Evaluation of Adobe After Effects Training Module

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IST 622

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July 24, 2017

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I. Introduction

Students in the game design program at California State University at Monterey Bay have need of enrichment courses to add breadth to their capabilities. My capstone project is to design a one-unit course in Adobe After Effects. Goals of the course are to create an animated splash screen to include text and logos, and to create particle effects for use in a console type 3D game.

Adobe After Effects is a powerful application used in the film and game design industries to create motion graphics and special effects. It features a complex interface and many built-in effects and simulations that can be applied to text, graphics, and video clips to create lighting, color, motion, particle and other kinds of effects.

After Effects deals with graphical objects including video clips as well as bitmap and vector images as well as text and particle objects created with the program itself. Through moving pieces, controlling color values, and controlling change over time visual effects are created. These can be used to animate text and logos, improve color, and create complex particle effects for things like rain, dust, fire, explosions and lighting effects.

Effects and simulations in Adobe After Effects are controlled by keyframes, which hold values like turbulence, particle size, color, light intensity, and literally countless other settings within the plugins and simulations present. These are used to fine-tune the look of a visual effect to create believability in the context in which it is used.

Consequently, a firm foundation in using the basics is essential if learners are to successfully follow tutorials for controlling complex sets of graphics and effects. Learners must know how to add and subtract keyframes, how to find the elements they control, and how to adjust the values they contain. Learners must navigate the workspace effectively, work with layers of content, and work with changes to elements and effects over time.

This evaluation will test the effectiveness of an eLearning prototype for teaching the basics of After Effects. Because of the potential for additional design capability and how these goals will contribute to student game products, the overall course expected to be engaging and interesting to learners. This module is intended as an entry point to After Effects. Learners will learn how to navigate the interface, navigate the timeline, and work with keyframes to animate position, scale, rotation, and opacity of a simple object. While its specific results are somewhat unremarkable, the module creates immediate possibilities for the animation of objects. The next step for learners in game design will be to use these capabilities to animate text and logo designs. As such, it is expected that students will have some enjoyment of this module and begin to consider what is possible moving forward.

II. Methodology

Prototype:

The prototype eLearning product for this was created in Adobe Captivate, and includes a combination of media for instruction, including voice audio, screen capture video and images from Adobe After Effects, and interactive quizzes. The learning in the prototype has three phases: Pre-Test, Instruction, Simulation, and Post-test.

The Pre-Test and Post-Test both consist of twenty multiple choice questions, some with screen shots for reference. The original plan was intended to run pre- and post-tests in the Captivate product, but challenges in the LMS made this temporarily impossible, so the questions were then added to a Google forms quiz in order to work with the data more effectively. This solution made it impossible to use hotspot clicking for solutions and resulted in different user interface than the original plan. Further experimenting with Captivate will uncover a better solution, but for the time being, Google helped gather the data.

In the simulation the user is guided through specific steps to practice a procedure for creating keyframes for the animation of position, scale, rotation, and opacity. The simulation is a screen capture performed in Adobe Captivate with Adobe After Effects as the captured environment. Users click on hotspots and are provided guidance. There is no real way of getting this part wrong. The goal is to create a low anxiety environment for learners to develop familiarity with the interface and simple control of keyframe elements.

Learners:

Learners approaching this module are expected to be college students with varying degrees of experience using multimedia and graphics programs, largely coming from the game design program at CSUMB. These students may have experience with other Adobe products such as Photoshop, Illustrator, or Premiere. There may also be cases be experienced After Effects users in the class.

Participants ranged in age from 25 to 49 with an average age of 37.4. Education include a range of educational levels, including MIST graduate students, a Masters Degree in Physics, community college, and high school graduates.

Tryout Conditions

The components of the product test were assembled in a blog owned by the designer. While a Moodle or Canvas environment would have been preferable, I was important to be sure test participants would have access. It was effective to upload the Captivate products and link them, as well as the quizzes and surveys. Elements were linked in an ordered list preceded by instructions and included an explanation of each piece. (See Appendix V-A)

Tryout conditions varied. Several were done at home and reported remotely, and several others were performed at local coffee shops. Students in the game design program the After

Effects Course is designed for will be learning online, indicating that the variety of locations may represent the kind of variety we can expect from actual learners in the course. In addition, all learners were using laptop computers on both OS and Windows platforms, also indicative of the expected work environment of the students. Learners went through the training only once. While learners in the game design course this is designed for may have the opportunity to repeat, a single use is best for gaining data on the effectiveness of the design overall.

Process

Each learner went through the same pattern in the learning, which included pre-survey, pre-test, instruction, simulation, post-test, and questionnaire . Emails were gathered in case further questions were needed on the participants' experiences.

Survey

The pre-survey collected information about user age and previous computer experience across several computer experiences and programs. The goal of the pre-survey was to identify varying levels of computer expertise and check for correlation with pre- and post-test results. While the responses are self-reported in the absence of a rubric, the value connects with users' confidence level and apparent readiness. This makes this data nearly anecdotal rather than pure data.

Pre-test

The pre-test focuses on knowledge or prediction of the use of After Effects. It includes twenty multiple choice questions. Ten of these refer to screenshots from After Effects. The questions ask learners about things they may not know about. While the post-test should be the same, it may have been useful to include an option for students to have had a choice for no

knowledge or experience. Allowing students to guess predict may provide information about how apparent answers may be in some cases, particularly involving the interface of the program.

There were some questions written that were removed prior to testing because they did not reflect what is taught in the module and relied upon previous knowledge or guessing. They represented valuable knowledge, but must be covered and tested in a later module.

Instruction

The Instruction portion is focused on providing information that is exercised in the simulation that follows. It explains and demonstrates specific areas of the interface using video and audio captured from Adobe After Effects. Callouts are present to point out specific elements of the After Effects interface, as well as explaining specific application of their use.

The first of these covers the Project Panel, the Composition Panel, and the Timeline Panel. In the Timeline Navigation segment, the learner is introduced to different ways of moving back and forth in the timeline, including using one of two time displays, using keyframe navigation, or manually dragging the time display marker. Finally, the Keyframe Navigation segment explains use of keyframes; keyframes hold values for transform properties such as position, scale, rotation, and opacity (transparency). This concept is of particular importance as all effects use keyframes in some way to create change over time when two or more keyframes holding different values are employed.

Each sub-topic is followed by a check for understanding. Information is segmented into small sets of concepts in the interface. The check for understanding is often a rehearsal for later assessment in the pre-test. By repeating the questions through exposure to the content, it is hoped that the learner retains the information at a higher rate than without the immediate check.

Simulation

In the simulation the user is guided through specific steps to practice a procedure for creating keyframes for the animation of position, scale, rotation, and opacity. The simulation is a screen capture performed in Adobe Captivate with Adobe After Effects as the captured environment. Users click on hotspots and are provided guidance. There is no real way of getting this part wrong. The goal is to create a low anxiety environment for learners to develop familiarity with the interface and simple control of keyframe elements.

The simulation relies upon Adobe Captivate to create click boxes in the simulated environment as well as text entry. For example, the user is directed to click on a current time display and enter a value to change current time. They are then instructed to click on the Time-vary Stopwatch to create a keyframe for Position. Next they change the current time value again, and change the value of the Position, which creates another keyframe. At this point a video is shown that demonstrates the animated results of this change, providing feedback on the process.

Post-test

The post-test uses the same questions as the pre-test. The purpose in this setting is to gauge the effectiveness of the learning module. Using identical questions in the post-test allows comparison and statistical analysis. It is anticipated that overall scores will improve.

Questionnaire

The purpose of the questionnaire is to identify the effectiveness and appeal of the learning and simulation module. Most of the questions use a Likert scale

III. Results

Entry Conditions

Initial plans were to test the learning module with a Photoshop class of eight students at Gavilan College. Due to technical issues that occurred with the LMS the developer intended to use in this environment, an alternative plan was developed in which a separate group of volunteers met one on one with the developer to go through the module. Of these, three were MIST students in the developer's cohort who went through the module remotely and provided feedback, including the amount of time required to complete. The other five participants went through the module in the presence of the developer.

Learners began by navigating to the blog post that launches the learning activities. If they were present with the designer, the page was already open in a browser. Participants who were working remotely were sent the link and asked to report the time it took to complete the test.

Instruction

This instructional module is intended to be used by students in a blended course. As such, there is little to no direct interaction with the instructor during the process. All required instructional and practice elements are included in the learning product. It is intended that learners will follow up this module with an actual exercise in After Effects; that is outside the scope of this module and is not addressed in this test. In person subjects were observed and time for each section of the module; remote subjects reported overall time spent. One participant did not complete the post-test and questionnaire and is removed from the data.

Outcomes

The results of participants in direct observation as well as those from remote users were quite valuable in determining the effectiveness of the instructional design and the learning product itself.

Direct observation allowed me to see a number of things I had not discerned in my preliminary observation of the module. For example, the timing in the Instructional section of the module needs to be completely user controlled; there are sections where a caption box indicates valuable information but is gone before the learner can absorb the information it contains. Testing also revealed that the Tab key did not take users to the second value box for position or scale as was intended. Learners had to user playbar controls to advance to the next value.

There are a few signaling issues in both the Instructional section and the Simulation. At the beginning of the Instruction section three users asked if there is sound. The embedded check for understanding questions use a "Submit" button. Several users took time to locate this, likely due to color and placement. Both the Instruction and the Simulation have weak signaling indicating the last slide.

Hypothesis 1

Hypothesis 1: Test subjects with more computer experience will score higher on the post-test than students with less. Average scores for basic computer/office, graphics, and video/3D were added for each user. A cutoff point of 7.0 was selected to divide users into two groups. Less experienced users were those with a score of 7.0 or less.

To determine if there is a relationship between self-reported computer expertise level and post-test scores, a t-Test: Two-Sample Assuming Unequal. $H0: \mu$ group 1 post-test$<\mu$ group2

post-test. Level of significance at .05. Results reject the null, indicating that computer expertise level can predict success with Adobe After Effects beginning tutorial.

	Computer Rating	Post Test				
sb0023	4.4	9		t-Test: Two-Sample Assuming Unequal Variances		
sb1912	4.9	11				
mh0320	7.0	9			*Group 1*	*Group 2*
poisonoak	7.2	14		Mean	9.108631	13.75
GV1984	9.0	14		Variance	2.391094	0.25
pmartin	9.1	14		Observations	4	4
Royins	11.0	13		Hypothesized Mean Difference	0	
				df	4	
mean	**7.5**	**12.0**		t Stat	-5.71195	
				P(T<=t) one-tail	0.002323	
Group 1:	<=7			t Critical one-tail	2.131847	
				P(T<=t) two-tail	0.004646	
				t Critical two-tail	2.776445	

Hypothesis 2:

Hypothesis 2 states an expectation that there will be a significant difference between pre- and post-tests, showing that the training is effective in helping beginning users of After Effects understand the basics. A t-Test Paired Two Sample for Means. Therefore, H0: μ pre-test>μpost-test. In this case, the t-critical one-tail<t Stat, so we reject the null here as well indicating that the module has a significant effect on learning.

User ID	pre	Post	difference		t-Test: Paired Two Sample for Means		
mh0320	11	9	-2				
GV1984	10	14	4			*pre*	*Post*
sb0023	4	9	5		Mean	9.714286	12
sb1912	11	11	0		Variance	8.238095	5.333333
Royins	12	13	1		Observations	7	7
poisonoak	12	14	2		Pearson Correlation	0.402305	
pmartin	8	14	6		Hypothesized Mean Difference	0	
mean	9.714286	12	2.285714		df	6	
Max	12	14	6		t Stat	-2.10697	
Min	4	9	-2		P(T<=t) one-tail	0.039853	
					t Critical one-tail	1.94318	
					P(T<=t) two-tail	0.079706	

					t Critical two-tail	2.446912	

Recommendations

While the results are positive, there are eight questions that show negative or zero change between pre- and post-test when the mean of correct answers if figured for all participants. This suggests that those portions of the instructional module, including the Composition Panel, using keyframes, and time code format, need to be improved.

Based on response to the questionnaire and user input, giving users more control over sound and pacing is essential to improving learning in this module. In addition, creating a more seamless unit that includes and reports pre- and post-test data will not only work better for the instructor, but create a more consistent learning experience for users.

Questions that involve visual choice in the simulated software setting should use click-boxes rather than a single image for several questions, based on the Contiguity Principle. Parts of the simulation that depend on text entry should use user click to select the correct text box rather than the as yet undependable Tab key to move from one value to the next.

IV. Summary

The test reports positive experience with the learning module. The hypothesis regarding correlation between learner computer experience and post test scores is confirmed. The hypothesis that the module results in a significant increase in user learning based on a comparison between pre- and post-tests is also confirmed. The module needs further improvement, but establishes a useful learning environment for short learning modules that teach basic skills in certain areas. Most work learners will do in After Effects is too complex to rely upon this method; once learners gain basics in specific areas, the patter will be set for how to use,

in this case, keyframes and transforms to move objects and text. This learning can then be transferred to more complex effects that have subsets of controls using keyframes.

The goal of the course in After Effects is to have students become independent developers of special effects. Moving forward from this module, other research- and peer-based learning activities will be introduced. As such, this module represents an introduction rather than a template for instruction, though it can be used in other forms for other learning objectives provided the length of the module is less than thirty five minutes.

V. Appendices

Appendix A: Introductory Script

Thank you for participating in this evaluation of this learning product. My name is Rob Campbell, and I am a graduate student in the Instructional Science and Technology, or MIST program at CSUMB. Part of the work in this program involves designing, developing, testing, and evaluating eLearning products.

In this case we are doing a usability test on a product designed to introduce learners to Adobe After Effects, which will ultimately be part of a short course at CSUMB on After Effects as a game design tool.

The flow of this usability test includes a pre-survey, a pre-test, instruction, an interactive software simulation, a post-test, and a user opinion survey. Please keep in mind that *you* are not being tested. This particular learning product is being tested for soundness of design. I'm interested in knowing what works and does not.

Remote users saw the following:

> This learning unit is designed to teach beginning users of Adobe After Effects some basic skills. After Effects does motion graphics and special effects. You've

probably seen something on TV or at the movies made cooler with the help of After Effects. In order for users to learn special effects, they must first learn some basics, which is what this unit is about.

This is not a test of you--it is a test of this learning design and product. Your feedback is important data.

1. User information survey: Here we gather some information about you to for data purposes.
2. Pre-Test: A Pretest on what you're about to learn.
3. Instruction: Beginning instruction to introduce the After Effects layout and some basic procedures.
4. Learner Simulation: A guided simulation in which you will learn how to move, rotate, and fade an object. If part of the learning product does not work, use the Next button in the nav bar at the bottom.
5. Post –Test: Here we find out if you learned. If you didn't, it may not be your fault!
6. User Experience Survey: Here you get to tell me your thoughts about this product and how I can improve it.

Appendix B: Preliminary Survey

Intro to AE Pre-Survey

* Required

1. Email address *

2. Enter your user ID *

3. Enter your age

4. What is your level of computer use experience?

1 2 3 4 5

Specific computer experience

For each program listed, indicate your level of expertise

5. Microsoft Word.

1 2 3 4

6 Google Docs.

1 2 3 4 5

7. Microsoft Excel.

1 2 3 4 5

8. Microsoft PowerPoint.

1 2 3 4 5

9. Adobe Photoshop.

1 2 3 4 5

10. Adobe Illustrator.

1 2 3 4 5

11 Adobe Premiere.

1 2 3 4 5

12. Adobe Flash/Animate.

1 2 3 4 5

13. Adobe After Effects.

1 2 3 4 5

14. Blender 3D.

1 2 3 4 5

15. Unity 3D .

1 2 3 4 5

Task Knowledge

Rate your proficiency on the following tasks:

16. Can create folders.

1 2 3 4

17. Can move files between folders.

1 2 3 4 5

18. Can use word processing to write a paper.

1 2 3 4 5

19. Can use spreadsheets (Excel or Google Sheets) to create a budget.

1 2 3 4 5

20. Can crop an image in Photoshop.

1 2 3 4 5

21 Can resize an image in Photoshop.

1 2 3 4

22. Can rearrange layers in Photoshop.

1 2 3 4 5

23. Can rearrange layers in Photoshop.

1 2 3 4 5

24. Can create Text in Photoshop.

1 2 3 4 5

25. Can edit video in Premiere.

1 2 3 4 5

26 Can create scrolling titles/credits in Premiere.

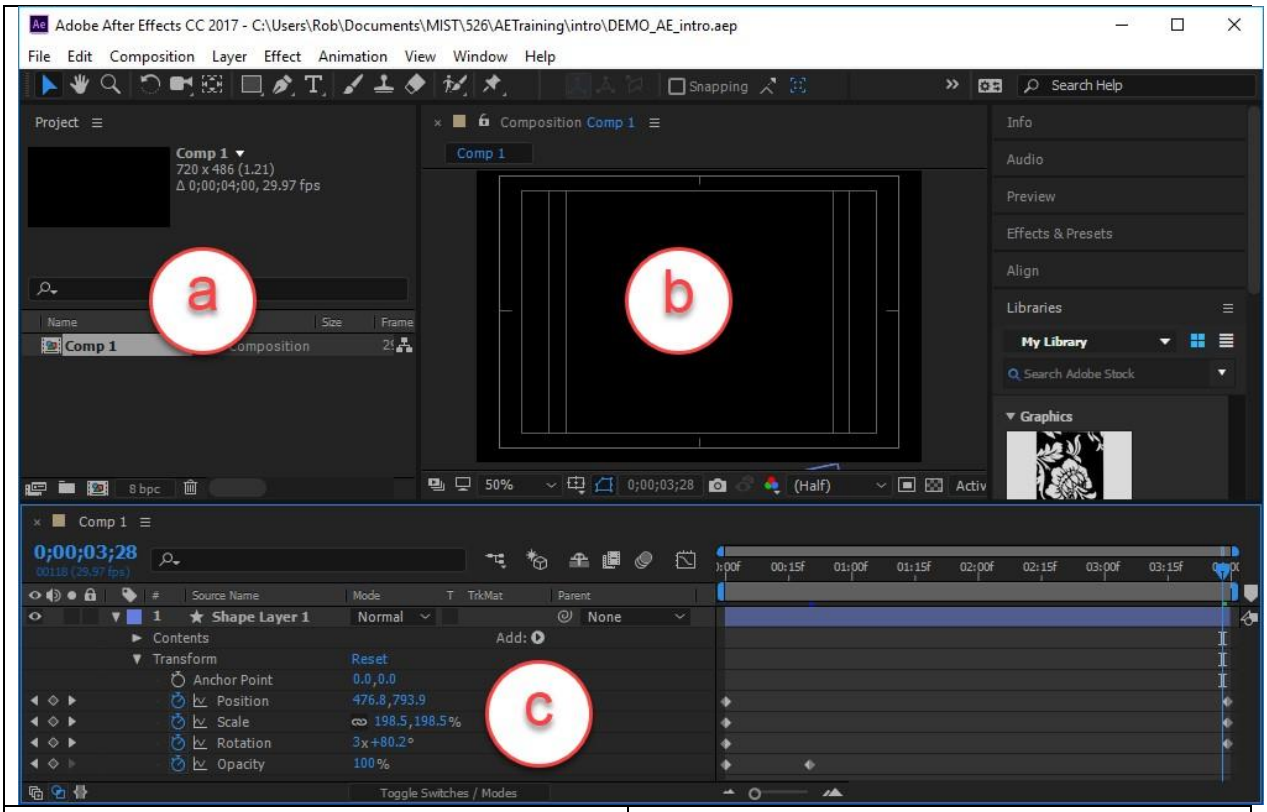
1 2 3 4 5

27. Can animate simple movement in After Effects.

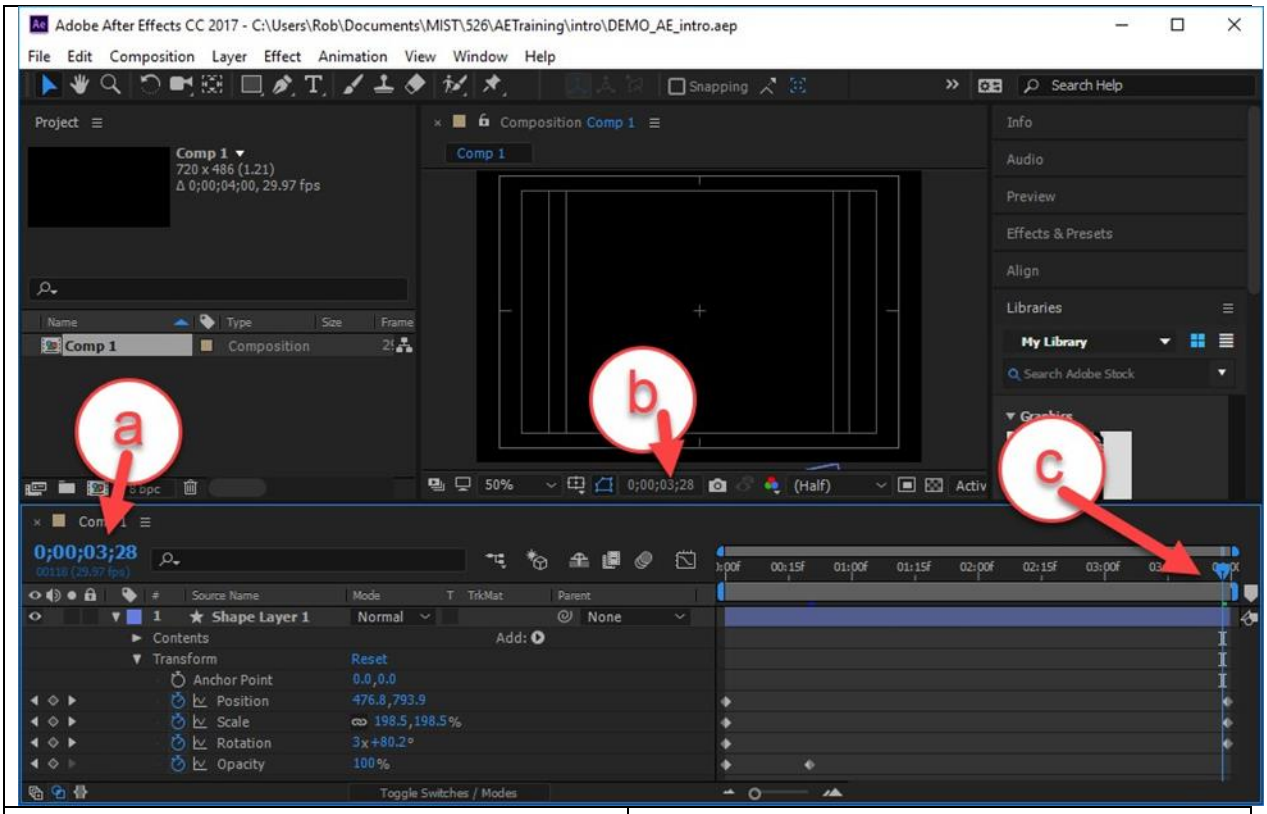
1 2 3 4 5

Appendix C: Pre-Test/Post-Test

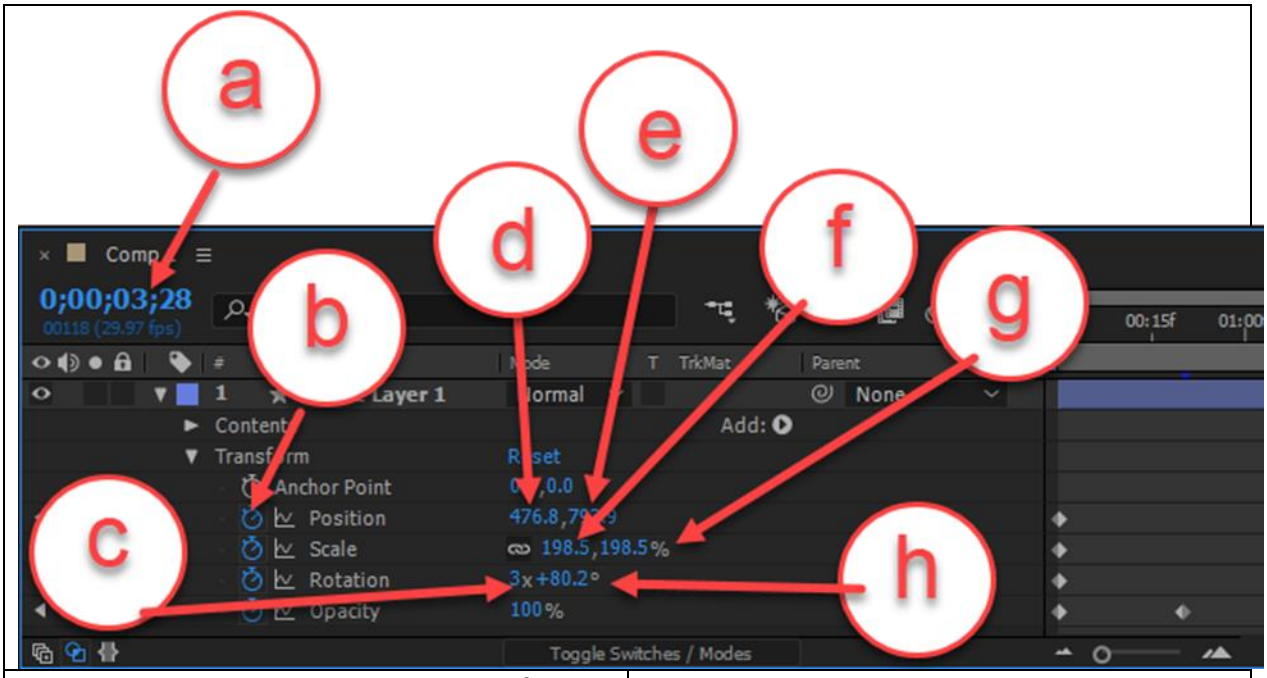
When moving a layer a. Only parts of the layer can be moved. **b. The entire layer is moved at once.**	What is the minimum number of keyframes required to create movement? a. 0 b. 1 **c. 2** d. 3
3:15:12 means a. Three hours fifteen minutes and twelve seconds **b. Three minutes fifteen seconds and twelve frames** c. Three seconds and 15.12 seconds d. Twelve seconds and 15.3 frames	How is the first keyframe for a transform created? a. How is the first keyframe for a transform created? b. Right click in the timeline for the transform property and choose "New Keyframe" **c. Click the Time-Vary Stopwatch for the transform property** d. Drag the layer object to a new position
How is the second keyframe for a transform animation? (choose any that apply) Right click in the timeline for the transform property and choose "New Keyframe" **a. Change the value of the transform** b. Right-click in the timeline for the transform property and choose "New Keyframe" c. Click the Time-Vary Stopwatch for the transform property **d. Drag the layer object to a new position**	



In the above image, which is the Timeline Panel? a. b. **c.** *	In the above image, which Project Panel? a. * b. c.
In the above image, which the Composition Panel? a. b. * c.	



In the above image, which is Current time in the Composition Panel? a. b. * c.	In the above image, which is Current time display in the Timeline Panel? a. * b. c.
In the above image, which shows position of current time in the Timeline Panel? a. b. c. *	



In the above image, which is the value for vertical scale? e. f. * g. h.	In the above image, which is the horizontal value for position? . d. * e. f. g.
In the above image, which is the value for rotations? c. * d. e. f.	In the above image, which creates the first keyframe? a. b. * c. d.
0% Opacity is **a. Completely transparent** b. Dark with little contrast c. Impossible d. Solid and opaque	The transform setting for scale in After Effects is measured in a. Pixels b. Inches **c. Percent** d. Proportion
Entering 303 in the Time Display means a. 303 seconds b. 30 seconds 3 frames c. 3 minutes 3 seconds **d. 3 seconds 3 frames**	Clicking the stopwatch after adding keyframes will **a. Remove all keyframes** b. Add a new keyframe at current time and current values c. Change current time d. Set current time to 0 frames

The Tab Key a. Confirms current operation **b. Moves the cursor to the next field or entry box** c. Moves the current time marker ahead by one second d. Moves current time to Next keyframe	

Appendix D: Questionnaire

1. Email address *

2. Enter your User ID *

3. How interesting was this lesson? Mark only one oval.

   1 2 3 4 5

4. How useful were text colors in directing your focus? Mark only one oval.

   1 2 3 4 5

5. Describe your experience with this lesson.

6 How well did you understand information presented in the first part of the lesson (before the simulation)? Mark only one oval.

   1 2 3 4 5

7. In the simulation, how well did you understand what to do? Mark only one oval.

1 2 3 4 5

8. In the simulation, how well did the interface of the simulation work? Mark only one oval.

1 2 3 4 5

9. How much did the simulation contribute to your knowledge of how to use keyframes in After Effects?

Mark only one oval.

1 2 3 4 5

10. How do you feel about the statement "this was the best way to learn how to do this procedure"? Mark only one oval.

1 2 3 4 5

11 How do you feel about the statement "this would have been better just following video"? Mark only one oval.

1 2 3 4 5

12. How do you feel about the statement "this would have been better working from print directions"? Mark only one oval.

1 2 3 4 5

13. How do you feel about the statement "text on the screen during simulations helped me understand more"? Mark only one oval.

1 2 3 4 5

14. How do you feel about the statement "the amount of text on the screen during the simulation was confusing"?

Mark only one oval.

1 2 3 4 5

15. How easy was it to enter text when needed? Mark only one oval.

1 2 3 4 5

16 Is there anything else you'd like to point out about this experience?

APPENDIX E: Link to online module

http://www.balerarts.net/2017/07/14/intro-to-adobe-after-effects-usability-test/