Faith Luce is double majoring in Earth Science and Environmental Science with a minor in Geology and is a senior at the University of Northern Iowa. She began working on undergraduate research last summer after learning about the opportunity on the Facebook page for the Earth and Environmental Science department at UNI.

“I saw at the beginning of summer that Dr. Heinzel needed somebody to come in and help him with some research, so I emailed him about it. We got started in the summer and just kinda ran from there. I fell in love with the research and we really made it grow.”

Faith’s research involves archaeometry, which is the analysis of archaeological materials through various scientific techniques. During her research, Faith has been able to use her background knowledge in both Geology and Chemistry to analyze a set of pottery shards and other artifacts that were found at a rock shelter in Jackson County nearly one hundred years ago.

“Faith is looking at ceramics that were collected by a guy named Paul Nesbit who was a professor at Beloit College in the 1920s. He did an archeological excavation there while he was getting his masters degree and then he went on to get a PhD. At some point those artifacts from Jackson County Iowa were housed at Beloit College and have stayed there ever since,” said Dr. Chad Heinzel, UNI Geology professor and Faith’s mentor on this project.

“We’re kind of trying to figure out as much information as we can about this rock shelter and its inhabitants through the geochemistry work,” Faith explained.

The work is still ongoing, but that does not mean Faith has not already done quite a bit.

She has gone through multiple stages in the process. First, she used a munsell soil chart, which is a chart used to classify the color of soil, to determine all of the colors in each artifact. She then recorded that information, along with the weight and measurements of each artifact, in a spreadsheet. She determined which artifacts were manmade and made latex molds of each of those.

“And then after that I clipped off a small portion of each artifact and then I powdered it and then I ran it through an X-ray fluorescence spectrometer. Right now we’re still running those through, so
we haven't gotten all of our data points yet. That will tell us the source of material what elements are within it what minerals were used. This way we can see if the tribe was nomadic or not—if they got the resources from somewhere else,” Faith said. “That's pretty much where we are now in the process.

“We have actually sent out a lot of our samples to get thin sections made,” Faith continued. A thin section, called this because it is only a few molecules thick, is a laboratory preparation of a sample for analysis in a polarizing petrographic microscope, electron microscope, or electron microprobe. “Once we get the thin sections made, we’re able to optically look at all the minerals within the pottery and more can be determined from that.” Using all of these various techniques allows Faith and Chad to piece together the pottery’s story.

Faith said that this research is important because it is important to understand how Native Americans lived in Iowa thousands of years ago. The research holds a personal connection to her as well.

“I’m from that area, and I grew up going outside of my grandparents’ house and just finding Native American artifacts. For me to be able to paint that picture of what that area looked like thousands of years ago, it’s important, and I think it’s important to understand how people before you lived,” Faith explained.

Doing this research has motivated Faith to pursue a masters degree in Geo-Archaeology when she is done at UNI, and she hopes to one day do some research in the same area that she currently is. The undergraduate research experience helped Faith apply the things she learned in her classes to a real life setting. It made her feel like a more well-rounded student and inspired her to seek a masters degree.