

Piecing Together the Next 15 Years of Computing Education Research Workshop Report

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ABSTRACT

The session will present an overview of findings of a recently funded NSF workshop that set out to examine the pressing issues for computing education research for the next 15 years. Based on dialogs for scholars working in this area, the workshop participants developed a series of themes and topics that they felt should become the focus of computing education research efforts for the next 15 years. Main themes that emerged and will be discussed in this session include: diversity, equity, inclusion, ethics, broadening participation, teaching, learning, K-12, research to practice, computing's connection to other fields, and computing education research disciplinary issues. The session will focus on interesting research questions from each of these areas that are ripe to be explored as well as enablers and

blockers to the progress of this work.

CCS CONCEPTS

•Social and professional topics~Professional topics~Computing education

KEYWORDS

Computing education research

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1 Introduction

From December 2020-June 2021, a virtual workshop was held in multiple sessions that brought together 43 members of the computing education research community to develop a vision for what the key areas of focus for the next 15 years of computing education research should be. During the sessions, the participants worked in small groups based on their areas of interest and expertise and developed a vision for topic areas as well as research questions for these areas that they felt were key milestones to work on for the next 15 years. This session will bring forward those ideas to the wider SIGCSE Technical Symposium audience. More information about the results of the workshop can be found on the workshop website: <https://cerfutureworkshop.org/>.

2 Session Structure

We will begin with an introduction of the workshop and then introduce the workshop topics. This will be followed by a direct question session with prepared questions for the presenters, followed by time for open Q & A.

2.1 Introduction (Decker & Weiss – 5 mins)

Workshop leads will introduce the overall premise of the workshop and the structure of this special session. Each group will then introduce their topic for 5 minutes.

2.2 Diversity, Equity, Inclusion & Ethics (Ko)

We need culturally responsive and critically conscious computing that helps prepare teachers and students to recognize and respond to the role of computing in reinforcing and dismantling the matrix of oppression.

2.3 Broadening Participation (Pérez-Quñones & Rankin)

Is the traditional computer science degree too narrow in scope? We should investigate more pathways to computing degrees and ways to make the curriculum more flexible and how to combat the negative stereotypes of computing in our classrooms, departments, and institutions.

2.4 K-12 (Vahrenhold & Weintrop)

We need to better understand the needs of classrooms, learning goals, pedagogical practices and assessment at the K-12 level both in formal and informal settings. In addition, stakeholders from outside the classroom (e.g. policy makers) need to be engaged and involved in the process.

2.5 CS & Other Fields (Becker)

We need a better understanding of what foundational computer literacy is for both computing and non-computing fields as well as better ways for collaboration to work across disciplines.

2.6 Learning (Morrison)

We need to address gaps in preparation of students as they enter university as a first-year student or transfer from other institutions or community colleges. We need to think about the role of upskilling and bootcamps in the learning of computing concepts. We need to understand how the proliferation of widely available resources impact the classroom both in prior preparation of students and in how students learn using those resources.

2.7 Research to Practice (McGill)

How can researchers be more effective in moving research findings into practice? Collaborating with practitioners can give unique insights into their various problems of practice. Equipping the computing education research community to become effective partners will enable successful collaborations.

2.8 Teaching (Dougherty & Edwards)

We need better ways to share resources, improve student feedback, uniformly assess students, replicate teaching strategies to determine their efficacy, and implement standards. In addition, we need ways to ensure that our classrooms, our tools, and our pedagogy are more accessible to all students, but especially those with disabilities.

2.9 Computing Education Research Disciplinary Issues (Ross)

Support is needed for CER as an area of study within universities so that graduate students are not discouraged from pursuing it as a field of scholarly activity. What can we do as the computing education community to help this effort?

2.10 Directed Questions (15 mins)

After the introductions of the themes of the workshop are presented, there will be a short time of seeded/directed questions to the workshop participants to start discussion. The questions will include questions about enablers and blockers of the work as well as challenges we face as a field moving into the next 15 years.

2.11 Audience Q & A (15 mins)

The last part of the session will be an open Q&A from the audience to session presenters.

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