



# Supporting Complex Problem Solving in Socioscientific Inquiry: Where Scaffolding Meets Technology

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## BACKGROUND

In Socioscientific Inquiry (SSI), students consider scientific issues that have social implications (Sadler, 2004). However, engaging in SSI can be demanding for the learner, simultaneously requiring scaffolding to support learner reasoning. Given the complex nature of SSI reasoning, we designed, developed, and implemented *SSI-Net*, a suite of tools to scaffold student inquiry.

## AIM

The purpose of our study was to understand more about the ways in which a teacher experienced *SSI-Net* as a resource to scaffold student inquiry. We wanted to know how an instructor integrated technology- and teacher-based scaffolding practices to implement instruction with his 9th grade biology classes.

## METHOD

Implementation took place during the spring semester in which and the teacher, Mr. Kaynor, engaged students with the following question: *When should we use personal genetic information to make decisions?* We examined the teacher's use of the tools using heuristic case study (Merriam, 1998). Specifically, in our study, we investigated how the teacher used the tools, how they fit with his current approaches, and how they prompted him to consider new approaches or practices.

## RESULTS

The teacher used the tools to meet three distinct goals:

1. **Providing embedded expertise.** When assembling the resources for students, Mr. Kaynor annotated 29 web-based resources divided across an entry event and five activities. In the post-unit interview, Mr. Kaynor stated: "[When I used] the annotations, I was able to see where student was at in the reading, 'cause they were able to scroll and focus in on one part of the text, I knew that that was what they were looking at, so that was kind of useful. Also, it allowed me to go around and ask questions as they are reading."
2. **Providing forward guidance.** Mr. Kaynor also developed other forms of structured guidance. For example, Mr. Kaynor provided forward guidance by having his students prepare for the whole class discussion to occur later in the activity and set students up for success.
3. **Making thinking visible.** A third form of scaffolding employed by Mr. Kaynor is reflected in his attempts to make student thinking visible, which blended student constructed responses with whole class discuss.

## CONCLUSION

Our analysis demonstrates some key trends: the teacher seamlessly blended multiple scaffolding practices, and placed tremendous reliance on scaffolding with in *SSI-Net*. We argue that this blending provides both contingent and necessary support at keep moments that the teacher can anticipate in advance but also provide as needed.

## REFERENCES

- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.
- Sadler, T. D. (2004). Informal reasoning regarding socioscientific issues: A critical review of research. *Journal of Research in Science Teaching*, 41, 513-536.