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Let's Try Something New: Service Learning in Boise State's Computer Science Department

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Cover Page Footnote
I would like to thank Dr. Sole Pera for organizing the service learning project in my Information Retrieval class.

As part of a new service learning project initiative, Dr. Sole Pera, instructor for CS497 Information Retrieval, decided to try something different. Instead of assigning the usual programming project to her students, she tasked them with a storybook writing assignment. This presented the students a creative outlet to teach children how to use search engines effectively.

An undergraduate senior in the class, shares his story idea. "My story is titled 'Modern Merlin and the Spell of Searching.' The main theme behind the story is that modern wizards are those who gain knowledge by skillfully utilizing the modern methods of finding it."

"[I'm] a senior and the title of my story is 'Bobby Boolean.' It is about an elementary student that is studying and he wants to know more about what Boolean means."

A Master's student states, "'IR Man and the School of Lost Data' is about two children who are trying to find a spelling book but are unable to do so. It takes IR Man and IR Woman to help them find it while teaching how this relates to Information Retrieval and how it works."

Information retrieval is an area of Computer Science that deals with obtaining relevant resources pertaining to an information need. The canonical example is a search engine, such as Google Search. Given some text input in a search box, Google can find relevant web pages using key concepts in information retrieval, which include text processing, term indexing, and query evaluation. Information retrieval is not limited to search, as it is fundamental to YouTube's video suggestions, Siri's speech-to-text processing, and Gmail's spam filters.

Dr. Pera explains that the storybooks written by the students are intended to be read by children in the Boise area. "The books will be printed and donated to community organizations by the end of the [fall 2016] semester." Book It Forward, an Idaho community partner aimed at increasing children's access to books, will be the one in charge of distribution. The organization has donated more than 80,000 books to children in need of them, and is happy to accept more ("Book It Forward," n.d.). In this manner, this story telling opportunity gives Computer Science students the chance to share their knowledge with the community in an impactful way.

Several students in the class have shared their appreciation for this service learning opportunity. One student continues, "I think that simplifying a topic such that you can explain it to a child really makes you distill the idea into a very pure form and you end up gaining a new perspective on it. Also, of course, just trying to put yourself in a child's position in terms of interacting with a search engine forces you to gain some perspective… This was a bit of a different experience as I haven't really written for a particularly young audience. It was a bit of a break from the monotony of programming projects though and I am sure it did me some good to put some extra thought into the subject matter."

Boise State emphasizes the importance of service learning in the classroom, explaining that their Service Learning Program "connects classrooms with the community through capacity-building partnerships in order to enhance student learning, address critical community issues, and encourage students to be active citizens in their local, national and global communities" … Since the program began, Boise State has offered service-learning courses to over 27,000 students. Annually, it impacts over 130 classes, 30 departments, and 100 community partners. In total students and faculty have contributed over $10 million to the community through their Service-Learning" ("Welcome to Service-Learning," 2016). Examples of such service learning projects can be seen on their Twitter page, which include stories on engineering students creating a new exhibit at the Discovery Center of Idaho and Spanish students translating letters in the Idaho State Correctional Institution ("Service-Learning BSU," n.d.).

Service-learning projects have been a rare occurrence in the Computer Science department. Out of 8 undergraduate seniors and graduates who completed a survey, not a single

student completed a prior service-learning project throughout their time at Boise State. Beyond Boise State, Pete Sanderson from Otterbein College in Ohio shares the same sentiment, in his paper titled, "Where's (the) Computer Science in Service-Learning?" (2003). His research into the topic indicates that Computer Science, and the sciences in general, do not garner much exposure to service learning components in the classroom. He indicates that "It is imperative for those Computer Science faculty involved in service-learning to develop, apply and disseminate effective frameworks for integrating service learning into undergraduate Computer Science curricula so that its benefits may be more fully realized." (p. 83).

Despite the lack of emphasis (overall) on service learning in Computer Science, there are many clear examples of its successful implementation (see Further Reading). For instance, Sonoma State University provide an example where "Students in the Introduction to Computer Science course at Siena College in Loudonville, New York, created computer animations for a non-profit called Music Mobile, a gender and race neutral learning tool" ("Service-Learning in Computer Science," n.d.). A 2015 study details the effects of integrating service learning into Computer Science by surveying students who participated in STARS, an NSF-supported computing initiative (Payton, 2015). The authors report, "students agreed that service learning provided hands-on experiences that enhanced their confidence in computing and their commitment to their computing major and to pursuing a career in computing… showing significant increases in both computing efficacy and computing commitment over time. It is also consistent with service learning research showing that students who participate in service learning report higher satisfaction with their college experience and are more confident in their career choices" (p. 322).

Many students in the information retrieval class have offered their recommendation to implement more service learning projects in other Computer Science classes. Another undergraduate senior in the class states, "Now that I can reflect back on this project, I enjoyed it a lot. Even while it wasn't a simple task of just sitting down and writing out a story, I enjoyed sharing this experience with my daughters. I also enjoyed talking to others at my work who have young kids and getting their feedback. Since there aren't really [any] stories out there for this type of learning, I think this is an excellent way for us (college students) to give back to our communities… It might help the younger generation to see the benefits of writing code and get them interested from a young age. I know at my daughter's school they don't have any coding classes, so outside of my influence they wouldn't know what programming is. We should be propelling and inspiring the next generation of coders."

It is an open question whether or not more service learning projects will be incorporated into other courses in Boise State's Computer Science department, but from the positive experiences shown so far, there is a noteworthy potential for enhanced education in the classroom.

Having written a storybook in the Information Retrieval class myself, I had a fantastic experience with the project. Drafting and illustrating my story offered me an opportunity to think creatively, in a way that allowed me to find deeper connections between what we were learning in class and what happens in the outside world. Service learning projects are definitely something I wish to see more of, so that students like me can not only absorb information, but apply it for the benefit of the local community. I hope the children who receive our stories from Book-it Forward can learn some of the valuable information we have been taught in class.

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