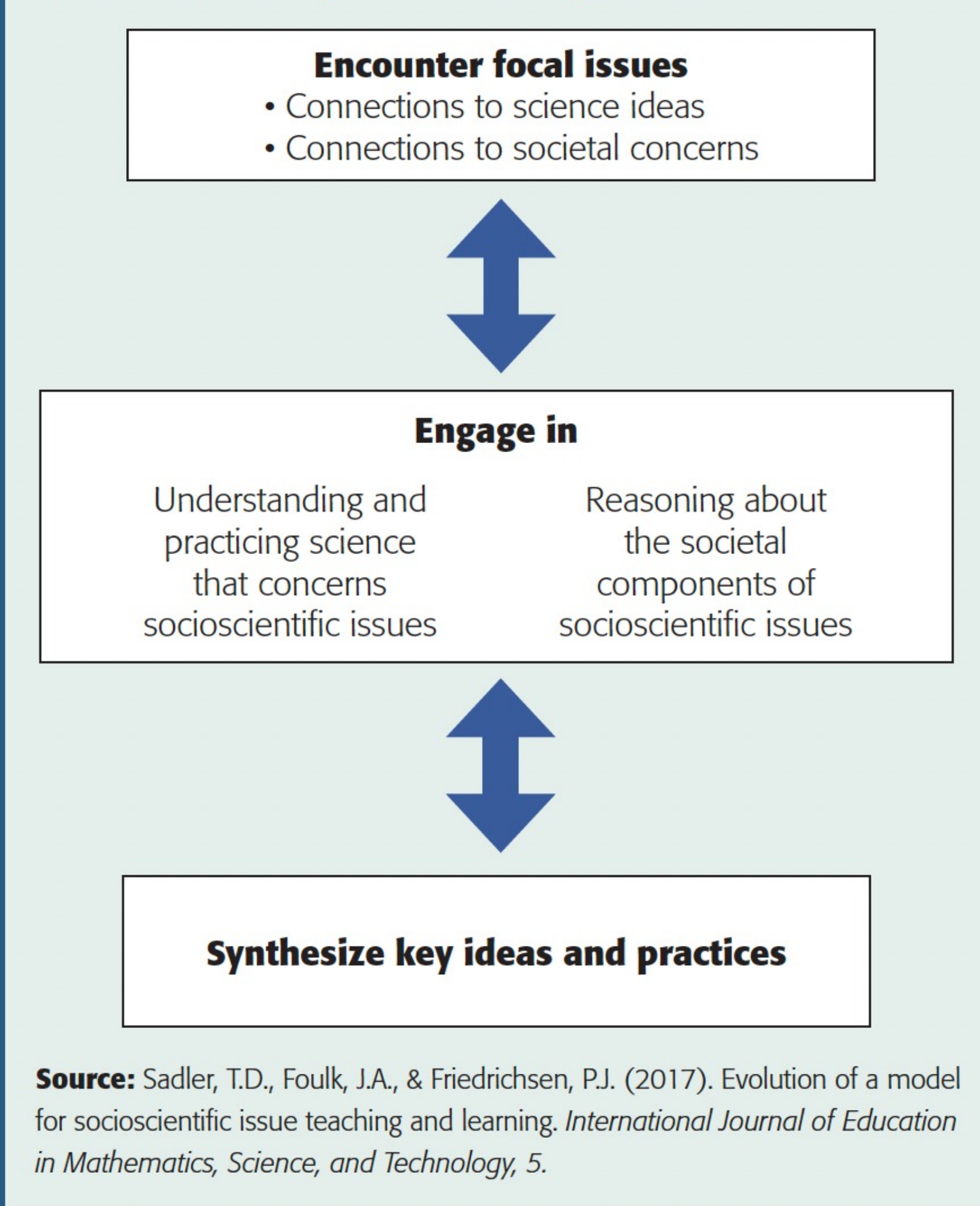


What is Socioscientific Issues Instruction?

- Pedagogical approach that leverages complex societal problems that involve both scientific knowledge and sociocultural considerations
- Requires individuals to analyze, synthesize, and evaluate information from a variety of sources
- Require individuals to apply moral reasoning or evaluate ethical concerns when arriving at a resolution of a given issue

FIGURE 2.
The SSI Teaching and Learning model



ECU students engaging with stakeholders to examine the impacts of climate change on Ocracoke Island.



Students examining natural resources issues in the Greater Yellowstone Ecosystem.



ECU students using virtual reality to examine the impacts of climate change on the Outer Banks.



Students assuming the perspective of an ecotourism business to debate wolf management in California.

Findings from Research

- Place-based SSI is an effective model for teaching environmental education and climate change.
- An association exists between place-based SSI experiences and students' self-reported pro-environmental behaviors.
- Participation in place-based SSI increases students' emotive reasoning.
- SSI instruction is an effective way to improve students' perspective taking
- Using VR and AR technologies increased student engagement.
- AR technology embedded within a place-based SSI course promoted consideration of sociocultural aspects of climate change on the Outer Banks.
- VR technology promoted a sense of being immersed in the physical landscape while investigating climate change on the Outer Banks.
- Introducing SSI instruction to preservice teachers as part of their preparation has positive impacts on their confidence to implement SSI instruction, as well as their attitudes regarding the effectiveness of SSI instruction.

Recent Publications on SSI

Newton, M.H., Annetta, L., Bressler, D. (2023). Extended reality technologies within a socioscientific issues unit on climate change. *Journal of Science Education and Technology*.

Newton, M.H. (2023). Using a socioscientific issues approach in an undergraduate environmental science course. *Journal of College Science Teaching*.

Herman, B.C., **Newton, M.H.**, Zeidler, D.L. (2021). Impact of socioscientific issues instruction on students' conceptualizations about contentious Greater Yellowstone Area environmental issues. *Science Education*, 105(4), 585-627.

Newton, M.H., Kinskey, M. (2021). The association between course context and preservice teachers' perceptions of SSI instruction. In W. Powell (Ed.), *Socioscientific issues-based instruction for scientific literacy development*. Hershey, PA: IGI Global.

Newton, M.H., Zeidler, D.L. (2020). Developing socioscientific perspective taking. *International Journal of Science Education*, 42(8), 1302-1319.

Herman, B.C., Owens, D.C., Oertli, R.T., Zangori, L.A., **Newton, M.H.** (2019). Exploring the complexity of students' scientific explanations and associated nature of science views within a place-based socioscientific issues context. *Science & Education*, 28(3-5), 329-366.

Herman, B. C., Zeidler, D. & **Newton, M. H.** (2018). Students' emotive reasoning through place-based environmental socioscientific issues. *Research in Science Education*, 50(5), 2081-2109.

Zeidler, D.L., **Newton, M.H.** (2017). Using a socioscientific issues framework for climate change education: An ecojustice approach. In D. Shepardson, A. Roychoudhury, & A. Hirsch (Eds.), *Teaching and learning about climate change: A framework for educators* (56-65). New York, NY: Routledge.

Effective Instruction

"Dr. Newton clearly has a strong command of the subject matter and also the ability to model and integrate strong pedagogical practices into the course. His explanations and contextualization of both the science content and the pedagogical strategies are very beneficial for his students as they are in their Intern 1 and coming up upon edTPA in Intern 2 where they will both have to use best pedagogical practices and explain their rationale." – *Peer Observation, Fall 2022*

"I think what made the class so amazing was the professor. Dr. Newton is one of the best professors I have ever had, and I respect him and his teaching style so much. He not only taught very important ideas and brought them to us in great ways, but also looked at us as people and related to us. Dr. Newton is an amazing professor, and I am a better educator because of him." – *anonymous SCIE 3606 student, Spring 2023*

"It was tough, but I feel that I am a stronger teacher as a result of taking this course. This course provided me with exactly what I was looking for to increase my understanding of new teaching methods and advanced Earth Science content. I thoroughly enjoyed it even though I consistently felt like I was working my tail off. The Aero assignment proves that this professor is willing to try emerging technology with students." – *anonymous SICE 6005 student, Spring 2023*

Impacts of Research on Teaching

"Presently, I am interning in a fifth-grade class in Pitt County, which falls under both Title One and Low-Performing categories. These students exhibit a strong affinity for both hands-on activities and subjects that resonate with their personal interests, characteristics well-suited for integration with SSI. In this context, SSI could be a powerful tool to explore various topics, including but not limited to solutions for climate change or pollution, renewable energy, food waste, endangered species, and human impacts on Earth. The expansive range of possibilities inherent in SSI aligns perfectly with the diverse needs and interests of my current student population." – *student, SCIE 3216, Fall 2023*

"Dr. Mark Newton has served as an incredibly influential professor to my teaching career. He has introduced an impressively large variety of effective teaching strategies and resources to help me become a better teacher. One such resource that I think I have used the most effectively thus far is the implementation of virtual reality in the classroom. The first class I took under Dr. Newton, he allowed us to experience a virtual tour of a scene in the Outer Banks. I was so intrigued by this activity that a year later I reached out to him for help in making my own." – *student, SCIE 4923, Fall 2023*

"This was actually a life changing course for me. They way we engaged with the problem and our trip to Ocracoke have changed the way I see the world and myself" – *student, HNRS 2014, Spring 2023*