Using Mobile Technologies and ArcGIS Online in Preservice Science Teacher Education

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Improving Understanding of Visual Data Using ArcGIS Online on Your Smartphone or Tablet

Collector
ArcGIS Online
Snap2Map
Apps

ArcGIS Online and Org Accounts

Science in the Natural Environment Course Using ArcGIS Online

Goals: The focus of the course is to understand science and inquiry-based instruction in the natural environment through experience. A focus is on performances of authentic science practice in both instruction and assessment. Participants develop inquiry-based units and lessons that focus on the use of the natural environment and wetlands to be used immediately in their classrooms. Participants use technology tools as a part of inquiry-based instruction.

General Concepts: history of science, inquiry, mapping, data collection and analysis, argumentation, nature journaling, classification

Specific Concepts: global positioning systems, geospatial technologies, botany, astronomy, geology, maritime forests, wetland plants and animals – vertebrate and invertebrate, coastal ecology.


Assessments: nature autobiography and photovoice, Last Child in the Woods book summary and small group discussion, nature journal, species mediation/GPS and podcast, collection, group experiment, nature teaching improvement plan. Participants present the results of their experiments and write a written report, teach a portion of the nature teaching improvement plan to the class, and submit the nature journal, unit and lesson plans and collection for assessment. Students learn how to set up and use ArcGIS online Org accounts in their schools.

Conclusions and Insights

Lessons Learned: Participants in the course were overall pro-environmental before the course began as measured by an Environmental Attitudes Survey. Participants exhibited a slightly increased attitude toward behavior change regarding the environment after the course. Participants remarked that they were unaware of all the garbage generated in a day until handling and disposing of it themselves. Participants learned how to use geospatial technologies and maps in science instruction and were more comfortable “switching” between different technologies. Overwhelmingly the course participants favorite activity was nature journaling and secondly the mapping activities. Using geospatial technologies not only taught participants how to use them in instruction but assisted with data collection and analysis as well as navigation and measuring changes over time on the island.

Student Collections

- Effects of Foraging Tools on the Survival and Health of Organisms in the Big Mucky Chincoteague Island, Virginia
- Qualitative Data-Observation with Descriptions of Organisms in the Chincoteague National Wildlife Refuge
- Ecological Observations
- Weather Data Collection (temperature, humidity, pressure, altitude, and precipitation)
- Species List
- Marine Life Data (Species and Organisms)
- Example: Marine Life List on 1st of June 2014

Group Experiment #1

Drop Bucket Survey of Coastal Transition Zones of Osabaw Island, Georgia

Group Experiment #2

Nature Journals with GPS Coordinates

Beach Profile Group Activity by Student

Fig. 1: Osabaw Island in ArcGIS Online Org Account

Fig. 2: Map of Osabaw Island in ArcGIS Online Org Account

Fig. 3: Map of Osabaw Island in ArcGIS Online Org Account

Fig. 4: Map of Osabaw Island in ArcGIS Online Org Account
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department of Education

The University of North Carolina at Pembroke