children, adults have a goal and a need in mind when they enter the learning process. Learning for adults needs to be interactive to engage them. The content needs to cause them to make a connection to their current experiences, add the new experience when a new skill is learned and integrate them and make an effort put into the learning meaningful (Conaway W. Z.-A., 2016).

When choosing learning strategies for this project, the goal is two-fold: 1) how can the participant make connections with the content to their current workday, and 2) make sure the content and delivery can be applied to the participant’s interactions with dental radiography. All veterinary clinic staff has experience using full-body x-ray which can be integrated into their experience learning dental radiography. Dental radiography has an increased learning curve due to the unique oral anatomy of the dog and cat. This challenge adds difficulty to the learning

process and adds new experiences and knowledge to the established knowledge needed to perform full body x-rays. The increased difficulty can cause frustration depending on the motivation of the participant. A solution is to make the training process more like a puzzle or game. They first learn the steps and assess their results each time following a decision tree which builds critical thinking and challenges. Challenge causes engagement when the facilitator or trainer supports the participant as they work through the puzzle.

Revisions to the ID Process

Though future projects will involve developing a full course, for this education process, developing one component of the original course is a more prudent way. Working on the full project all at once, caused the project to lose cohesiveness. It would have been more efficient and effective to build a skeleton course plan, choose the content for the skeleton course and follow the ADDIE model for each component. For training adult learners and teaching medical skills, instruction needs to meet the needs of the participant (Wiles, 2015). The instruction needs to be clear and concise stressing the importance of the topic and the role that it plays in the goal of the course (Morrison G. R., 2012).

Writing the IDFEA and the IDPP portions of the project, changes were a constant. In retrospect, the project needs to not be in the student's experience. Being involved with the project as a vocation, caused assumptions to be made without basing findings on evidence-based research. Too much experience with the project made it difficult to be objective and investigate the needs of the learners. Lastly, little experience with data collection made the analysis part of the project insufficient. Inversely, having experience with the project, brought comfort when the learning process of instructional design felt overwhelming.

Revisions to Delivery Process

In the delivery process of this project and how it would best engage the participants, adding ways to interact with the material brings engagement (Gopalan, 2017). Working with the instructional materials revealed that while multimedia may be used in the project, interaction with the material may not occur.

In the first instructional material, the topic of radiation safety is very important to understand. Powtoon was the platform used for the material. The intention was to use an infographic style to keep the topic focused and to the point (Clay-Williams, 2015). There was a time limit to each slide which was too short to give the topics in the presentation any deep meaning. The goal of the material is to cause the participant to make a change in their daily workplace habits. That goal might not be achieved. The presentation needs a different delivery process and could be made into a course on its own.

The second and third instructional material achieved their goals for interaction but need to be tested for further feedback. The third material was a video tutorial on a skeleton course. Because the course was incomplete, the tutorial felt lacking.

Revisions to Project Design

Original Design	Revision	Rationale
<i>In this space state the original design element</i>	<i>In this space state the change that will be made</i>	<i>In this space explain why the change is being made.</i>
Online Pre-Coursework	Title: Dental Radiology Training: The Preparation	The course needs a title that fits the objectives of the course

IDT 604: Project Changes

Online Pre-Coursework	Pretest needed	A pretest is given to participants listed to take the online course. If they pass the course, they can bypass the online training.
Online Pre-Coursework Materials	Original materials needed	Original materials need to be written for each of the units of the course.
Online Pre-Coursework Videos	Permission needed	The videos I have chosen for Unit 1 and 2 belong to the publication that published them. Permission needs to be requested before use. Unit 3 and four videos need to be written and produced.
Online Pre-Coursework Quiz	Question bank needs to be written	A minimum of 100 total questions (25 per unit) needs to be written. 25 new questions need to be added yearly. Exam security requires that there be enough questions for participants to retake the quiz till they reach 100%.
Face-to-Face In-Clinic Session	Pass/Fail quiz for online students. Write quiz questions.	This will serve as a summative assessment of whether the learning has transferred to the face-face session.
Face-to-Face In-Clinic Session	Instructional materials need to be written	An agenda and activity list need to be written for the participants.
Face-to-Face In-Clinic Session	Unit Number change	The Unit numbers were changed to be a continuation starting at Unit 6 and going to Unit 8.
Face-to-Face In-Clinic Session	Participant evaluation needs to be developed	The participant evaluation will have them review their experience with the course.

Revisions to Instructional Material

Instructional Material 1

IDT 604: Project Changes

For this application to work within the scope of the project, the success of the infographic message relies on its ability to elicit recall from the participant along with a change in behavior. The difference in behavior occurs using active language giving clear and concise direct course of action. Dunlap et al. look at the design of infographics to deliver a significant and sometimes complex amount of content in a small space by whittling it down to clear and concise language (Dunlap, 2016). When the visuals in an infographic are used effectively, they increase learner understanding especially when the learner is unfamiliar with the topic.

Due to the time limit on each slide, the presentation felt rushed to cover the material shown on the slide. To increase interaction, extra slides will need to be added to activities that can be performed on the slide.

The ARCS Motivation Model serves this project effectively since it looks at how motivation is linked to behavior and emotions. The goal of this project is to elicit an emotional and behavioral response from the participant to protect themselves from radiation exposure by explaining the risks. The goal ultimately is to take the extrinsically motivated, stimulate them by the subject matter and change them to intrinsically motivated.

The motivation design results were lacking in this project. The brevity of the presentation caused the language to be short and to the point. During the design process, the brevity hindered detail. The missing detail may cause the participant to lose motivation in the topic. The project would make a good introduction to the topic but not to teach a topic.

Suggested revisions. Due to time constraints, revisions have not been made to the instructional materials. The following is a list of revisions that need to be made.

- Take classes in Powtoon.
- Post the material on the Powtoon Facebook page to see if there is any additional feedback. Feedback from veterinary staff who are not specialists in dentistry might also prove useful.
- Change the platform from Powtoon to PowerPoint to allow for the time needed to relay the message of the slide and increase the ability for interaction.
- The Unit numbers are incorrect. Unit 3 needs to be changed to Unit 4.

Instructional Material 2

The rationale for choosing this material is found in the need's analysis. In the need's analysis, the task of identifying solutions for technical errors has not transferred efficiently from the training environment to the work environment.

One solution is to involve Merrienboer and Kirschner complex learning theory into the training. Merrienboer and Kirschner found that it is not enough to teach the steps of the task, adding complexity to each stage of the training teach problem-solving skills (Van Merrienboer, 2018). Before the activity training begins, a lesson is given by the trainer that goes reviews the components of a diagnostic radiograph and technical errors. Using the steps during the assessment lesson, the participant learns to assess their radiograph for diagnostic completeness.

Handshaw states that a job aid can also be referred to as performance support. That performance support can be in hard copy form or an electronic format. The job aid will ensure that the performance of the tasks carries over from the classroom to the job. The job aid must be accessible now it is needed (Handshaw, 2014). A job aid is a tool used to provide additional support or guidance to perform a task. The job aid would be an instructional material the

participant can access once they start using their skill individually. The job aid should be available both during the training when the participant is learning the skill for the first time and after the training to remember the steps learned.

The look and function of the second instructional material were successful. Testing is needed to see if it would be a useful job aid for the participant. The job aid will continue the training in the workplace by providing support to the participant in the form of a single slide decision tree that walks them through the assessment process. The job aid begins with a mini-lesson showing the participant what a diagnostic x-ray looks like. The image is labeled, and the important points identified and explained. This provides the learning baseline upon which their images can be compared.

Suggested revisions. Due to time constraints, revisions have not been made to the instructional materials. The following is a list of revisions that need to be made.

- Google Classroom is the current location of the instructional material. The page needs to be assessed to see if it would be a beneficial place for participants to use the job aid after the face-to-face training. Anyone who would like to take the class needs to be invited. This adds a step to the process and might dissuade them from using the job aid. A small website might need to be developed.
- Test the job aid for further feedback.

Instructional Material 3

The third instructional material was an instructional video. The video would be a tutorial; to help the participant navigate around the online course (Winch, 2015). The rationale for developing this video is to provide learner support. The participants in the target audience will be adult learners. In their article, Winch et al. found that some adult learners are new to online

learning and might not find the course intuitively navigable. It has been shown that learners that use a video tutorial do better than those that don't (Winch, 2015, p. 408).

The use of video tutorials to navigate websites is not an original idea, but a necessary one to build a relationship between the participant and the instructor. There needs to be an introduction to make the participant feel someone is supporting their learning. I narrated the tutorial as the instructor. The combination of choosing an LMS and building a skeleton course without resources other than free trials caused a time crunch at the end which made the video less approachable as a form of relationship building.

Suggested resources. Due to time constraints, revisions have not been made to the instructional materials. The following is a list of revisions that need to be made.

- Add mini screen shares with instructions for each direction in the video. Participants can read the instructions they may not have caught on the video.
- Revise the narration to sound more polished. Sticking to a script and practicing before recording will improve the quality of the narration.

References

- A model of learning objectives*. (2018, September 10). Retrieved from Iowa State University Center for Excellence in Learning and Teaching: <http://www.celt.iastate.edu/wp-content/uploads/2015/09/RevisedBloomsHandout-1.pdf>
- AVMA. (2018, January). *CVTEA Accreditation Policies and Procedures - Appendix I*. Retrieved from AVMA Accreditation: Vet tech: <https://www.avma.org/ProfessionalDevelopment/Education/Accreditation/Programs/Pages/cvtea-pp-appendix-i.aspx>
- Butler, A. J. (2013). Active learning of novel sound-producing objects: Motor reactivation and enhancement of visuomotor connectivity. *Journal of Cognitive Neuroscience*, 25(2), 203-218. doi:10.1162/jocn_a_00284
- Clay-Williams, R. C. (2015, May 12). Back to basics: Checklists in aviation and healthcare. *BMJ Quality Safety*, 428-431. doi:10.1136/bmjqs-2015-003957
- Conaway, W. Z.-A. (2015). The keys to online learning for adults: The six principles of andragogy. *Distance Learning*, 12(4), 37-42. Retrieved from <http://www.infoagepub.com/dl-issue.html?i=p570d954550a94>

IDT 604: Project Changes

Conaway, W. Z.-A. (2016). The keys to online learning for adults: The six principles of andragogy, part III. *Distance Learning*, 13(2), 1-5. Retrieved from <http://www.infoagepub.com/dl-issue.html?i=p57ac948f0378c>

Conaway, W. Z.-A. (2016). The keys to online learning for adults: The six principles of andragogy, part II. *Distance Learning*, 13(1), 1-6. Retrieved from <http://www.infoagepub.com/dl-issue.html?i=p57600f98ac51c>

Dunlap, J. L. (2016). Getting graphic about infographics: design lessons learned from popular infographics. *Journal of Visual Literacy*, 35(1), 42-59.
doi:10.1080/1051144X.2016.1205832

Gopalan, V. A. (2017). A review of motivational theories in learning. *American Institute of Physics*. doi:10.1063/1.5005377

Handshaw, D. (2014). Designing for the classroom -virtual and live. In D. Handshaw, *Training that delivers results: Instructional design that aligns with business goals* (pp. 125-138.). New York, NY: Amacom.

Johnson, L. (2013, September 20). *YouTube*. Retrieved from ARCS motivation model-Learning design : <https://www.youtube.com/watch?v=RpjVprPeSo0>

Krathwohl, D. (2002). A revision of bloom's taxonomy: An overview. *Theory into Practice*, 41(4), 212-218. doi:10.1207/s15430421tip4104_2

- Lobprise, H. (2012). Diagnostics. In H. Lobprise, *Blackwell's five-minute veterinary consult clinical companion: Small animal dentistry* (2nd ed., pp. 5-57). Ames, IA: Wiley-Blackwell.
- Moore, M. K. (2012). In *Distance education: A systems view of online learning* (3rd ed.). Belmont, CA: Wadsworth Cengage Learning.
- Morrison, G. R. (2012). Designing the Instruction: Strategies. In G. R. Morrison, *Designing effective instruction* (7th ed., pp. 136-159). Hoboken, NJ: John Wiley & Sons.
- Morrison, G. R. (2012). Learner and contextual analysis. In G. R. Morrison, *Designing effective instruction* (7th ed., pp. 50-71). Hoboken, NJ: John Wiley & Sons.
- Owen Wilson, L. (2016). *Anderson and krathwohl – Bloom's taxonomy revised: Understanding the new version of Bloom's taxonomy*. Retrieved from The Second Principle: <http://thesecondprinciple.com/teaching-essentials/beyond-bloom-cognitive-taxonomy-revised/>
- Parahakaran, S. (2017). An analysis of theories related to experiential learning for practical ethics in science and technology. *Universal Journal of Educational Research*, 5(6), 1014-1020. doi:10.13189/ujer.2017.050614
- Sangsawang, T. (2015). Instructional design framework for educational media. *Procedia - Social and Behavioral Sciences*, 65-80.
- Vakhtina, E. P. (2015). Didactic designing of learning objects. *Engineering for Rural Development - International Scientific Conference*, 14, pp. 661-668.

IDT 604: Project Changes

Van Merriënboer, J. K. (2018). A new approach to instruction. In J. K. Van Merriënboer, *Ten Steps to Complex Learning: A Systematic Approach to Four-Component Instructional Design* (3rd ed., pp. 1-10). New York, NY: Routledge.

Wiles, L. R.-L. (2015). Bringing learning to light: Innovative instructional strategies for teaching infection control to nursing students. *Nursing Education Perspectives*, 36(3), 190-191.
doi:10.5480/12-977-1

Winch, J. C. (2015). Improving student performance in a management Science course with video tutorials. *Journal of Education for Business*, 90, 402-209.
doi:10.1080/08832323.2015.1081865