

**NORTHCENTRAL UNIVERSITY
ASSIGNMENT COVER SHEET**

Learner: **Steven Diaz**

THIS FORM MUST BE COMPLETELY FILLED IN

Please Follow These Procedures: If requested by your mentor, use an assignment cover sheet as the first page of the **word processor** file. Use "headers" to indicate your course code, assignment number, and your name on each page of the assignment/homework including this assignment cover sheet. .

Keep a Photocopy or Electronic Copy Of Your Assignments: You may need to re-submit assignments if your mentor has indicated that you may or must do so.

Academic Integrity: All work submitted in each course must be the Learner's own. This includes all assignments, exams, term papers, and other projects required by the faculty mentor. The knowing submission of another persons work represented as that of the Learner's without properly citing the source of the work will be considered plagiarism and will result in an unsatisfactory grade for the work submitted or for the entire course, and may result in academic dismissal.

LTM5007

Dr. Susanne Flannelly

Multimedia Production Management

**Assignment 2: Visual Literacy
Strategies**

Dr. Flannelly,

I hope you enjoyed the holidays with family and friends. I apologize for not keeping up with the suggested assignment deadlines but it took me considerable time to complete this assignment due to the holidays and my inexperience creating visual activities. However, this assignment about visual strategies was interesting, fun and meaningful. I will maximize what I have learned to improve my practice.

Faculty Use Only

<Faculty comments here>

<Faculty Name>

<Grade Earned>

<Writing Score>

<Date Graded>

Visual Literacy Strategies

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Introduction

Teaching basic skills math courses (i.e. Basic College Mathematics, Introductory Algebra, and Intermediate Algebra) to college freshmen students is a challenging and exhausting endeavor. Students bring from their schooling years negative attitudes and disabling behaviors toward learning mathematics that most often hinder their chances of earning a college degree and to value mathematics as useful knowledge in their lives. Harding and Terrell (2006) stated that math anxiety is the top reason many students find challenging and frustrating to perform computations and math reasoning. Students often fear and dread making mistakes which is the most natural way for learning mathematics. Most of these students probably experienced classroom environments where lecture-based mathematics was the dominant instructional strategy. Cobb, Perlwitz, and Underwood-Gregg stated that reformers of the school of mathematics believe the traditional mathematics instruction has hindered students' disposition to recognize and use mathematics in their everyday lives (as cited in Draper, 2002).

Verbal and logical instructional approaches are often favored in this traditional type of learning environment, which unfortunately it may only work well for a few students (Educational Developmental Center, 2001). Learning mathematics becomes more difficult if students are exposed to instruction that relies mostly on memorization, verbal language, and minimal use of visual imagery (Bateman, 2007). According to the Educational Developmental Center (2001), students usually experience visual oriented mathematics instruction only in Geometry courses. Barwise and Etchemendy stated that the use of visual imagery is still considered a *second-class citizen* in the theory and practice of mathematics (as cited in Arcavi, 1999). Smaldino, Lowther, and Russell (2008) recognized that today's education is saturated with visuals but these are

mainly used for motivational and decorative purposes about learning instead of taking an essential role in the instructional process.

If I want my students to learn and value mathematics then I must stop perpetuating the same learning environments they experienced during their schooling years, which it is a possible reason they are taking basic skills math courses in college. I need to add more visuals approaches in my repertoire of instructional strategies since many of my students are comfortable placing greater value and deriving much of their knowledge from visuals (Burns, 2006). An increased use of visual instruction could help me foster a classroom environment where students are actively learning mathematics, which Allen (2006) also recognized when he stated, "The world is changed; it is more visual and digital. Today's student responds actively to this world. The methods of algebra instruction must be reshaped to reflect this new reality" (para. 1).

Not only visuals can clarify and provide concrete experiences about abstract mathematical concepts but it also can provide connections of how math is used in the real-world. Making mathematics relevant is essential to foster motivation and confidence for those students who did not experience success learning in the traditional mathematics classroom. I want to emulate the visual instructional approaches that math teacher Dan Meyer has been using with his ninth grade remedial classes in California. Meyer has been using high-interest visuals to promote conversations about mathematics with his students, which he claims that his visual examples are 100% of the time better than what the textbook provides to introduce a topic (as cited in Boss, 2008). By creating and using visuals, I will be trying to convince my students that learning mathematics is valuable and possible to understand, as Allen (2006) suggested. For students to see the essence of mathematics, as a teacher, I must direct their attention on how powerful is this field of knowledge to explain what is happening around us (Bryan & Dorrington, 2004).

Students taking basic skills math courses probably have their last chance to learn and value mathematics as useful knowledge since without algebra proficiency, they most likely will not be able to attain their academic and career goals. Algebraic thinking is a gateway to higher math and science courses, better critical thinkers, effective decision makers, and productive members of a technological and informational society. I have the responsibility to provide a learning environment where students feel not intimidated of doing mathematics and willing to explore how mathematics can meet and enhance their intellectual abilities and personal interests. Using visuals is an instructional approach that I have not maximized in my teaching practice but I am determined to change this inadequacy to make my classroom a place where my students are actively learning mathematics. The two activities described in this assignment are my first conscious approach for improving my teaching practice with the use of visual strategies.

The first activity consist on students creating an animated presentation about a question often asked in my basic skills math courses: *Why do I need to learn this?* Unfortunately, there are too many college students who believe mathematics is irrelevant for non-science majors such as psychology, criminal justice, communications, and so forth. There have been many instances when even science major students believe that no mathematical knowledge is required to do science. In those instances that I have attempted answering the *Why do I need to learn this?* question, my students are usually not fully convinced with my response since they see me as a biased source. My efforts to convince my students about the important role of mathematics in our lives is an example of the popular quote, *No one learns from others experiences*. For such reason, I decided that my students should research how mathematics is used in their chosen majors or personal interests, so they make learning mathematics their own experience.

The purpose of the second activity is to address a benchmark concept covered in Introductory Algebra that most students struggle understanding: linear relationships. The relationship between two variables is said to be linear when there is a constant rate of change between them. Students usually learn this concept by manipulating algebraically linear equations and by memorizing formulas and procedures. However, students often cannot transfer the symbolic manipulation of linear equations when working with real-life word problems. They lack concrete experiences that could help them identify linear relationships between two real-life events that can be quantified. In the activity, students will observe real-life data organized in tables and graphs to discover patterns or trends that define a linear relationship. From identifying the patterns, students can then deduce the linear equation that represents the patterns. After completing the activity, students should realize there are three forms for representing a linear relationship: table, graph, and linear equation.

Activity 1: Why do I need to learn this?

Age-Grade Level

This activity was created for college students taking basic skills math courses; however, it can also be used with high school students.

Curriculum Area

The activity is based on the subject of Mathematics.

Duration

This activity is a long-term project depending on the duration of the course (e.g. 16 weeks).

Goals

1. Promote awareness of how mathematics is used in our daily activities, chosen major or career, and personal interests.

2. Appreciate and value mathematics as a useful and powerful field of knowledge to understand the world around us.
3. Increase interests, motivation and confidence for the study of mathematics.
4. Become proficient with visual literacy skills to communicate effectively mathematical ideas or topics with visuals.

Objectives

1. Students will research how mathematics is used in their chosen major or personal interests to answer the question: *Why I need to learn this?*
2. Students will create an animated presentation using Animoto, an online presentation tool, to communicate the findings of their research.
3. Students will apply visual design guidelines to create an interesting and effective animated presentation.

Materials

1. Computer with Internet access and speakers or headphones.
2. Copyright-free digital images and/or digital camera.
3. Copyright-free digital music. (Optional since Animoto.com offers this)
4. Image-editing software such as Microsoft Office Picture Manager.
5. An Animoto.com and YouTube.com accounts.
6. Credit or debit card to make a purchase of a \$3 video.

Procedure

Students will research how mathematics, in particular Algebra, is used in their chosen major or their personal interests such as sports, hobbies, etc. Students need ample time to locate the information from the Internet, the school library, interviewing professionals in their chosen

majors or careers, and/or other sources. However, students will use 12-20 digital images to communicate visually the findings of their research through an animated presentations using Animoto.com. The images must emphasize how mathematics is used, connected or relevant in their chosen major, career, or personal interests. Students can download copyright-free images from the Internet or take their own pictures with a digital camera, but they must compress or downsize pictures that are larger than 1 MB in size using an image-editing program.

Due to the length and complexity of this activity, the project will be divided into three checkpoints in which students must submit to the instructor 3-5 images per checkpoint with a written description on how the images show the usefulness or relevancy of math in their chosen majors or personal interests. Students must include in the written description which math concepts or skills are implied in the images. During the checkpoints, the instructor will have the opportunity to provide additional guidance and support. It is important the instructor encourage students to find images that focus on a variety of math concepts and skills. On the first checkpoint, students must inform the instructor the theme (i.e. major, career, or personal interests) of their presentation. Students can work individually or in small groups of 2-3 students but the members of the group must have in common the same major, career, or personal interests.

Students must read carefully the following articles (by opening the hyper links), which provide useful information and guidelines for making an effective, interesting and ethical presentation.

1. [Visual Presentations: Create Stunning High-Impact Video Presentations With Effects And Music Automatically – Animoto](#) from Robin Good.

2. [Copyright Guidelines](#) from Visalia Unified School District and [To Copy or Not to Copy – That is the Question](#) from Dee Davis and Bruce Bergland.
3. [Designing Better Pictures](#) from Sharon E. Smaldino (scroll down to the bottom of the web page). This article will be useful for those students who will take their own pictures for the presentation.
4. [The Rule of Thirds](#) from Digital Photography School web site. The rule of thirds is mentioned in the article *Designing Better Pictures*.
5. [How to Create Great Titles](#) from eHow web site. The guidelines presented in this article will be very useful when inserting text in the storyboard of the presentation.
6. [What is a Storyboard?](#) from Ricky Y. Okazaki. Animoto uses the concept of storyboard to create animated presentations.

After the third checkpoint, students are prepared to complete their animated or video presentation in Animoto web site. Once completed, students must upload the video presentation to YouTube web site, so their classmates and other visitors rate the presentation and provide feedback (text format or video format) using YouTube's tools.

Evaluation

Use the rubrics below to evaluate if students attained the goals and objectives of the activity. Students should receive copies of the rubrics to know what to expect in the activity. Students' presentations will be evaluated by three parties: the instructor, the author(s) of the presentation, and peers. The activity is worth 100 points with the following distribution: 30 points for the three checkpoints and 70 points for the animated or video presentation (15 points from peer-reviews, 15 points from the authors' self – assessment, and 40 from the instructor's assessment).

The first rubric is used by the instructor during the checkpoints. Use a new copy of the rubric for each checkpoint.

Activity: Why I need to learn this? Rubric for the Checkpoints			
<i>Criteria</i>	<i>Points Possible</i>	<i>Points Earned</i>	Comments
Student(s) brought 3-5 images showing how math is used, connected or relevant to their chosen major, career, or personal interests.	3		
Images follow the guidelines specified in the article <i>Designing Better Pictures</i> .	4		
Student(s) mentioned in the written description the math concepts and/or skills implied in the images.	3		
Checkpoint Score	10		

The next rubric is for the peer-review to aid students rating the presentation in YouTube.

Activity: Why I need to learn this? Rubric for the Peer-Review		
Instructions: Use the below criteria to rate your classmates' video in YouTube.com. The total points earned represent the number of stars you will give to the presentation using YouTube's rating tool. Post feedback in text or video format at YouTube site to support your rating.		
<i>Criteria</i>	<i>Points Possible</i>	<i>Points Earned</i>
Presentation clearly communicated how math is used in a major, career, or personal interest.	2	
Presentation was entertaining and interesting.	1	
Presentation provided new information of how mathematics plays an important role in your life.	1	
Presentation increased your interest, motivation and confidence to do mathematics.	1	
Peer-Review Score	5	

The last rubric will be used by the instructor and the author(s) to assess the final product of the activity: the video presentation.

Activity: Why I need to learn this? Rubric for the Self-Assessment and Instructor's Assessment			
Instructions: Select the score that appropriately describes the overall quality of the presentation. Write the score in the lower-right cell of this table.			
<i>Criteria and Score</i>			
5	4	3	1
<p>The student(s) fully achieve(s) all the mathematical and project objectives. The presentation demonstrates clear thinking and explanation. All work is complete and correct</p>	<p>The student(s) substantially achieve(s) the mathematical and project objectives. The main thrust of the project and the mathematics behind it is understood, but there may be some minor misunderstanding of content, errors in computation, or weaknesses in presentation.</p>	<p>The student(s) partially achieve(s) the mathematical and project objectives. A limited grasp of the main mathematical ideas or project requirements is demonstrated. Some of the work may be incomplete, misdirected, or unclear.</p>	<p>The student(s) make(s) little progress toward accomplishing the objectives of the project because of lack of understanding or lack of effort.</p>
<i>Presentation's Score</i>			

Finally, use the following score sheet to calculate the final grade for the animated presentation.

Activity: Why I need to learn this? Score Sheet			
<i>Assessment</i>	<i>Points Possible</i>	<i>Points Earned</i>	Comments
Checkpoint #1 Score	10		
Checkpoint #2 Score	10		
Checkpoint #3 Score	10		
Peer Review Score (x 3)	15		
Self-Assessment Presentation Score (x 3)	15		
Instructor's Assessment Presentation Score (x 8)	40		
Total Points	100	0	
Final Grade			

Activity 2: What is a linear relationship?

Age-Grade Level

This activity was created for college students taking basic skills math courses; however, it can also be used with middle and high school students taking Algebra I course.

Curriculum Area

The activity is based on the subject of Mathematics – Algebra.

Duration

This activity was designed to take place online as an asynchronous discussion that last 7days or a week.

Goals

1. Develop deeper understanding about mathematical ideas through communication and collaboration.
2. Make connections between mathematical ideas and real-life applications.

3. Become proficient with visual literacy skills to interpret effectively mathematical ideas from visuals.

Objectives

1. Students will deduce typical patterns in linear relationships from tables and graphs that represent real-life applications.
2. Students will discuss the typical characteristics of linear relationships.
3. Students will create a linear relationship word problem for their classmates to create a table or graph that represents the problem.
4. Students will provide feedback to their classmates about their understanding of the linear relationship word problems.

Materials

1. Computer with Internet access and speakers or headphones.
2. Web-based discussion board.

Procedure

This activity consists on students participating asynchronously in a discussion using a web-based discussion board about the concept of linear relationships. If the school does not provide a course management system that includes a discussion board then the instructor must create a class discussion forum using one of the many available free discussion boards in the Internet (e.g. Yahoo Groups). In case the instructor creates a class discussion forum, he or she must ensure that only students have access to the class discussion forum to protect students' privacy and avoid the threat of spam messages.

The instructor will create a discussion thread in the web-based discussion board at the beginning of the week to initiate the discussion. The subject line for the starting discussion

thread is *DQ: What is a linear relationship?* and the body of the post contains the following instructions and questions:

Students,

Everyday we need to make decisions on events in which the outcomes depend on its relationship with other events. For example, the weekly paycheck of hourly employees depends on the amount of time they worked during the week. Understanding the relationships between two related events can help us make informed and better decisions. We will discuss this week about linear relationships. Watch the video [*What is a linear relationship?*](#) (by opening the hyper link) located in Screencast.com website and reply to this post by answering the following questions

- a. Explain in your own words what a linear relationship is.
- b. What information is always necessary to determine a linear relationship? Explain why by referring to the visual cues in the video.
- c. How can you calculate the values of the second column of the data table from the first column? Similarly, how you find another point on the graph when given a set of points that show a linear relationship? Write a general rule or formula.
- d. Create a word problem that involves a linear relationship for your classmates to illustrate by using a table or a graph. Provide feedback to your classmates

In addition, participate actively in the discussion by replying to your classmates' posts with clear and concise responses. Your responses should generate additional discussion, clarify misconceptions, provide guidance, inquire more details and/or add new insights to the discussion topic. By the end of the week, you should have posted at least 8 substantive posts throughout four days.

The instructor must encourage students to participate actively in the discussion by providing promptly feedback to their responses with clarifying or probing questions. In addition, the instructor must maintain a dynamic and interesting discussion by introducing new perspectives, information and/or challenges related with the discussion topic. The role of the instructor is to facilitate a productive and positive discussion, in which learning occurs through collaboration and reflection. Therefore, it is important the instructor is interacting with students on a daily basis. On the last day of the discussion, the instructor must summarize the key points that were mentioned in the discussion and clarify any misconceptions that came to light during the discussions.

For a productive and positive discussion to happen, it is important the instructor clearly state the expectations and policies that guide students' efforts and behaviors during the discussions. Academic honesty, appropriate online communication, and substantive responses are key points that should be addressed before the discussion activity takes place. The instructor should monitor the discussion several times during the day on a daily basis to address promptly any posts that do not follow expectations and policies.

Evaluation

This activity has two assessment components: students' response to the discussion's questions and students' participation in the discussions. This activity is worth 25 points with the following distribution: nine points for the response to the discussion's questions and 16 points for participation. Students earn participation points by replying substantively to their classmates' posts or the instructor's additional posts (other than the original discussion's questions). The instructor has the discretion to determine when students' posts are substantive or not, but the instructor should notify students when their posts are not substantive. Each substantive post is

worth two points and students must posts at least eight substantive replies throughout four days of the week. The instructor should use a spreadsheet to tally each student’s substantive posts.

Use the rubric below to score students’ response to the discussion’s questions. Students should receive copies of the rubrics to know what to expect in the activity.

Score	Criteria
9	Response is coherent and well structured. Mathematical ideas are communicated clearly and concisely. Student demonstrates full understanding of the mathematical ideas and processes. Student identifies all the key points of the activity and presents strong supporting arguments. Response includes examples and counterexamples.
8	Response is coherent and adequately structured. Mathematical ideas are communicated fairly well. Student demonstrates sufficient understanding of the mathematical ideas and processes. Student identifies most of the key points of the activity and presents good supporting arguments.
6	Response is somewhat coherent and structured. Mathematical ideas are vaguely communicated. Difficult to make sense student’s explanation or reasoning. Student demonstrates limited understanding of the underlying mathematical ideas and processes. Student identifies few key points of the activity and presents weak supporting arguments.
3	Response is incomplete. Ideas are incoherent. Ideas are written in fragments; therefore, student omits most key points of the activity. Student fails to prove understanding of the mathematical ideas and processes.
0	No response or ideas are completely irrelevant and inadequate.

Finally, use the following score sheet to calculate the final grade for the asynchronous discussion.

Activity: Discussion – What is a linear relationship? Score Sheet			
Assessment	Points Possible	Points Earned	Comments
DQ Students’ Response	9		
Student’s Participation	16		
Total Points	25	0	
Final Grade			

References

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