Project 4: Concept Development of Course Topics

In this project, you will research the development of a concept from its early history to today, such as earliest known uses, real-life applications, and high school teaching and learning. The purpose of this assignment is the diverse geometric perspectives of the concept development of a major course topic. You may work alone or with one other person. During class you will write down your top topics (unranked) and from this you will be assigned one: analytic geometry (with coordinates/metric), area and area measurements, axiomatic systems for Euclidean geometry (synthetically, without coordinates), geometric constructions (including IGS and dynamic geometry), modeling with geometry, parallel postulates, perimeter and circumference and their measurements polyhedra (three-dimensional objects), right triangles similarity, geometric transformations, or volume and volume measurements.

Publication Quality Product

You will create a typed two-page or three-page single-spaced product in your own words that is of publication quality, which you'll tape up, and brings together the following:

1. (Historical and Current Perspectives)

   Provide as complete as possible a listing of the major geometric discoveries and geometric development of the topic. The result should be an in depth exploration of the important and interesting geometric events—not the entire history. Be sure to include related geometric images, recent information or applications related to your topic, and contributions from diverse mathematicians. Approximate dates can be noted as ∼1762, by a range of dates such as 1700–1800, or by notations like the 18th century.

2. (High School Connections)

   All of our future intended careers are impacted in some way or another by our past experiences in high school. Research and report back on how your topic arises in
   Common Core State Standards Initiative
   `http://www.corestandards.org/Math/Content/HSG/`
   North Carolina Standard Course of Study Math 1
   `https://files.nc.gov/dpi/documents/curriculum/mathematics/scos/current/math-1.pdf`
   North Carolina Standard Course of Study Math 2
   `https://files.nc.gov/dpi/documents/curriculum/mathematics/scos/current/math-2.pdf`
   North Carolina Standard Course of Study Math 3
   `https://files.nc.gov/dpi/documents/curriculum/mathematics/scos/current/math-3.pdf`

Annotated Bibliography

Use different sources, including scholarly sources. Create an annotated bibliography with annotations explaining how you used each reference in your timeline and where the pictures came from. Use as many pages as you need for the bibliography. Any consistent reference format is fine, although you should try to list authors, even if it is a webpage (sometimes that requires some additional searching, like taking off the end of a web address to see whose page it is, if it isn't listed at the bottom). Try to find the original source too (for instance, Google is a database and not a source for images). While there are standards in some fields, every journal I submit to has its own specific reference style, but they all do follow these general principals. Rather than in-text citations, an annotated bibliography pushes that info to the end so that the main content is more readable. Here is a sample project from a first-year seminar class with different criteria: `http://cs.appstate.edu/~sjg/class/fs/ResearchProject2Diabetes.pdf`

Research Presentation

The research presentation is similar to research day at Appalachian where people are presenting posters, which in turn is similar to research conferences and science fairs. Rather than being at the front of the room with us sitting, your entire project, including your bibliography, will be taped up to the wall. During your session, present your project to classmates and answer their questions. The presentation component typically involves a small group listening to and looking at your project so they can take notes for peer review. During the other session, you will talk to others about their projects and fill out peer review. If you work with someone else, you will each be in different research sessions.

https://magicineducation.wordpress.com/2011/03/30/make-your-own-comics-witty-comics/

Rubric for Grading

clear geometric connections	suggestions	good	exceptional
earliest geometric perspectives	suggestions	good	exceptional
geometric breakthroughs/important events	suggestions	good	exceptional
current perspectives	suggestions	good	exceptional
real-life applications	suggestions	good	exceptional
contributions from diverse mathematicians	suggestions	good	exceptional
related geometric pictures	suggestions	good	exceptional
timeframes	suggestions	good	exceptional
depth of connections	suggestions	good	exceptional
Common Core State Standards Initiative	suggestions	good	exceptional
North Carolina Standard Course of Study	suggestions	good	exceptional
own words	suggestions	good	exceptional
creative & two-or-three-page typed product	suggestions	good	exceptional
professional & flows well	suggestions	good	exceptional
annotated references (not included in page count)	suggestions	good	exceptional
image refs (no annotations needed for pics)	suggestions	good	exceptional
quality references	suggestions	good	exceptional
discussions & engagement at the presentations	suggestions	good	exceptional
peer review	suggestions	good	exceptional
self-reflection	suggestions	good	exceptional

Peer Review

1. Name of the person and the topic.
2. Name the strongest part(s) of their project.
3. Give a constructive suggestion for improvement.
4. What was the most interesting thing you learned from their project?
5. Ask the speaker a question about their project. Write down your question and their response.

Self-Reflection (after you have presented your project)

1. What would you have improved about your project?
2. What did you feel went well?
3. What would you have included with more time and space?