Dr. Chad Heinzl is currently working with UNI senior Faith Luce on her undergraduate research. He is a professor in the Earth and Environmental Science department. His research interests include combining techniques from geology, geography, and archaeology to investigate possible environmental and human influences on the development of indigenous cultures, as well as integrating new technologies, such as GIS, into classrooms. One of the classes he teaches is Introduction to Geology.

Dr. Heinzl has been working with undergraduate students on research projects for nearly a decade, and he believes it’s extremely beneficial to the students who do it.

“Doing research takes what students are learning in the classroom and allows them to apply it. And that’s typically where they tend to learn the most and have the most fun. They can learn a lot from a textbook or listening to me talk, but actually doing something hands-on is helpful.” He continued, “Faith has done a good job of putting in all of the extra time it takes outside of class. I know students are busy, but I think the extra time spent doing undergraduate research will pay off.” Participation in undergraduate research prepares students for field and lab careers. It also makes them more competitive when applying to graduate programs.

“Faith’s project is really interesting,” Dr. Heinzl said. “We’re putting together, for the first time, an Archaeometry laboratory. Archaeometry is the study of human cultural material.”

Dr. Heinzl explained that Faith is looking at ceramics that were collected by Paul Nesbit. A professor at Beloit College in the 1920s, he did an archeological excavation in Jackson County. Dr. Heinzl only learned about the artifacts last spring, and immediately began the process to be able to analyze them. Faith started working with him soon after. There had not been a lot of research done with the artifacts yet, but that’s why Faith and Dr. Heinzl are trying to learn more about them through geochemical and physical processes.

“The very first thing that Faith worked on was just kind of cataloguing the samples: noting what color they were, their size, how much they weighed. So just basic kind of logistics about the samples. The first stage is looking at their chemistry through x-ray fluorescence. Now we’re getting into the chemistry and physical aspect of the research,” he explained. They will also use a special microscope to examine thin sections, a laboratory preparation of a sample that is only a few molecules thick, and see what materials the artifacts consist of. Dr. Heinzl said that he expects to find out more about the artifacts as they move beyond the data collection phase of the process.

This research is important to Dr. Heinzl for a variety of reasons. He and Faith both have family in Jackson County, Iowa, so there is a personal connection for both of them to the landscape the artifacts come from. He also believes that it is important to learn from history, and this research will help them do that.
“I think any time we can look at historical examples helps show that humans depend on natural resources. The more we remember that the more we might try to conserve and use them wisely.”

-Dr. Chad Heinzel

“I think an important point is just looking at how people viewed the landscape over time. So we'll be looking at Woodland or Late Woodland cultures from eastern Iowa. This means the pottery is from a Native American cultures from eastern Iowa around 500 BC - AD 1100.

Dr. Heinzel and Faith are trying interpret how they saw the landscape at that time and how they were using and interacting with it. He explained, “There is also something we could learn from these older Iowan cultures that may help us improve our current culture. Humans depend on natural resources and we don't often think of that since everything that we consume today can be bought at a store, but we don't really have a good understanding of what all those products are linked to in the natural resources. So I think any time we can look at historical examples helps show that humans depend on natural resources. The more we remember that the more we might try to conserve and use them wisely.”

Learn more about Faith Luce’s research here: [https://stemed.uni.edu/research-rocks](https://stemed.uni.edu/research-rocks).

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