EDTECH 503 – Instructional Design

Stereoscopic Imaging Using DAZ Studio

Instructional Design Project – Part 1

Douglas A Bushong

7/10/2011

Table of Contents

Synthesis Reflection Paper

Designing instruction is like solving an engineering problem. You have to define the nature of the problem, and then apply proven engineering principles to your design. While it is possible to arrive at a satisfactory design through trial and error, this approach is usually inefficient.

Prior to this class, my own design experience was rooted in an *iterative* approach. Most of my classes were 5-day, 40-hour seminars, so all of my material was delivered over a relatively short time. I would come up with a design relatively quickly, and then make changes and corrections as I discovered problems along the way. I had several tools to help measure effectiveness at various stages in the course; these included a video camera for recording and reviewing my lectures, a daily feedback form, and an end-of-course evaluation sheet.

If I was lucky, I would reach a point of satisfaction with relatively few iterations; if not, I would keep working on it until the course was complete. In any case, my approach was motivated by the desire to constantly improve. I used my feedback and documentation of each iteration as a measurement of my effectiveness as a designer.

This approach served me well — or so I thought — and I began this class quite skeptical of the design principles being taught. My concern was that a "one size fits all" strategy or method would be taught, and that continuous improvement and re-evaluation would be ignored. I expressed this concern during the first week, when we discussed the use of the term "systematic" as it relates to instructional design.

Famed electrical engineer Nikola Tesla once said the following of Thomas Edison (Tesla, 1931):

> *If Edison had a needle to find in a haystack, he would proceed at once with the diligence of the bee to examine straw after straw until he found the object of his search. ... I was a sorry witness of such doings, knowing that a little theory and calculation would have saved him ninety per cent of his labor.*

Before this class, I suspect that most instructional designers would have shared Tesla's lamentation when viewing my work. I've often thought of this quote when solving my own *engineering* design problems, but I now realize that I generally didn't apply it to my own *instructional* design problems.

The instructional design process is much larger than the individual design strategies or methods. The process taught in this course isn't a single strategy for developing every type of class. Rather, it is a process that *leads* the designer to the most applicable strategy. This does not remove the need for iterative design; it only reduces the number of iterations by establishing a strong framework at the beginning of the course.

Going forward, my goal is to repeat the process that I learned in this course for every course I create, and to use the Smith & Ragan text extensively with each design.

Part 1 – Topic

Part 1a – Stated learning goal

Upon completion of this course, the learners will produce 3D stereoscopic images using DAZ 3D Studio, Adobe Photoshop, a printer, and a stereo viewing lens.

Part 1b – Description of the audience

The target audience consist of mid-career artists and animators with proficiency in DAZ Studio, and seeking to enhance their portfolios with 3D stereoscopic images.

Students taking this course should have a clear understanding of the following concepts:

- Camera control
- Posing objects and characters
- Positioning objects and characters
- Null creation and control
- Parenting objects to other objects *and* to nulls
- Pointing objects, lights, and cameras, and the effects that pointing has on movement.

Part 1c – Rationale

As a hobby, I create and sell stereoscopic artwork using 3D animation software. At a recent art show, I was surprised to discover that many artists already familiar with 3D animation did not understand how I created the stereoscopic images. I realized I had an opportunity to teach my fellow animators and 3D artists — many of whom rely on their artwork for their livelihood — a potentially profitable skill.

The major instructional strategy that I will use for my course is derived from the strategies for teaching **simple procedures**, as described in chapter 10 of the Smith & Ragan text (Ragan & Smith, 2005). While principles and psychomotor skills will be included in the lesson, the knowledge required for stereoscopic imaging is predominantly procedural. For this reason, an expository-based strategy is recommended, and the overall strategy will be **supplantive**. The instructor will be teach principles of stereoscopy, and walk the students through the procedure.

In this course, the students will be required to complete the following:

1. Briefly explain the theory and history of stereoscopy.
2. Setup and render a stereoscopic scene using 3D software.
3. Edit a stereoscopic pair using photo-editing software.
4. Review the stereoscopic image, and revise as necessary to change the scene's depth.

The classification of this procedure as *simple* is based on the assumption that the learner has a firm understanding of the controls and functions in DAZ Studio. Given the constraints of the course, the instructor will not have time to teach all of the background skills required (sense of artistic proportion, camera controls, object parenting, etc). For example, the learner must be able to translate a phrase like "after rendering the first image, move the camera by rotating the null along the Y-axis by 4 to 5 degrees" into the program.

Part 2 – Analysis Report

Part 2a – Description of the Need

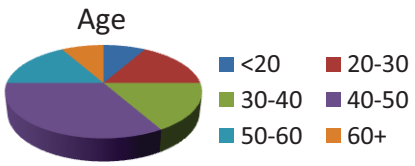
2a.1 – Needs Analysis Survey

In order to assess the needs of the learners, a survey was posted at SurveyMonkey.com. A copy of the questions is available in Appendix A. The survey was advertised on DAZ3D and Renderosity's online forums. These two sites were selected because the course will use DAZ Studio for its demonstrations; both sites have a pre-existing interest in the software, and there is a fair amount of cross-product development between the two. The participants were permitted to self-select.

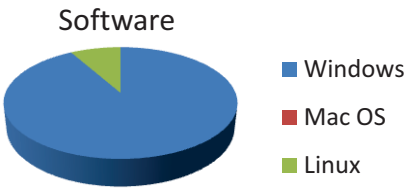
At the time of this writing, the survey has received feedback from 13 participants, 12 of which answered all questions in the survey.

2a.2 – Needs Analysis Data Report

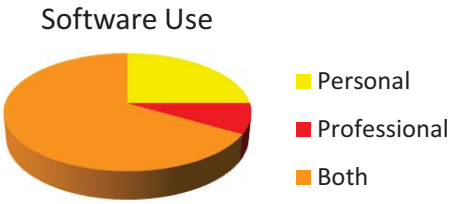
Demographics: The survey asked about age, gender, and general location. Age groups were broken down into 10 year increments, between 20 and 60 years. The age distribution was relatively even, with the largest percentage (33%) between 40 and 50 years. Over 90% of the participants were male, and all were from either Europe or North America.



Software: The survey asked about the participants' operating systems and software packages. Over 90% of the participants identified themselves as PC users. 75% of the learners primarily use software made by DAZ3D, including DAZ Studio and Carrara.



Use of Software: The survey asked participants to describe how they use the software (personally or professionally), and how frequently they use it. 75% of the respondents use their software in some professional capacity. 2/3 use it their 3D animation software least a few times per week, and all participants use it at least a few times per month.



Student Proficiency: The survey asked participants to rate, on a scale of 1-5, their proficiency in a variety of controls within their program of choice. The mean score was above 4.0 in all areas except lighting (3.9), null creation (3.9), and object d-forming/morphing (3.4). **In no area** did more than 50% of the students rate themselves as less than 4.0. Further details are provided in section 2C.

Stereoscopic Image Class: Approximately 90% of the students have considered producing stereoscopic images in the past, and over 70% expressed interest in taking a course on stereoscopic image creation. When asked about class formatting, 100% of the students requested that the course be delivered in an online format; 50% requested a set of text-based courses, and 50% requested a series of YouTube videos.

Overall Interpretation: The participants are mostly males from a variety of age groups. They are confident in their proficiency with 3D software, and most of them are using Windows-based computers. Most of them use either DAZ Studio or Carrara, a program published by DAZ with similar functionality. The participants have a general interest in the course, and would like the course to be delivered online.

2b – Description of the Learning Context

2b.1 – Learning context

In the survey, learners expressed a desire to have the course be delivered online in either a web-format or a YouTube series. Given the nature of the material, I have opted to construct the course for both a seminar *and* a series of online videos. The seminars will be presented to the students in a normal classroom, and will be recorded with a video camera for the YouTube course. In addition, any work within the software will be shown to the seminar learners via a projector, and will be recorded using CamStudio for the YouTube course.

With that in mind, the target learners will generally participate in a seminar OR work within their own homes. Either way, the general environment will vary based on the learner. They will use their own computers with DAZ Studio and Photoshop installed.

In order to complete the course, the computers will need to meet the hardware requirements of both DAZ Studio (DAZ3D, 2011), Adobe Photoshop (Adobe, 2011). If the course is taken online, a web browser capable of viewing YouTube is also required. Based on the results of the survey, the course will be developed for a Windows-based machine using the default file structure of a DAZ installation. The content and arrangement of the learner's Runtime folder —the folder where DAZ models and other content is stored —will vary from learner to learner.

Learners will also need some kind of stereoscopic viewer; this can range from a simple set of stereoscopic glasses to a full sized viewer. In addition, it is recommended, though not required, that students have multiple screens available to allow viewing on one screen while working on another.

When the course is delivered online, there will still be an instructor in the video tutorials. In addition, an instructor will be available for evaluations and questioning via e-mail. The instructor for the course will be well-versed in 3D animation using DAZ Studio. Many of the animation concepts can be explained in either physical or mathematical terms. Since the course will be self-contained, the lesson will require both explanations to be included to ensure that the description meets the needs of the students.

2b.2 – Transfer context

The students will receive the lessons through a seminar and/or through web-based instruction and videos. They will learn through immediate application of the principles and procedures described in the lessons, and through continuous practice of the techniques.

Learners will apply their knowledge in the same context that they received the knowledge, and will continuously evaluate the results as new stereoscopic assets are produced. Generally, the learners will be expected to translate the knowledge, as necessary, to other machines that have different file structures. Learners may also translate the procedures to other software as well.

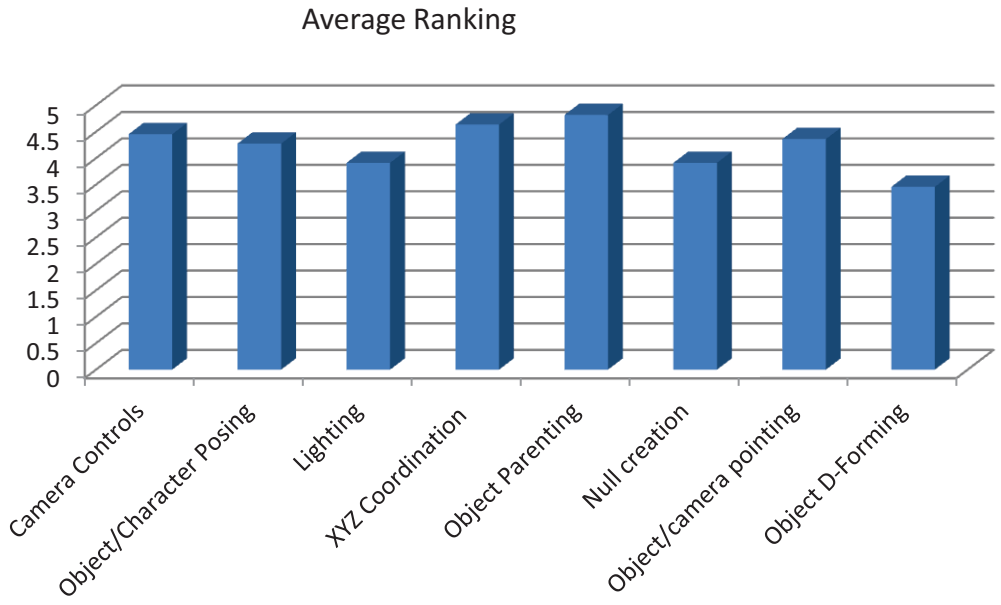
2c – Description of the Learners

Given the voluntary nature of the course, it is assumed that the learners will have some degree of interest in the procedures being taught. Similar to the survey, this class is intentionally designed to be self-selected by the learners; the decision to develop the lesson was based on an expressed learner interest, and not any organizational need.

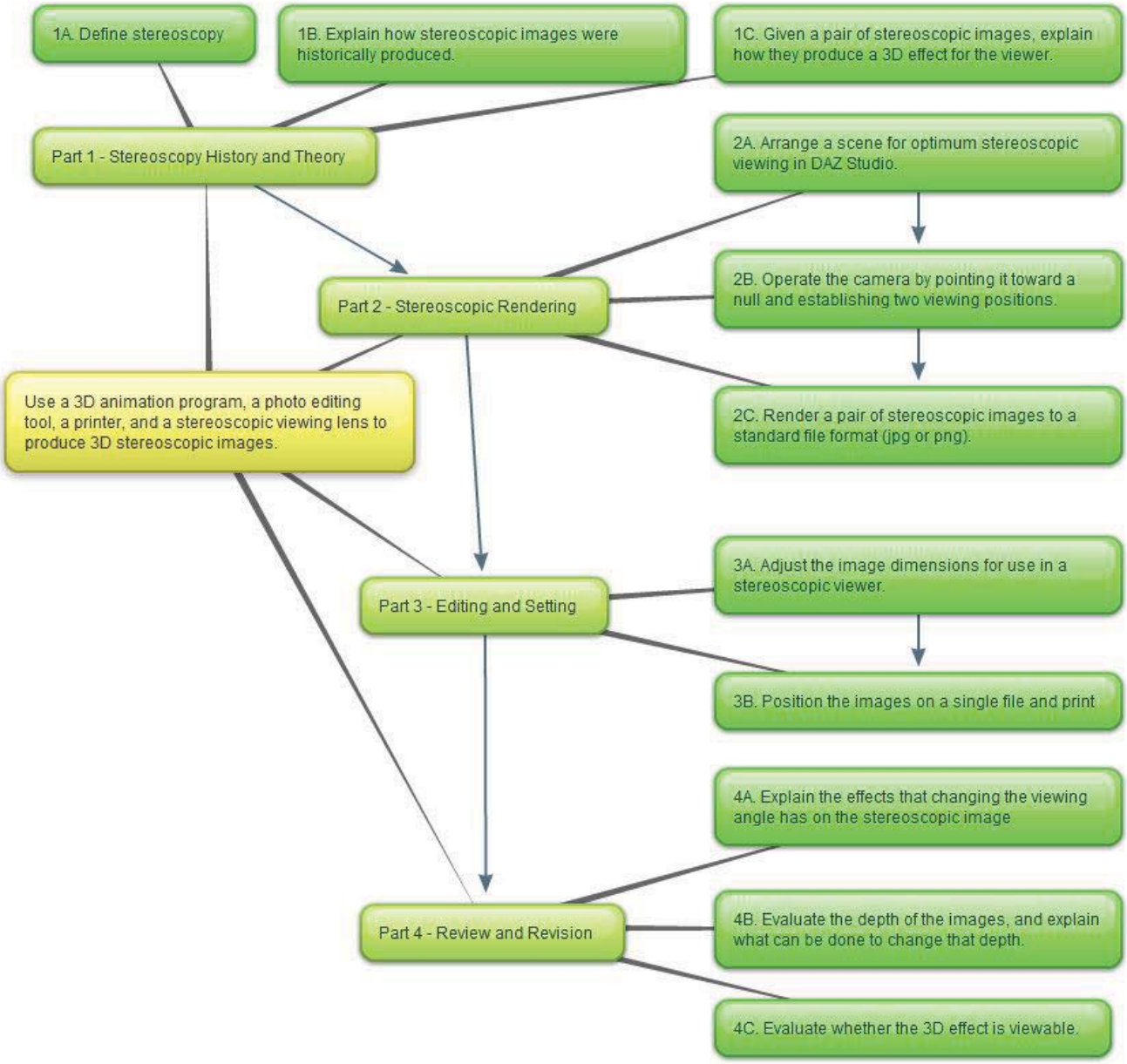
The learners will be mid-career professionals with experience using DAZ Studio. They will need to have a firm understanding of camera controls, scene creation, character posing, and render settings within DAZ Studio.

Due to the visual nature of 3D stereoscopic images, the learner **must** have a working depth perception in order to review the images. A leaner with no depth perception can potentially mitigate this during review by allowing a helper with a working depth perception to view the images.

One of the goals of the survey was to ensure that we did not create a fictitious learner. If the learner did not have the required skill set, then this course could not be delivered without considerable preparatory training. Based on the survey, the participants rated their skill sets highly in all areas.



2d – Task Analysis Flowchart



Part 3 – Planning

Part 3a – Learning Objectives

Objective 1 – Explain the history and theory of stereoscopy.
1a) In your own words, define stereoscopy.
1b) Explain how stereoscopic images were historically produced.
1c) Given a pair of stereoscopic images, explain how they produce a 3D effect for the viewer.

Objective 2 – Render a pair of stereoscopic images in DAZ Studio
2a) Given DAZ Studio, arrange a scene for optimum stereoscopic viewing in accordance with the guidelines defined in the course.
2b) Given a properly arranged scene in DAZ Studio, operate the camera (or cameras) by pointing it toward a null and establishing two viewing positions.
2c) Given a properly arranged scene and a camera pair, operate the camera to render a pair of stereoscopic images to a standard file format (jpg, png, bmp).

Objective 3 – Edit and resize the stereoscopic pair for printing and use in a stereo viewer.
3a) Given a pair of stereoscopic images, a photo-editing program, and a straight-eyed viewer, adjust the size the images for use with the viewer.
3b) Given a properly sized pair of stereoscopic images and a photo-editing program, position the images to a single file and print.

Objective 4 – Review and Revision your stereoscopic pair, and identify potential areas of improvement.
4a) Explain the effect that changing the viewing angle has on the stereoscopic image.
4b) Evaluate the depth of 3D images produced, and explain what can be done to change that depth.
4c) Given a completed set of stereoscopic images, evaluate whether the 3D effect is viewable.

Part 3b – Matrix of Objectives, Bloom's Taxonomy, and Assessment Plan

The matrix of objectives for this course is generally applicable when the course is given *in-person* as a seminar. However, when the course is recorded and presented as a YouTube series, it will be very difficult for the learner to demonstrate the intermediate steps to the instructor. Instead, for the online class, assessment of the intermediate steps will be based on the assessment of the final product.

Learning Objectives (a)	Bloom's Taxonomy Classification (b)	Format of Assessment (c)	Description of test form (d)	Sample items
1A	Comprehension	Paper-and Pencil	Short Answer	Define stereoscopy.
1B	Comprehension	Paper-and Pencil	Short Answer	Explain how stereoscopic images were historically produced.

1C	Comprehension	Paper-and Pencil	Short Answer	Explain how stereoscopic images produce a 3D effect for the viewer.
2A	Synthesis	Performance	Demonstration of the skill to the instructor	Position at least 4 objects on a scene in such a way that they provide depth through varying distances from the camera.
2B	Application	Performance	Demonstration of the skill to the instructor	Position a null at the desired focal point of the scene, and point the camera at the null using the camera pointing tools.
2B	Application	Performance	Demonstration of the skill to the instructor	Render an image with the camera pointed at the null, and then reposition the camera either manually OR by parenting it to the null and rotating the null for a second render.
3A	Application	Performance	Demonstration AND explanation of the Skill to the instructor.	Size the images to a width of approximately 2-1/4 to 2-1/2 inches and a corresponding height.
3B	Application	Performance	Demonstration AND explanation of the Skill to the instructor.	Ensure the images are the same size, and position the centers of each image to correspond with the center of the viewer.
4A	Comprehension	Paper-and Pencil	Short Answer	Explain the effect of changing the viewing angle on the depth and perceived size of the image's content.
4B	Evaluation	Performance	Explanation of the student's evaluation to the instructor.	Identify, during a spoken self-evaluation, what can be changed to increase or decrease the depth of the objects in the image.
4C	Evaluation	Performance	Explanation of the student's evaluation to the instructor, to also include verification by the instructor.	CAPSTONE OF THE COURSE: Evaluate the effectiveness of the 3D effect. The learner (or learner's helper) will confirm this by viewing the image and performing his/her own evaluation.

Part 3c – ARCS Table

ATTENTION
A.1 Perceptual Arousal
> The instructor will pass around viewers with examples of stereoscopic images. The purpose of this activity is to let them see at the outset what stereoscopy is all about, and then to explain it to them afterward.
A2. Inquiry Arousal
> The instructor will ask what the students know about how the pictures passed around in A1 are created. Explore the answers, and write them up in a way for the whole class to see.
A3. Variability
> Attention will be maintained largely through individualized projects. As they progress through the course, they will be asked to evaluate their own materials, so the targeted learning that takes place will be the learning that they need at the time.

RELEVANCE
R1. Goal orientation
> The target learners for this class are 3D artists and designers. A large portion of them are professionals; their livelihoods come from their artwork. With that in mind, the instructor will demonstrate how the new skill can help them to expand their portfolios and/or product sales.
R2. Motive matching
> The instructor will start by having the learners create different perspectives on a single scene, and then have them build their own scenes to create their own stereoscopic pairs. As they see each other's' work, they will have the opportunity to spot areas of improvement and share ideas/praise with each other.
R3. Familiarity
> The instructor will demonstrate the procedures in software that the learners already understand. Based on survey data, the target learners are generally skilled with the 3D software in question, so the tie-in will occur with the software itself. The learners will likely have a variety of ways to control the program based on their own experiences, so the instructor will have to show them how the procedure can be adjusted to their styles.

CONFIDENCE
C1. Learning requirements
> The instructor will establish "quick wins" early in the course, giving the students opportunities to build projects on a high level. The instructor will then work downward and allow them to learn more about the details and customizable options as the learners construct their projects from a lower level.
C2. Success opportunities
> This is a procedural lesson, so there are key tasks to perform as the learner progresses through each lesson. These milestones will point the way toward the next milestone, and each demonstration of competence will enhance the belief in competence along the way.
C3. Personal control

> The instructor will provide learners with opportunities to choose the scenes that they will create for the course. While the procedures being taught will be supplantive, the products created in these lessons will be selected and created by the learners. As the learners become more familiar with the procedures through repetition, the instructor will transition from an informer to a coach.

SATISFACTION
S1. Natural consequences
> The meaningful opportunities to use the new skill will largely be learner defined, but the instructor will provide generalized tasks to guide the learner's choices. That is, after teaching the learner the procedure, the instructor will provide tasks that tell the learner *what* to do, but not *how* to do it. For example, the instructor can provide the learner with a description of what he wants in a scene – similar to the description that a commissioning customer might provide – and the learner will be given the opportunity to figure out the details.
S2. Positive consequences
> If the course is delivered in a classroom setting, the instructor will provide opportunities for learners to provide peer review and continuous evaluation. This will give the learners the opportunity to see his/her successes, but will also encourage him/her to seek out opportunities for improvement. If it is delivered online, information on 3D communities will be provided that will allow students to share their work.
S3. Equity
> The feedback for this course will generally be technical in nature, and not an artistic critique. With that in mind, the instructor will provide analysis of the depth and effectiveness of the 3D imaging, but will not comment on the content that the learners choose to create unless it directly relates to these areas. For example, if a learner chooses to create an image of a child blowing bubbles, the instructor will provide feedback on the effectiveness of the bubbles in 3D, but not on the choice to put bubbles in the image.

Part 4 – Instructor Guide

NOTE: The instructor's guide is written for an instructor teaching the material in a seminar. For the YouTube series, the seminars will be recorded and edited for clarity and efficiency.

Introduction

If delivered in a classroom setting, this class will initially require some form of large writing mechanism. This can include a dry-erase board or a flip chart, but there must be a way to note the discussion points that come up during the introduction.

The learning in this lesson is going to be generally expository, so we will use the steps that apply to supplantive instruction.

Gain Attention

Begin by passing around or demonstrating an example of stereoscopy. The specific example is at your discretion, and may include:

- 3D still shots on a screen using polarized 3D glasses.
- Small stereoscopic viewers with side-by-side stereoscopic images.
- A ViewMaster with stereoscopic slides.
- An old (pre-1900) stereoscopic pair.

Any demonstration used must be easy to see, and must not cause too much of a strain. Lorgnette glasses with stereo images are **NOT** recommended.

As the learners are viewing the examples, explain the basic definition of stereoscopy. It is the process by which two images (one for each eye) are used to create the illusion of depth in a picture. Discuss the historical context, and show how the images were historically created with multiple/sliding camera.

Inform Learners of Purpose

After getting their attention, you should state the objective clearly:

"The purpose of this class is to teach you a procedure for creating stereoscopic images using 3D animation software."

You may also inform them that this isn't a "be-all, end-all" procedure. There are many ways to create stereoscopic images; this is just one of them. The purpose of this course is to teach a single method to get them started; they may establish a way that works better for them in the future. For now, though, we are teaching them a specific technique (which we will call the "Null Rotation" technique) to get them started.

Stimulate Learners' Attention/Motivation

Ask the students if they have noticed the resurgence in 3D technology in recent years. Discuss why this may be happening, and how they can benefit from it. Provide a few scenarios where they might benefit from adding stereoscopic images to their portfolios.

Provide Overview

Since section 2-4 of the learning objectives are structured around the steps of the procedure, you can briefly review the objectives at this point.

BE SURE to explain that they don't need to know the whole procedure at this point; you are only going over the procedure to give them a rough idea of the process, and will explain each step in detail later.

Body

The body of this lesson will be broken down into four areas of learning. You will complete the learning events for each of the four areas, in order:

- Learning to determine if the procedure is required.
- Learning to complete the steps in the procedure.
- Learning to list the steps in the procedure.
- Learning to check the appropriateness of a completed procedure.

Part 1 – Learning to determine if the procedure is required.

Stimulate recall of prior knowledge

Ask if anyone in the class has experience in creating stereoscopic images or generating 3D content. If they do, ask them to describe the process that they used. When you teach your procedure, you can create points of comparison between your procedure and their experience.

Conduct a small experiment with the class. Ask each of them to place their finger about 6 inches in front of their noses, and to focus on some object at the front of the room. When they do this, they should see two fingers (the left eye sees the finger to the right, and the right eye sees the finger to the left). Now, ask them to focus on the finger; they should see two of the object in the distance (this time it's reversed: the left eye sees the object on the left, and the right eye sees the object on the right).

Explain that each eye is seeing a different picture, and it is the combination of the two images that makes the 3D image possible. Today, they will be learning how to create those two images using DAZ3D Studio. Use the diagram in **part 5a, materials 2** for this explanation.

Present information and examples

The determination of whether the procedure is required will ultimately be made by the students, but here you will provide examples of when an image might be a good candidate for stereoscopic imaging. The best scenes are:

- Scenes with a few discernable objects at varying distances from the camera.
- Scenes with objects that are difficult to see in a 2D image, but become visible in 3D.
- Scenes that have **NO** post production in Photoshop, i.e. scenes that were completely rendered in DAZ3D.

Gain and direct attention

Provide examples (of your own making) of these types of scenes. Then, show examples of scenes that are too busy, that have no depth, and that have too much post production. Explain why these scenes fail.

Give the students an example of something to run *toward* as well as something to run *from.*

Prompt use of learning strategies

The best "rule of thumb" to teach the students is this: **If you can't do it within the confines of the 3D software, then you can't make it stereoscopic.**

What I mean by that is that it is usually far too difficult to make the appropriate changes to both images in Photoshop and have those changes line up properly. All special effects must happen within the confines of the scene.

Provide for and Guide Practice

Project 2D examples of your own design on a screen, and ask the students to discuss whether the image is appropriate for stereoscopic viewing. Give examples of ideal scenes, as well as scenes with no depth, too much going on, and with special effects added.

Ask them what can be changed to make it work within the context of DAZ Studio.

Provide Feedback

This step should be in a continuous loop with the "guide practice" step above. After the class has had a chance to discuss their opinions on the images, explain to them where the problem areas are and what can be done to fix them.

NOTE: These images are of your design, so you will know what you did and did not do with each one of them.

Part 2 – Learning to complete the steps of the procedure

Stimulate recall of prior knowledge

This is where we start digging into the software. Take a moment to review the control functions of DAZ Studio. The learners should know how to do the following before coming to class:

- **Control the camera** – Use the control dials in the upper left corner to move around an object, in/out, left/right, and to rotate.
- **Pose an object or characters** – Move extensions of the characters as desired. Also, demonstrate how to use poser presents.
- **Position an object** – Using the XYZ axes (transition, scale, and rotation), show them how to position objects within the scene.
- **Create and position a null** – Show where null and light creation takes place.
- **Parent an object** – Demonstrate the process for parenting an object to another object or to a null, and show how it will move with the parent object as it moves.
- **Point an object, light, or camera** – On the right control bar, demonstrate how an objected can be pointed at another, and show how it will remain pointed at the other object even as it moves.

Take a few minutes in each of these areas to ensure that the students understand them.

Present information and examples

For this portion, you will need to have a scene already established. Give a copy of the scene to each of the learners, and ask them to follow along. **NOTE**: As you go through each of these steps, go slowly and talk through everything that you are doing.

1. **Load a scene** that has no predetermined camera or null positions. Rotate the camera around the scene, and refresh the learners on how to change perspective using the camera controls.
2. **Create a null**, and move it to the desired focal point of your scene. The null can be moved using the XYZ transition function, but should not be rotated along any of its axes.
3. **Point the camera** to the null, and then move the null and the camera independently to establish the scene that you want. Observe the students as they do the same. Ask the learners to select a focal point they want to use. Ideally, each learner will pick a different perspective on the same scene.
4. When the students are satisfied with their camera position, **parent** the camera to the null. Explain to them that this locks them together, and makes it possible to move the camera by rotating the null. **WARNING:** parenting the camera to the null before they are satisfied with the camera's position will make it extremely difficult to control the camera. Such a technique is advanced, and should only be considered after they have mastered the basics. It's beyond the scope of this course.
5. Once the camera is parented to the null, they can adjust the viewing angle by **rotating the null along the y-axis**. Warn them that they should not rotate the null by more than 10 degrees, and can usually stand to do much less. For the sake of this procedure, adjust the rotation by 5 degrees.
6. **Render both images** (one at the original angle, one at the 5 degree angle).
7. Using Photoshop, demonstrate how to **size the images** to 2-1/4 inch width. Explain how the white space in the middle can be used to clearly define the edges.
8. Demonstrate how to **position the images** on a standard 6x4 inch image.
9. **Print the image** to a 4x6 size. **NOTE:** you may need to trim about one-half of an inch from each side and the bottom of the image, depending on the dimensions of your viewer.
10. **Test it in the viewer**. The students should see their 3D images pop out of the scene.

Gain and direct attention

Attention should be drawn to the emboldened steps above. These will be emphasized again during the *Learning to list the steps in the procedure* step below.

Prompt use of learning strategies

The four main sections of the procedure are creation (1,2), positioning(3,4,5), rendering(6), and final production(7-10). Teach the students to think of the steps in these larger groups.

Provide for and Guide Practice

After the procedure is completed, allow the students to repeat the process with the same scene, but from multiple angles. If they are confused about any specific step, take the time to explore that step with them. Give the students about 25 minutes with the same scene, and ask that they produce about 5 pairs of stereoscopic images. With each round, their speed should increase.

Provide Feedback

The first time through the procedure, make sure the students are conducting the steps exactly as they are described in the procedure. Often, the understanding for a given step will become apparent in the later steps.

When the students are repeating the procedure on their own, walk through and observe the students. If one of them makes a mistake that will prevent the stereoscopic image from functioning properly, take a moment to continue the procedure with them individually to demonstrate the consequences of the mistake. This is important: if a problem occurs, do not just tell them *that* they made an error; explain *why* it was an error.

Part 3 – Learning to list the steps of the procedure

Present information and examples

You already have examples (from the renders completed in part 2), of images that work correctly, so now is a great time to provide examples of problems that can occur if the steps are performed out of order. Some examples are obvious – if the images are printed before they are correctly size and positioned, for example, then there is no way that the pair will appear in 3D. Others are not so obvious:

- If the camera is parented to the null before it is in position, then it will be difficult to move.
- If the null is not placed at a proper centralized location, the scene will look strange as the focal point is too far away.

Gain and direct attention

The key cues that demand their attention in this procedure are those that are emboldened in the procedure.

1. At the start, **Load the scene.**
2. When the scene is loaded**, create a null.**
3. When the null is created, **point the camera.**
4. When the camera is pointed, **parent the camera.**
5. When the camera is parented, **rotate the null along the y-axis.**
6. When you have both null positions, **render both images.**
7. When the images are rendered, **size the images.**
8. When the images are sized, **position the images.**
9. When the images are positioned, **print the images.**

10. When the images are printed, **test in the viewer.**

Let the cue of the completion of each step guide their progression to the next step.

Prompt use of learning strategies

Encourage the students to develop their own job aid for the procedure. Project the emboldened list of steps above onto the board, and give them some time to develop their own mnemonic or acronym for the steps. Let them read through the procedure as they perform the tasks to establish familiarity. Their own job aid will likely have more meaning than any job aid that we define.

There is no reason why the job aid can't be used during their regular performance of this task, so the more value the job aid can deliver, the better.

Provide for and Guide Practice

You provided opportunities for practice of the procedure in the last section. In this section, should provide opportunities for students to practice remembering the *steps* of the procedure.

Provide Feedback

Since the job aid is permissible, there is no need to ask the students to simply list the steps of the procedure. Instead, you should review by asking them to *explain* each step in their own words, and explain the problems that can potentially occur at each step.

Part 4 – Learning to check the appropriateness of a completed procedure

Present information and examples

Show the original stereoscopic images from the beginning of class, and review the characteristics that made those images "work" as stereoscopic pairs.

Gain and direct attention

Above we listed the key cues for each step. At each cue, we want the student to understand how to identify if the step was performed properly.

Prompt use of learning strategies

In part 1, you provided examples of 2D images and asked the students to evaluate whether it can be made stereoscopic. Here, you will provide examples of 3D images with problems, and teach them to identify where in the procedure the source of the problem can be found.

Provide for and Guide Practice

Ask them to review the 5 stereoscopic pairs that they created in step 2. Ask them what they would like to change, and how they would change it.

Provide Feedback

If they missed any possible explanations for the problems in the images, fill in those gaps. All along the way, you will identify whether the procedures were performed correctly. You should also provide correct answer feedback in response to their analysis of their own image.

Conclusion

Provide summary and review

Begin by reviewing the types of scenes that lend themselves well to stereoscopy.

- Scenes with a few discernable objects at varying distances from the camera.
- Scenes with objects that are difficult to see in a 2D image, but become visible in 3D.
- Scenes that have **NO** post production in Photoshop, i.e. scenes that were completely rendered in DAZ3D.

Review the objectives of the course, and talk through each of them as you go along. Personalize the lesson by recalling stories of specific moments that occurred during the class to tie the concept being discussed with the learning moments that happened throughout the course.

Enhance transfer

Near enhancement

Provide an assignment for the students to complete using the models installed in the PC. An example might be "Create an image pair depicting an angel and a dragon." Ensure that the models (human character, wings, dragon, etc) are properly installed on the machine. **DO NOT** describe to them what the interaction between the objects should be. Let their own imaginations create the scene.

When evaluating the assignment, focus on the depth of the scene and not the content selected. Discuss with the students ways that the scene can be altered to enhance the 3D effect.

Far enhancement

NOTE: *Use this mechanism for students whose native software is not DAZ3D.*

Provide an assignment asking the students to convert the terms, tools, etc., of the procedure to their own software package of choice. For example, another program might not use the term "null" for a point object with no shape. Ask the student to re-write the procedure using the language of their own software.

Provide Remediation and Closure

Remember to characterize the technique taught in this class as the "Null Rotation" technique. This will give the learners a name to trigger their recollection of the procedure.

Remind the learners of the potential that 3D stereoscopic imaging represents in the current 3D era. Encourage them to explore new techniques and new ways of creating 3D images of their own.

Assessment

Assess Learning / Evaluate

The assessment for the declarative learning will occur throughout the lesson as the learners apply the concepts and procedure to their own scenes. For students that use different software normally, be sure to review and give feedback on the procedure they produce in the **far enhancement** project described above.

The final assessment will occur during the **near enhancement** project described above. The learners will create a final scene that applies each step of the procedure. Their final submission will be assessed based on depth and separation of the individual objects. Encourage them to conduct self-evaluation along the way, and to submit the best product possible.

Provide Feedback and Remediation

Learners will receive feedback from you and fellow learners, and they will have opportunities to apply that feedback throughout the course. Be sure to keep your feedback structured around the technical aspects of their work, and not the content. Also, encourage the learners to send sample images after the class, further demonstrating their understanding of the procedure.

Part 5 – Learning Content

Part 5a – Learning materials

This section contains materials that the instructor can use to aid him/her through the course. **Please note that it is intended that you, the instructor, provide examples of your own work to personalize the course.** Providing work of your own makes it much easier to explain details of how specific effects were created. However, some materials have been included here to supplement the course.
NOTE: **all** materials used in part 5a were created by Douglas Bushong. With this course material, the instructor is granted the right to print these images for viewing in a seminar. If these materials are used, they must be collected at the end of the course.

Material 1 – Stereoscopic Examples

Straight View Stereo Images

These images can be printed and cut to fit into a Holga Stereo Viewer or, with practice, be viewed without a viewer or glasses using the straight view method. These are used during the **Gain attention** phase in Part 4.

Cross View Stereo Image

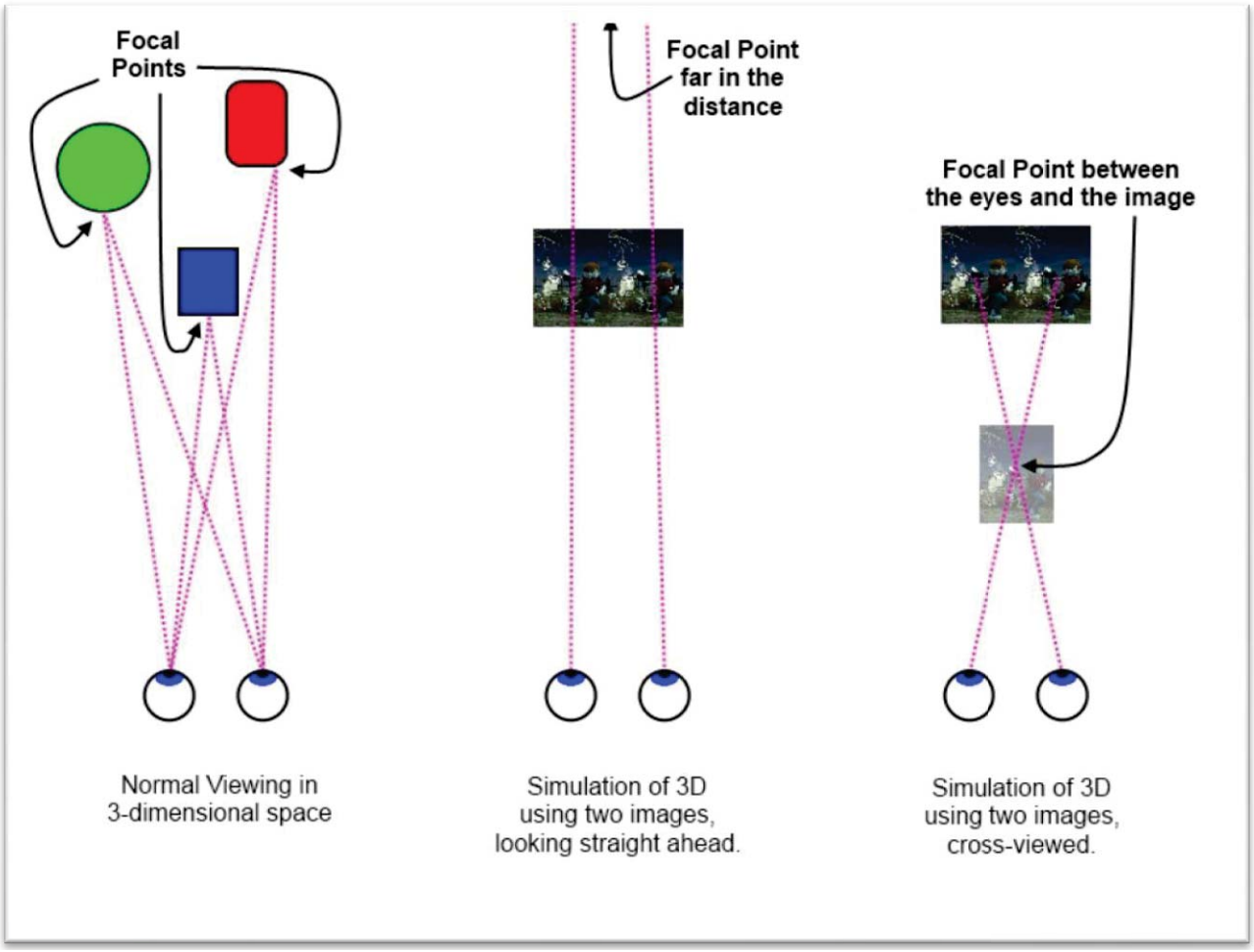
For students that are familiar with the cross-view technique (requires no viewer), here is the same image set up for cross-viewing. Note that this one can be printed larger because the cross-view technique doesn't require it to be sized to fit a viewer.

Red/Cyan Anaglyph image

You may use red-cyan anaglyph 3D glasses with the following images as well. NOTE: if you are presenting this class using a projector, it may be possible to project this image onto a screen and allow the learners to view it simultaneously. This should be tested prior to the seminar.

Material 2 - Explanation Diagram

In the instructor's guide > Body >part 1, when you **stimulate recall of prior knowledge**, it's recommended that you draw these diagrams on the dry-erase board/flip chart. They may be projected onto a screen, but they would have to be cleared before the projector can be used for other demonstration. By drawing it separately, you allow students to refer back to it later.



Part 5b – Formative and/or Summative Assessment materials

Generally, performance assessment will be ongoing as the learners progress through the seminar or video series. The instructor will provide tips along the way, as well as recommendations for possible improvement.

Summative assessment will either occur at the end of the seminar *or* when the stereoscopic image is submitted after the online course. The ultimate assessment come from simply viewing the images; if it "pops out" correctly through the viewer, then the student was successful. If not, then recommendations should be provided based on the nature of the problem.

NOTE: most problems occur from three things: (1) the images are reversed or arranged for cross-view when they should be arranged for straight view, (2)there is too much parallax, or

(3)there is a vertical translation of the camera between shots. Always check for these three things first.

Part 5c – Technology Tool Justification

Tool Justification	
Dry Erase Board OR Flip Chart	**Use**: Document student questions and explain concepts through drawings.
	Rationale: This allows the instructor to keep notes, drawings, etc., visible to the students while continuing to work within the program.
DAZ Studio 3.x	**Use**: Scene creation and camera placement.
	Rationale: DAZ Studio is a free animation program used by a large number of people. Its ease of use makes it ideal for this course.
Adobe Photoshop	**Use**: Final editing, sizing, and positioning of the stereoscopic pairs.
	Rationale: Photoshop is a layer-based program familiar to most designers. While other cheaper alternatives are available, Photoshop is the most pervasive.
Windows-based Laptop	**Use**: Portable machine used for presenting the course material.
	Rationale: most of the students surveyed use Windows machines for their animation. In addition, the portable nature of a laptop makes it easy to use in seminars.
Color Printer	**Use**: Printing final images for viewing.
	Rationale: The images need to be viewed for assessment, and high quality prints will generally look better when magnified by the viewer.
Holga Viewer	**Use**: Used for viewing the stereoscopic images.
	Rationale: The Holga viewer was selected because of how quickly it allows the observer to see the 3D effect. At about $7 each, they are quite affordable.
Video Camera	**Use**: Recording the seminars (especially discussions) for later use on YouTube
	Rationale: This will allow the viewer of YouTube videos to get the sense of an audience being present, and will make it more natural for the instructor to talk to people, rather than just a camera.
Projector	**Use**: Demonstration of software to a seminar or class.
	Rationale: The projector allows for demonstration, rather than simple explanation, to be used in communicating the tools in the software.
Camtasia Studio	**Use**: Recording software demonstrations from seminars for later use on YouTube.
	Rationale: Like the camera, Camtasia allows the instructor to capture the nuances of the software both inside and outside of a seminar.

Part 6 – Formative Evaluation Plan

Part 6a – Expert Review

Subject Matter Expert and Timeline

My subject matter expert is Bob Marrs. Bob holds a MS in Instructional Technology from Purdue University, and is the head of the instructional design department at North Indiana Public Service Company. Bob was selected for his instructional design expertise. The evaluation form is available in part 7, and the expert's completion of the form is in Appendix B. The form was submitted to Bob on 25JUL2011, and was returned on 27JUL2011.

Part 6b – One-to-One Evaluation

For this material, I would actually provide course materials to 2-4 people in **separate**, one-on-one sessions. My goal in selecting the learners is to diversity in both scope and level of expertise while ensuring that all have at least a *basic* proficiency. Any PowerPoint presentations and storyboards will be marked up using the presenter mode's mark-up feature; this will allow me to note potential changes on the fly and review them after the course is over.

I will encourage the learner(s) to think aloud and talk me through their thought processes along the way. I don't want this process to be interrupted by notes, so I will likely – with permission – **video record** the sessions and write down my notes from the playback immediately afterward.

Key questions during one-on-one sessions would include:

- Does the terminology make sense? Can you suggest any improvements?
- Do any of the steps seem out of sync? Would you recommend a re-arrangement?
- Are the examples and graphics clear?
- (Open ended) Are there any other obvious errors in the course?

Part 6c – Small Group Evaluation

I would test multiple small groups of about 10 students with the course, taking myself out of the equation. The groups would work through the material on their own, and I would independently observe. Between each group, I would make adjustments based on the results on the test before presenting it to a new group.

Once again, in addition to direct observation, I would seek permission to video record the session. The goal of the camera is two-fold. First, it would allow me to see the context of their discussion points and questions. Second, it would allow me to benefit from possible "happy accidents" that can occur when the designer is removed from the situation. If, for example, the group misunderstands a point in the process but doesn't *realize* that they've misunderstood, they may come up with a workaround that's actually more efficient than my intended process. To be clear, however, the video recording is supplement, not a substitute, for direct observation.

Given that my lesson is procedural in nature, I would use the process described on page 332 of Smith & Ragan's text. I would use a pretest to assess their understanding and to "prime the pump" for inquiry, and a post-class evaluation of their stereoscopic images. These will be followed by a questionnaire with a few follow-up questions.

Key questions include:

- Do you feel you had the appropriate prerequisite skills to take this class?
- Did you understand the connection between the theory and the application?
- Do you feel that the class succeeded in teaching you a new skill?
- Did the skills that you used in the class match the pre-requisites prescribed by the class?
- What necessary tool do you feel was emphasized the most in the class? What about the least?
- (Open ended, upon completion) Is there anything that troubles you about the class?
- What recommendations do you have for improvement?

Part 6d – Field trial

Following the small group evaluation, I would conduct a field trial to assess both the instructor's ability to use the materials and the learners' abilities to comprehend in. Ideally, I would attempt to find an instructor that already has a fundamental understanding of DAZ Studio OR was willing to learn some of the fundamentals before attempting to teach the class. This is important; if the lesson plan is written for someone who has no understanding of DAZ Studio whatsoever, it will likely be cumbersome for some who does understand.

While I would be willing to follow the text's recommendation of at least 30 students, I would not have all 30 students attending the same class. This class is not designed to be taught en masse to such a large number with a single instructor; the necessary moments of one-on-one attention would not allow for it. That said, I would be willing to achieve the statistical benefits of so many students by holding multiple sessions.

In the questionnaire, I would tend to ask the students questions similar to those posed in the small group, with a few additions:

- What specific conditions of the course made it particularly easy/difficult?
- Did you fee encouraged to participate in class?
- Did the class fee too rushed OR too slow/boring?
- Now that you have completed the course, was there anything specific that you didn't understand?
- If a friend was taking this course, what would you recommend they study before arriving?

The goal here is to gather as much information as possible about the more subtle things that we may have overlooked. Using such a large number of students, we can get a broad spectrum of ideas, and a good indication of what changes need to be made.

Part 7 – Formative Evaluation Report

Part 7a – Evaluation Survey or Rubric

Part 1: Please review each section of the course and provide comments and recommendations.

	Section-by-Section Evaluation
1	Goal, audience, and rationale Comments:
2	Needs assessment, learning and transfer context, description of learners, task analysis flow chart. Comments:
3	Instructional objectives, objective matrix, ARCS table. Comments:
4	Instructor's guide Comments:
5	Learning materials, assessment materials, and technology tool rationale. Comments:

Part 2: Please rate the degree to which you agree or disagree with each statement. The scoring system is as follows: **(1)** Strongly disagree **(2)** Disagree **(3)** Agree **(4)** Strongly agree.

	General Evaluation
1 2 3 4	**Readability**: The instructor's guide was readable and easy to follow Comments:
1 2 3 4	**Terminology**: The terms were clearly defined, and I did not feel lost in the jargon. Comments:
1 2 3 4	**Examples**: Enough examples were provided to explain the concepts. Comments:
1 2 3 4	**Exercises**: Progressive exercises were provided for skills to be applied. Comments:
1 2 3 4	**Practice**: Students are given adequate time to practice the skills and procedures. Comments:
1 2 3 4	**Consistency**: The message of the course is consistent from beginning to end. Comments:

Part 7b – Report the results of the expert review

For the expert evaluation, Mr. Marrs completed the form *and* personally discussed his recommendations. The form was broken into two parts: section-by-section evaluation, and a general evaluation.

Section-by-section Evaluation

Generally, the comments of the section-by-section evaluation were positive. He liked the overall structure used for this assignment, and has asked for a copy for use in his own department.

He provided the following specific recommendations for improvement in each section:

Section 1. Further explanation of DAZ Studio in the first section would be helpful. In addition, he felt the mid-career audience could be more clearly defined. When given the option, it is common for learner to see themselves as either novices or experts, but nothing in between. Mr. Marrs suggested that a clearer description would help them to understand exactly where they stand on the subject matter.

Section 2. He was pleased with the task analysis flow chart, but suggested that a pretest of learner knowledge may be beneficial. This test should at least require the students to demonstrate some of the required skills (camera control, null creation, parenting, etc.) before attending the seminar.

Section 3. He felt the objectives met SMART criteria – **s**pecific, **m**easureable, **a**ttainable, **r**elevant, and **t**ime-bound. He liked the matrix and the ARCS table.

Section 4. He felt this section was solid, but suggested that the objectives should be reviewed throughout the body of the training.

Section 5. A pre- and post-assessment can better determine knowledge gained through the course.

General Evaluation

For the general evaluation, Mr. Marrs responded with an overall evaluation of 6 criteria on a 4-point scale, and provided comments with recommendations for some improvements:

1. **Readability** – The instructor's Guide was well constructed, easy to read, and had a nice flow. ***Score: 4***
2. **Terminology** – Consider a glossary of terms to aid the student. ***Score: 3***
3. **Examples** – The examples were clear and detailed ***Score: 4***
4. **Exercises** – The exercises build on each other. ***Score: 4***
5. **Practice** – Students were given adequate time for practice. ***Score: 4***
6. **Consistency** – There was a very consistent message from the goals and objectives throughout the course. ***Score: 4***

Part 7c. Comments on Change

The four main recommendations of the SME were (1) a clearer description of the pre-requisite skills, (2) a pre-assessment to give the instructor a point of comparison to judge the

effectiveness of the course, (3) a glossary of terms to be provide to the students, and (4) that references back to the objectives will be included in the course materials.

I agree with changes 1 and 3. After receiving his feedback, I have expanded the learner description from simply "mid-career" to include the exact set of skills required for the course. This should help the students self-assess their own readiness prior to the course. I will also add a basic glossary of terms to help learners that do not use DAZ Studio to more easily translate the terminology to their own software.

Change 2 however, is not something that I believe is necessary for this course as it is currently intended. The student body for the course will be largely self-selected; given the clearer description of the pre-requisite skills provided in recommendation 1 and the general voluntary nature of the course, such a pre-test will likely be perceived as a waste of time for the students.

Change 4 is based on experience with longer courses. It's always a good idea to periodically remind the learners how the specific lesson relate to the objectives, especially when large amounts of information are involved. This tends to help keep the class in focus, and reduces scope creep as the course progresses. That said, this course is short enough and the objectives are procedural enough that I don't think a constant referral is necessary. This is something that I will look for in the video reviews of each seminar; if the students get off track, I will include more referrals back to the objectives.

Part 8 – AECT Standards Grid

Professional Standards Addressed (AECT)

The following standards, developed by the Association for Educational Communications and Technology (AECT), and used in the accreditation process established by the National Council for Accreditation of Teacher Education (NCATE), are addressed to some degree in this course. The numbers of the standards correspond to the numbers next to the course tasks show on the list of assignments. Not all standards are addressed explicitly through student work.

Standards	Meets?	Assignments meeting standard in whole or part
Standard 1: DESIGN		
1.1 Instructional Systems Design (ISD)	X	ID Project
1.1.1 Analyzing	X	ID Project
1.1.2 Designing	X	ID Project
1.1.3 Developing	X	ID Project
1.1.4 Implementing	X	ID Project
1.1.5 Evaluating	X	Selected Discussion Forums; ID Project
1.2 Message Design		
1.3 Instructional Strategies	X	ID Project
1.4 Learner Characteristics	X	ID Project
Standard 2: DEVELOPMENT		
2.0 (includes 2.0.1 to 2.0.8)	X	ID Project
2.1 Print Technologies	X	Reading Quiz; ID Projects
2.2 Audiovisual Technologies		
2.3 Computer-Based Technologies	X	(all assignments)
2.4 Integrated Technologies		
Standard 3: UTILIZATION		
3.0 (includes 3.0.1 & 3.0.2)		
3.1 Media Utilization	X	(all assignments)
3.2 Diffusion of Innovations		
3.3 Implementation and Institutionalization	X	ID Project
3.4 Policies and Regulations		
Standard 4: MANAGEMENT		
4.0 (includes 4.0.1 & 4.0.3)		
4.1 Project Management		
4.2 Resource Management		
4.3 Delivery System Management		
4.4 Information Management		

Standard 5: EVALUATION		
5.1 Problem Analysis	X	
5.2 Criterion-Referenced Measurement	X	ID Project
5.3 Formative and Summative Evaluation	X	ID Project
5.4 Long-Range Planning		

Course Goals & Objectives

The overall goal for the course is for each student to consider and use the systematic process of instructional design to create an instructional product. To achieve this goal, students will engage in activities that promote reflective practice, emphasize realistic contexts, and employ a number of communications technologies. Following the course, students will be able to:

1. Discuss the historical development of the practice of instructional design with regard to factors that led to its development and the rationale for its use.
2. Describe at least two reasons why instructional design models are useful.
3. Identify at least six instructional design models and classify them according to their use.
4. Compare and contrast the major elements of three theories of learning as they relate to instructional design.
5. Define “instructional design.”
6. Define the word “systematic” as it relates to instructional design.
7. Define “learning” and synthesize its definition with the practice of instructional design.
8. Relate the design of instruction to the term “educational (or “instructional”) technology.”
9. Describe the major components of the instructional design process and the functions of models in the design process.
10. Provide a succinct summary of various learning contexts (declarative knowledge, conceptual, declarative, principle, problem-solving, cognitive, attitudinal, and psychomotor)
11. Build an instructional design product that integrates major aspects of the systematic process and make this available on the web.
    a. Describe the rationale for and processes associated with needs, learner, context, goal, and task analyses.
        i. Create and conduct various aspects of a front-end analysis.
        ii. Identify methods and materials for communicating subject matter that are contextually relevant.
    b. Describe the rationale for and processes associated with creating design documents (objectives, motivation, etc.).
        i. Construct clear instructional goals and objectives.
        ii. Develop a motivational design for a specific instructional task

iii. Develop assessments that accurately measure performance objectives.

c. Select and implement instructional strategies for selected learning tasks.

i. Select appropriate media tools that support instructional design decisions.

d. Describe the rationale and processes associated with the formative evaluation of instructional products.

i. Create a plan for formative evaluation.

12. Identify and use technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
13. Apply state and national content standards to the development of instructional products.
14. Meet selected professional standards developed by the Association for Educational Communications and Technology.
15. Use various technological tools for instructional and professional communication.

AECT STANDARDS (Applicable to EDTECH 503)

1.0 Design

1.1 Instructional Systems Design

1.1.a Utilize and implement design principles which specify optimal conditions for learning.

1.1.b Identify a variety of instructional systems design models and apply at least one model.

1.1.1 Analyzing

1.1.1.a Write appropriate objectives for specific content and outcome levels.

1.1.1.b Analyze instructional tasks, content, and context.

1.1.2 Designing

1.1.2.a Create a plan for a topic of a content area (e.g., a thematic unit, a text chapter, an interdisciplinary unit) to demonstrate application of the principles of macro-level design.

1.1.2.b Create instructional plans (micro-level design) that address the needs of all learners, including appropriate accommodations for learners with special needs.

1.1.2.d Incorporate contemporary instructional technology processes in the development of interactive lessons that promote student learning.

1.1.3 Developing

1.1.3.a Produce instructional materials which require the use of multiple media (e.g., computers, video, projection).

1.1.3.b Demonstrate personal skill development with at least one: computer authoring application, video tool, or electronic communication application.

1.1.4 Implementing

1.1.4.a Use instructional plans and materials which they have produced in contextualized instructional settings (e.g., practica, field experiences, training) that address the needs of all learners, including appropriate accommodations for learners with special needs.

1.1.5 Evaluating

1.1.5.a Utilize a variety of assessment measures to determine the adequacy of learning and instruction.

1.1.5.b Demonstrate the use of formative and summative evaluation within practice and contextualized field experiences.

1.1.5.c Demonstrate congruency among goals/objectives, instructional strategies, and assessment measures.

1.3 Instructional Strategies

1.3.a Select instructional strategies appropriate for a variety of learner characteristics and learning situations.

1.3.b Identify at least one instructional model and demonstrate appropriate contextualized application within practice and field experiences.

1.3.c Analyze their selection of instructional strategies and/or models as influenced by the learning situation, nature of the specific content, and type of learner objective.

1.3.d Select motivational strategies appropriate for the target learners, task, and learning situation.

1.4 Learner Characteristics

1.4.a Identify a broad range of observed and hypothetical learner characteristics for their particular area(s) of preparation.

1.4.b Describe and/or document specific learner characteristics which influence the selection of instructional strategies.

1.4.c Describe and/or document specific learner characteristics which influence the implementation of instructional strategies.

2.0 Development

2.0.1 Select appropriate media to produce effective learning environments using technology resources.

2.0.2 Use appropriate analog and digital productivity tools to develop instructional and professional products.

2.0.3 Apply instructional design principles to select appropriate technological tools for the development of instructional and professional products.

2.0.4 Apply appropriate learning and psychological theories to the selection of appropriate technological tools and to the development of instructional and professional products.

2.0.5 Apply appropriate evaluation strategies and techniques for assessing effectiveness of instructional and professional products.

2.0.6 Use the results of evaluation methods and techniques to revise and update instructional and professional products.

2.0.7 Contribute to a professional portfolio by developing and selecting a variety of productions for inclusion in the portfolio.

2.1 Print Technologies

2.1.3 Use presentation application software to produce presentations and supplementary materials for instructional and professional purposes.

2.1.4 Produce instructional and professional products using various aspects of integrated application programs.

2.3 Computer-Based Technologies

2.3.2 Design, produce, and use digital information with computer-based technologies.

3.0 Utilization

3.1 Media Utilization

3.1.1 Identify key factors in selecting and using technologies appropriate for learning situations specified in the instructional design process.

3.1.2 Use educational communications and instructional technology (SMETS) resources in a variety of learning contexts.

3.3 Implementation and Institutionalization

3.3.1 Use appropriate instructional materials and strategies in various learning contexts.

3.3.2 Identify and apply techniques for integrating SMETS innovations in various learning contexts.

3.3.3 Identify strategies to maintain use after initial adoption.

4.0 Management

(none specifically addressed in 503)

5.0 Evaluation

5.1 Problem Analysis

5.1.1 Identify and apply problem analysis skills in appropriate school media and educational technology (SMET) contexts (e.g., conduct needs assessments, identify and define problems, identify constraints, identify resources, define learner characteristics, define goals and objectives in instructional systems design, media development and utilization, program management, and evaluation).

5.2 Criterion-referenced Measurement

5.2.1 Develop and apply criterion-referenced measures in a variety of SMET contexts.

5.3 Formative and Summative Evaluation

5.3.1 Develop and apply formative and summative evaluation strategies in a variety of SMET contexts.

SMET = School Media & Educational Technologies

Appendices

Appendix A – Needs Assessment Survey Questions

Needs Assessment – Basic Information

1. Demographics: Please make the selection that best fits you (choose one for each question)

Age:	<20	20-30	30-40	40-50	50-60	>60
Gender:	M	F				
Continent	Africa	Asia	Australia	Europe	North America	South America

2 Software: Please select the software/OS that you PRIMARILY use for animation (choose one).

OS:	Windows	Linux	MacOS	Other		
Software:	Poser	DAZ Studio	Maya	Carrara	Blender	Other

3. Reason for use: Do you use your 3D software for personal (hobby) or professional image creation?

- ☐ Personal
- ☐ Professional
- ☐ Both

4. Frequency: How frequently do you produce 3D artwork or animated videos.

- ☐ Every Day
- ☐ A few times per week
- ☐ A few times per month
- ☐ Once per month or less

Needs Assessment – Student Proficiency

5. Proficiency: Please rate your knowledge of the following aspects of your 3D software (1 is non-proficient, 5 is expert).

Camera Controls	1	2	3	4	5
Object and Character Posing	1	2	3	4	5
Lighting	1	2	3	4	5
XYZ Coordination of objects (scale, translation, and rotation)	1	2	3	4	5
Object Parenting	1	2	3	4	5
Null Creation	1	2	3	4	5
Object and camera pointing	1	2	3	4	5
Object D-Forming/Morphine	1	2	3	4	5

Needs Assessment – Stereoscopic image Class

6. Have you ever considered producing stereoscopic images using your 3D software?

- ☐ Yes
- ☐ No

7. Would you be interested in taking a free class in stereoscopic imaging using your 3D software?

- ☐ Yes
- ☐ No

8. If you are interested in taking a free class in stereoscopic imaging, which delivery format would you prefer?

- ☐ Seminar (such as at a 3D convention)
- ☐ Printable Textbook
- ☐ Online Course (text based)
- ☐ YouTube Video Series

9. How did you learn about this survey?

- ☐ DAZ3D Forums
- ☐ Renderosity Forums
- ☐ Other (Please Specify)

10. This survey is anonymous. If you would like to be contacted for follow-up questions, please leave your name in the space below (forum name and applicable forum is acceptable). If you would not like to be contacted, leave this space blank.

Appendix B – Completed Expert Evaluation Form

Part 7 – Formative Evaluation Report

Part 7a – Evaluation Survey or Rubric

Part 1: Please review each section of the course and provide comments and recommendations.

Section-by-Section Evaluation	
1	Goal, audience, and rationale Comments: The stated goal is specific, although a definition of DAZ Studio would be helpful. The Audience Description of Mid-Career could be more clearly defined (10-15 years experience) Good Rationale.
2	Needs assessment, learning and transfer context, description of learners, task analysis flow chart. Comments: The Learning Context listed, the needs of the learners and the task analysis flowchart was excellent and had a good flow of the job. Should there be a pretest on learners knowledge of DAZ Studio, Camera Control etc.
3	Instructional objectives, objective matrix, ARCS table. Comments: The Far Learning objectives and supporting enabling objectives are SMART. The matrix of objectives (3b) is excellent and ties well to instruction Design Theory. The ARCS table contains excellent information the instructor can use in the course.
4	Instructor's guide Comments: Good information contained in the instructor's guide. Review objectives throughout the body of the training. The ARCS for Gaining attention and stimulating the audience are very important
5	Learning materials, assessment materials, and technology tool rationale. Comments: Materials are good and detailed Pre + post assessment can better determine knowledge gained by students.

Part 2: Please rate the degree to which you agree or disagree with each statement. The scoring system is as follows: **(1)** Strongly disagree **(2)** Disagree **(3)** Agree **(4)** Strongly agree.

General Evaluation	
1 2 3 (4)	**Readability**: The instructor's guide was readable and easy to follow Comments: The instructors guide was well put together, was easy to read and had a nice flow.
1 2 (3) 4	**Terminology**: The terms were clearly defined, and I did not feel lost in the jargon. Comments: you might consider a glossary of terms to aid the student.
1 2 3 (4)	**Examples**: Enough examples were provided to explain the concepts. Comments: Good detailed examples
1 2 3 (4)	**Exercises**: Progressive exercises were provided for skills to be applied. Comments: Exercises build upon each other
1 2 3 (4)	**Practice**: Students are given adequate time to practice the skills and procedures. Comments: yes, and step by step instruction
1 2 3 (4)	**Consistency**: The message of the course is consistent from beginning to end. Comments: Very consistent message from goal and objectives through course content.

Appendix C - Works Cited

Adobe. (2011). *Adobe Tech Specs*. Retrieved July 2011, from Adobe.com: http://www.adobe.com/products/photoshop/tech-specs.html

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Ragan, T. J., & Smith, P. L. (2005). *Instructional design: 3rd edition.* Hoboken: Wiley.

Tesla, N. (1931, October 19th). *New York Times*.