A CASE STUDY: CROWD SOURCED AI PROGRAMMING [RESEARCH IN PROGRESS; ABSTRACT]

Christine Bakke	University of Minnesota, Minneapolis, MN, USA	cbakke@umn.edu

ABSTRACT

Aim/Purpose	To examine crowd-sourced programming as an experiential learning, instructional medium. The goal is to provide real-time, real-world, artificial intelligence programming without textbook instructional materials.
Background	Open source software has resulted in loosely knit communities of global software developers that work together on a software project. Taking open source software development to another level, current trends have expanded into crowd sourced development of Artificial Intelligence (AI). This project explored the use of Amazon Alexa's tools and web resources to learn AI software development.
Methodology	This project incorporated experiential and inquiry educational methods that combined direct experience with crowd-sourced programming while requiring students to take risks, solve problems, be creative, make mistakes and resolve them. The instructor facilitated the learning experience through weekly meetings and structured reports that focused on goal setting and analysis of problems. This project is part of ongoing research into small group creative works research that provides students with real-world coding experience.
Contribution	Undergraduate students successfully programmed an introductory level social bot using experiential learning methods and a crowd-sourced programming project (Amazon Alexa social bot).
Findings	A summary of the experience and findings will be included with final paper release
Recommendations for Practitioners	Crowd sourced programming provides opportunities and can be harnessed for semester long coding projects to develop student programming skills through direct involvement in real open sourced projects.

Recommendations for Researchers	There is a high rate of failure associated with software projects, yet programming courses continue to be taught as they have been for decades. More research needs to be done and instructional materials developed for the undergraduate level that use real programming projects.
	Can we improve the rate of success for software projects by requiring experiential education in our courses?
Impact on Society	Crowd-sourced programming is an opportunity for students to learn to program and build their portfolio with real world experience. Students participating in crowd-sourced programming are involved in creative works research and gain experience developing real-world software.
Future Research	Future research will explore experiential learning such as crowd-sourced and other open source programming opportunities for undergraduate students to participate in real software development.
Keywords	crowd-sourced programming, artificial intelligence, software development, programming, experiential learning, inquiry education, mob programming, artificial intelligence

OVERVIEW

This paper examines crowd sourced programming as an experiential instruction methodology, following the educational experiences of undergraduates learning artificial intelligence programming through use of publicly available resources primarily developed through Amazon's crowd sourced Alexa Prize social bot challenge. Students reported weekly following a structured report format that guided them through the real programming project (learning to code an AI social bot). Weekly analysis and discussion covered goal setting, trouble-shooting/problem solving, resource analysis, coding techniques and terminology.

BIOGRAPHY

Christine Bakke earned her PhD in Information Technology Instruction for Higher Education after 18 years of career experience that included a range of programming, database management and network administration. She emphasizes instructional methods that provide experiential learning and inquiry-based education. Since 2008, she has been an instructor of Information Technology, Computer Science, and Software Engineering courses.