

Our time around the lake: a hiking tour historical geology group project

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Abstract:

A student group work project involving the creation of a guided hiking tour matched to the geologic time scale has the advantage of informing public through outreach, while reinforcing concepts in a historical geology course. In this project, students collaborated on developing a hiking tour around Devil’s Lake in Devil’s Lake State Park, Wisconsin, but it can be replicated nearly any place imaginable. Students worked in teams to create information views for individual time periods which were enhanced with visuals in a google drawing. The individual drawings are accessed via hyperlinked buttons on an online map of the hiking path. The entire project is then organized into a google site and made available to the public.

To create the information views; geologic time periods were broken out and/or lumped accordingly with the number of groups desired, corresponding with the course enrollment. Students worked in groups to first develop a 600 – 1,200 word summary of their assigned time periods. After feedback is received from the instructor the students adjust their write-ups as needed and incorporate them into a google drawing. The students then work to enhance the drawings visually with various figures, which may include: a map of the tectonic plate alignment (where appropriate), flora and fauna present, type environments, etc. Very little guidance was given allowing for creativity, although some standardization may help increase the overall appearance in future applications.

To create the map; the instructor broke individual trail segments into geologic time units. The map scaling was accomplished using the split command in ESRI ArcMAP. Other elements, such as the lake outline, park roads and parking areas were digitized from various sources. To incorporate the actual location geology; the map scale was adjusted to intersect a great unconformity outcrop encountered on the hiking trail.

Instructor Created Content:

Figure 1. Home Page map of Devil’s Lake State Park and the geologic time scale fit to the hike around the lake. The Circles are live hyperlink buttons which link to further info as indicated here by arrows:

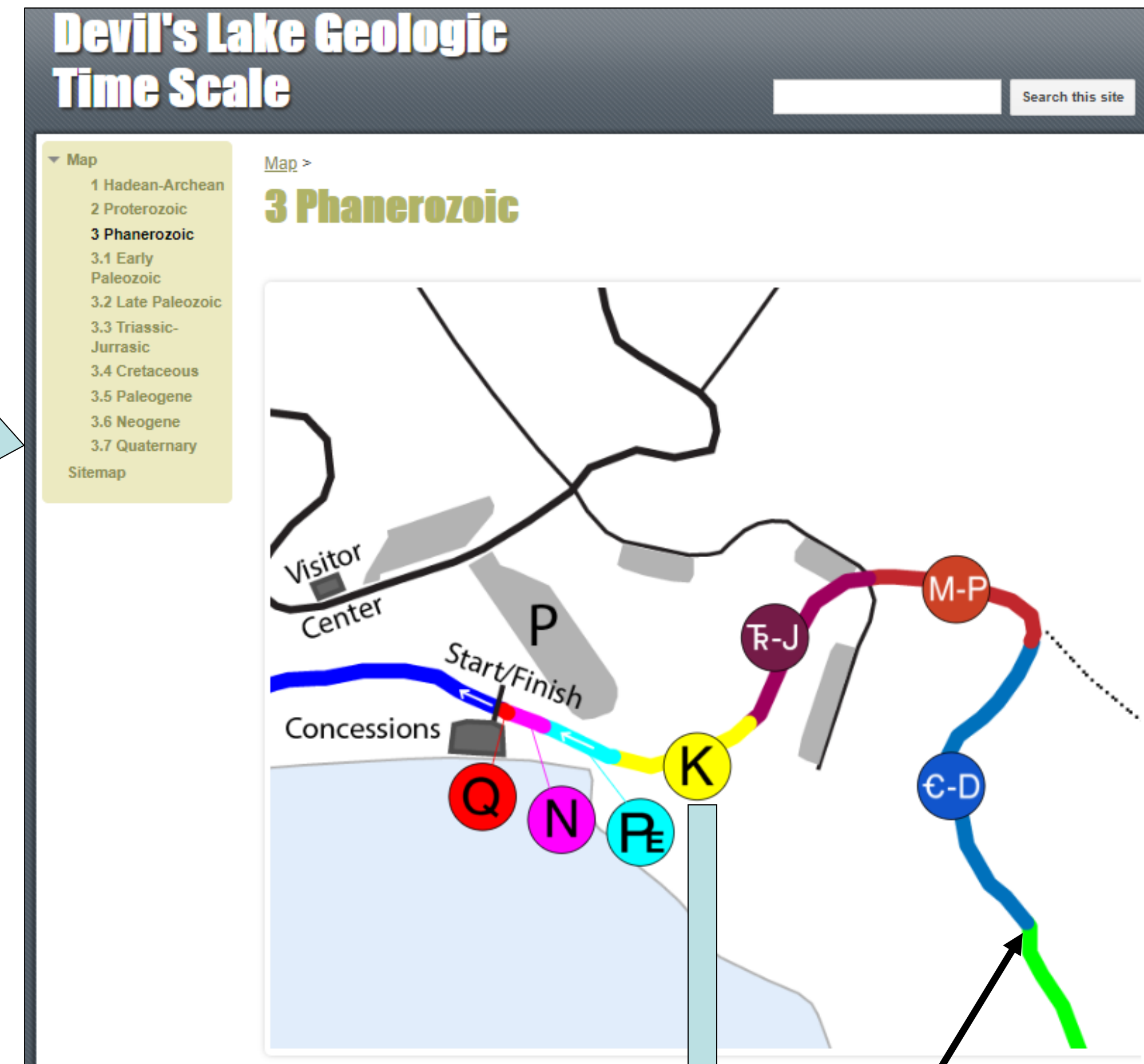
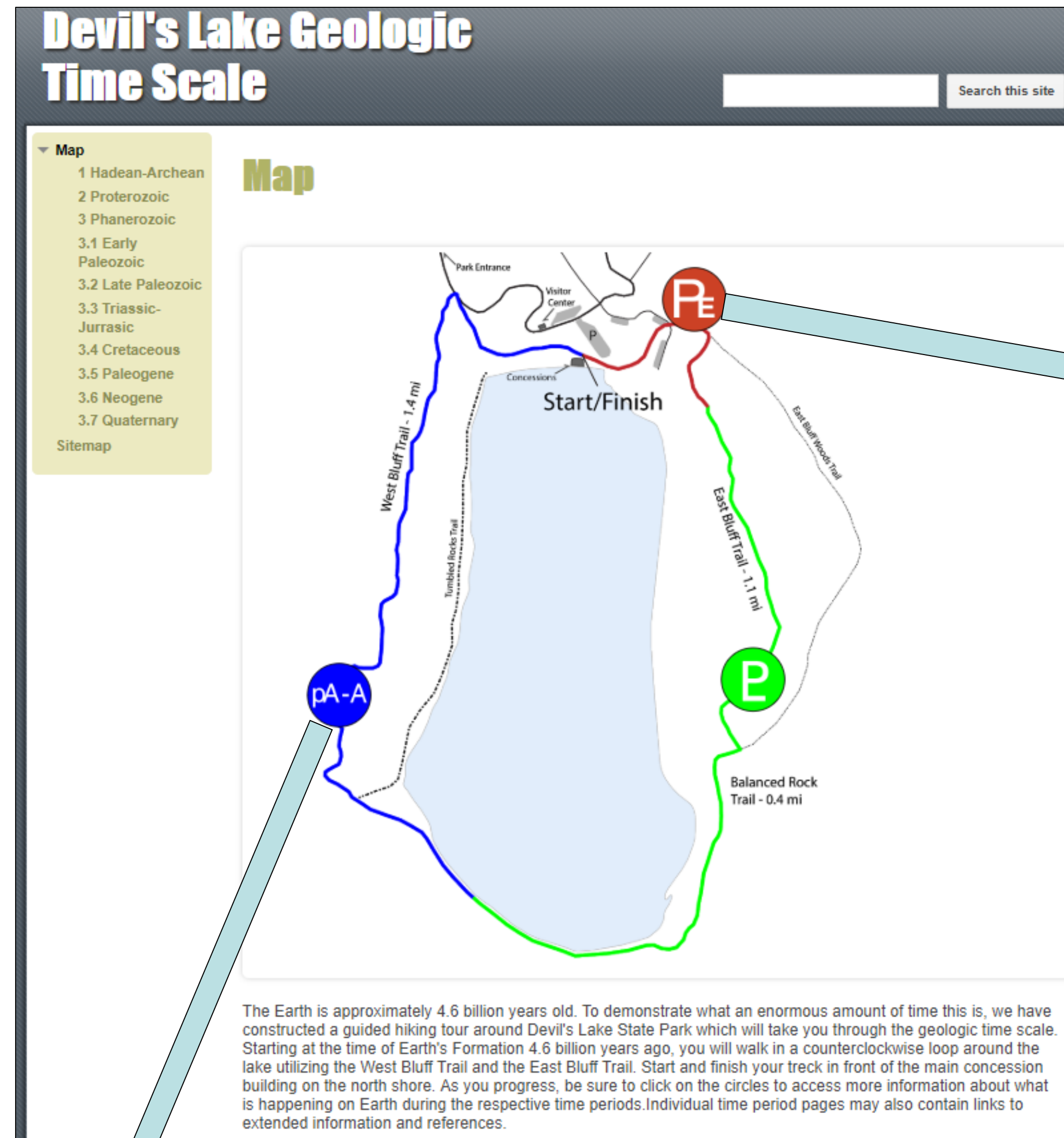


Figure 2. secondary map of the Phanerozoic section of the time scale.

Fun Fact: the tour ends the Precambrian precisely where a person encounters a real-world outcrop of the “Great Unconformity” on the trail.

Student Instructions:

GLG 102: Historical Geology
Devil's Lake Geologic Time Hiking Tour

Overview: There are two parts to this group project assignment. *Part I* involves groups of students researching a particular time period in the geologic record and writing a 600 – 1,200 word summary of their findings. *Part II* involves creating a visual display of their findings in Google Drawings.

Instructions: BEFORE your group starts Part I: Meet your group. Determine roles and a timeline.

- Plan a meeting time outside of class with the other members of your group. During that meeting you should:
 - Discuss:** the timeline, choose which group member researches which parts of the project.
 - Determine a timeline:** for your project. Set a date for the following material group activities (due date for your group work, not for class assignments per se): finishing your research on the assigned time frame, editing final draft, final formatting and proof reading.
 - Everyone in the group should plan** to be involved in reviewing and helping to improve each other's work to ensure the highest quality final product.

Part I: Summary of Earth History Time Period DUE Wednesday, May 7th, 11:59pm

Each group will be assigned one time period from the following list to study:

- Hadean - Archean
- Proterozoic
- Paleozoic
- Triassic - Jurassic
- Cretaceous
- Paleogene
- Neogene
- Quaternary

Your group will research your assigned time period using resources such as those listed below. Then, each group will write a 600-1,200 word summary of the findings and post this to the display on D2L.

Summaries must be posted by 11:59 pm on the due date. Late summaries will be worth 1/2 credit for up to one week, and then at one week they will not be worth anything.

Part II: Google Drawing Illustrative summary DUE Wednesday, April 23rd, 11:59pm

Working in a team, create a Google Drawing graphic that describes/illustrates key features of the time period.

Effective Title: Make sure to include an effective title for your graphic. Effective titles are brief, descriptive, interesting, designed to capture the audience's attention. Do not have your title be simply the name of your time period.

Illustrative Figure: You must include at least one map (one small-scale and one large-scale) and numerous images representative of the time period. Interesting figures will greatly enhance the visual impact of your Google Drawing. **Remember:** that a picture can be worth a thousand words. Embedded videos are also a possibility, if appropriate. All figures must have a reference and caption, which is a brief description of the figure. Figures should also be numbered. See the section Reference and Caption below for specific information on reference format.

General Description: List important facts and statistics about your time period. Include an updated version of your summary if Part I.

References: List and Reference Style: You must include a number of well-chosen references as sources of your information. All figures and photos must have a reference and a caption, which is a brief summary of the information in the figure or photo. For all references in the text and figure captions, use sequential numbers, which refer to the detailed references given in a separate Google Drawing titled "References". Include a link to your references in your main Google Drawing. References to books and journal articles should include the author(s), year, title of book or article, title of journal, and page. References to Web sites must include the URL (address of the Web site), title, and sponsor of the Web site. Write in your own words; plagiarism (representing someone else's words or ideas as your own) will be penalized severely.

Resources:

- You must include the sources of your information, e.g., high quality Web site, textbook, or reference book. Make sure to use reputable sources such as those given below.
- Wikipedia and Modern Historical Geology (any edition) - Google Learning
- Stanley and Leary: *Earth System History* (any edition) - Freeman
- University of California Museum of Paleontology: This Web site has outstanding photos and summaries of geologic time periods.
- The Wikipedia entry for each Time Period - For example, [Cambrian](#). Do not use Wikipedia as your only source of information, but it will help you get started.

Instructor's Role: I will be creating the main map with links to individual group Google Drawings. I will also organize the drawings into a Google Site posting that is accessible to the public.

Finalizing: By period, all members of the group will require identical copies for Part I, and Part II unless a group member does not contribute their "Pie share". The following rules are subject to minor modifications, however it should serve as guide.

Part I:

- 5 - Summary 1st Draft (Part I)
- 1 - 600 – 1,200 words
- 2 - Initial grammar and spelling mistakes
- 2 - content is meaningful and accurate

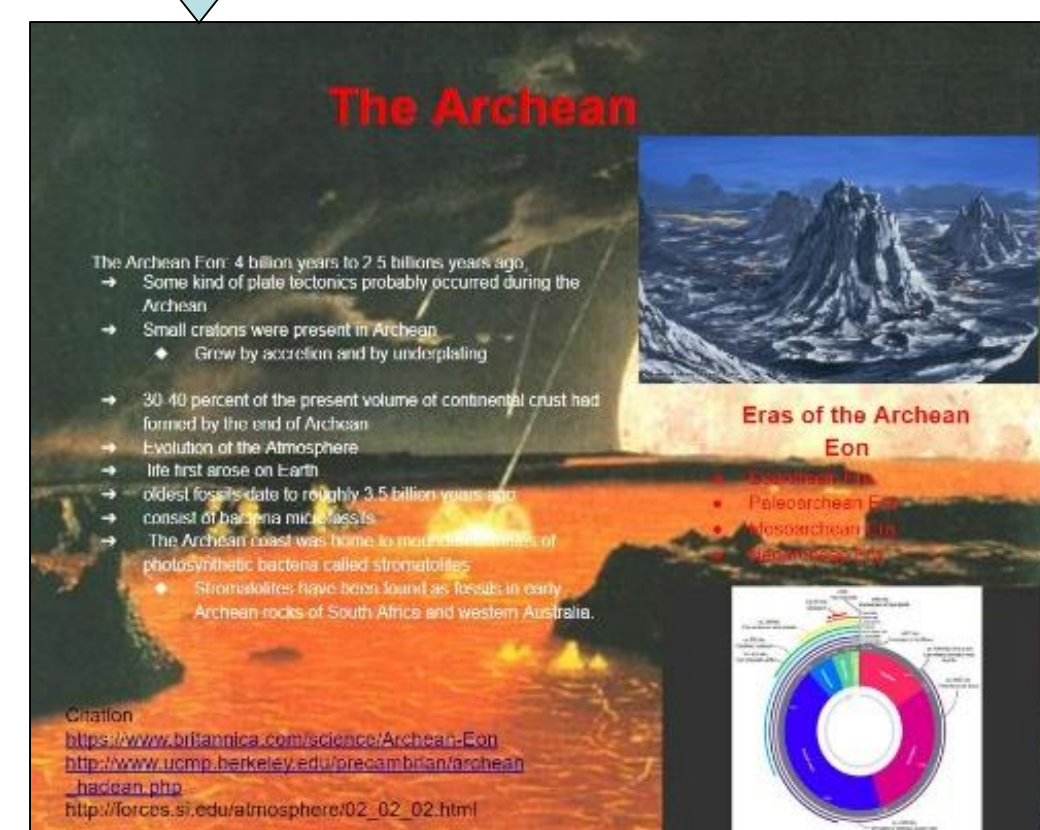
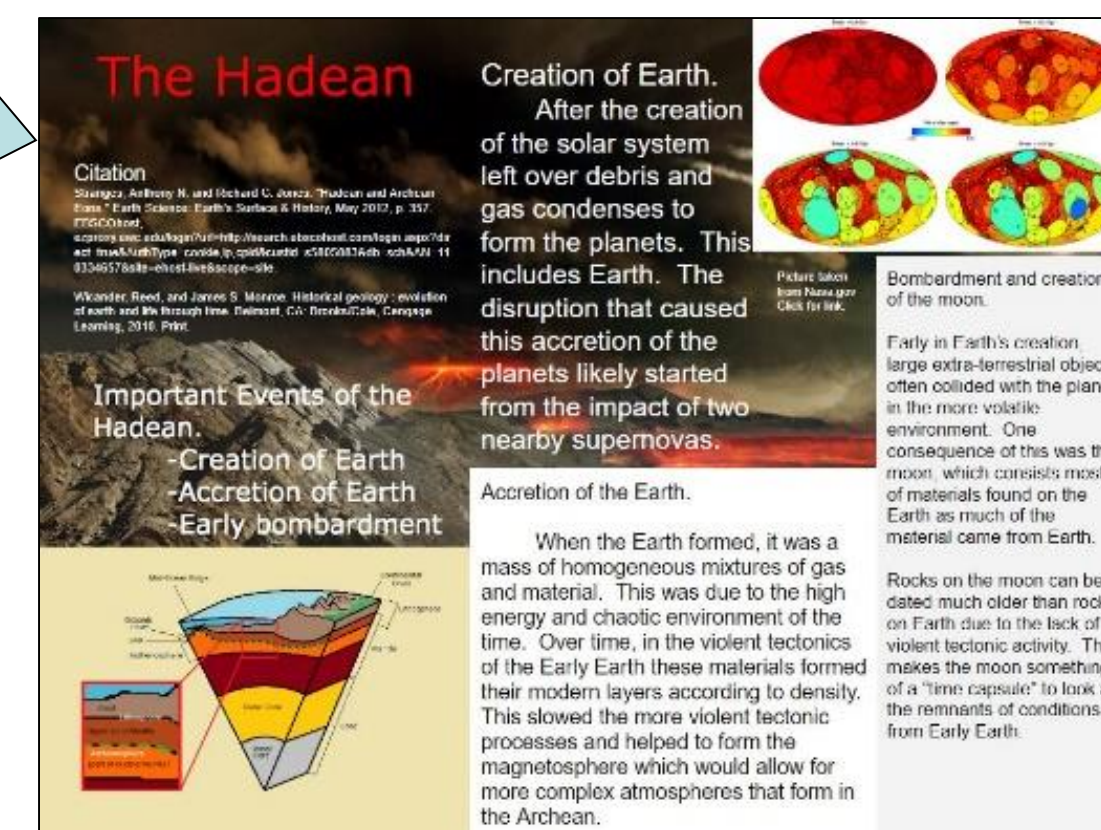
Part II:

- 1 - Title: Eye-catching and informative title are specific and should characterize the main theme of your time period summary
- 3 - Final summary (similar point scheme as with Part I)
- 3 - Figures (maps, maps, videos, etc.) are illustrative to the main summary, have citations and are properly referenced
- 3 - References: At least 3 references are properly identified

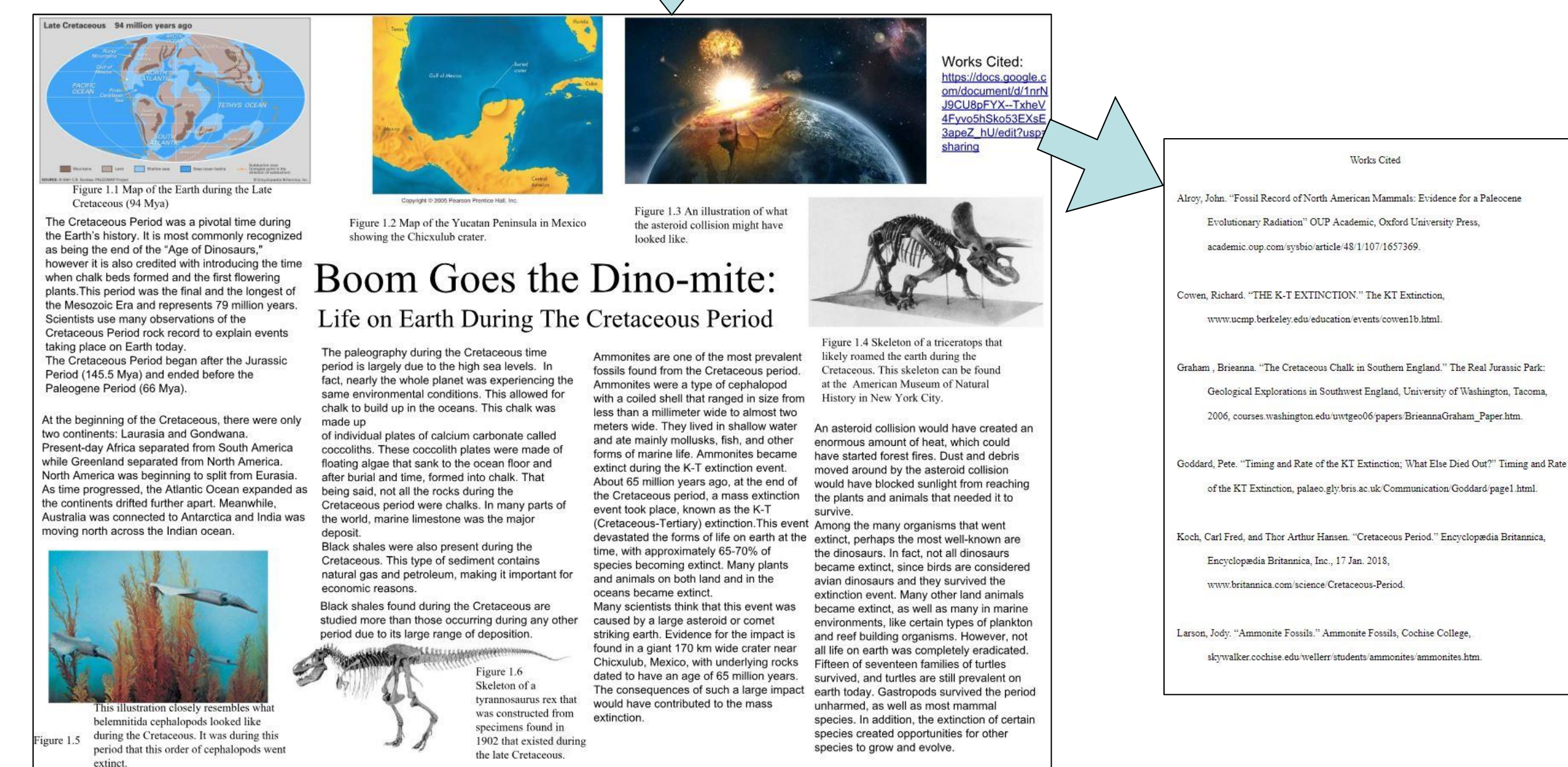
3 - Attendance at "Earth History" day at Devil's Lake park to help introduce the walking tour to the general public. (Date is tentatively set for Saturday May 4th)

20 - Total Points

Examples of Student Created Content:



- Free web hosting on Google Sites
- Free collaborative content design on Google Drawings
- Free storage in Google Drive
- Website navigation is accomplished by creating hyperlinked buttons in the google drawings



Considered Improvements:

- Standardization of page design would make project more aesthetically pleasing, but would limit creativity
- Better game-plan for outreach

Acknowledgements:



This project was developed and trialed while I was an associate lecturer at the University of Wisconsin-Baraboo/Sauk County. I am grateful to the participation of the students in 2018 spring semester GLG 102 – Historical Geology. The instructions were modeled after a hazards course wiki-project design I received from Dr. Jacalyn Malinowski (SUNY-Geneseo).

See the Site!

To see the full site take a picture of the QR code at right:

<https://sites.google.com/site/devilslakegeologictimescale/home>



Now a SERC Activity!

Activity Outline and Instructions are available in the Science Education Resource Center (SERC) “Teach the Earth” Activities Collection:

<https://serc.carleton.edu/teachearth/activities/214583.html>

