Building Professional Identity as Computer Science Teachers: Supporting Secondary Computer Science Teachers through Reflection and Community Building

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ABSTRACT

This is a summary of my thesis work, which examines the sense of identity HS CS teachers hold and explores ways of supporting their identity development through a professional development program focusing on community building and teacher reflection.

Categories and Subject Descriptors

K.3.2 [**Computers and Education**]: Computer and Information Science Education–*computer science education.*

General Terms

Design, Experimentation, Theory.

Keywords

CS Teacher Identity, Community, Reflection, Professional Development

Introduction

Quality computing education requires quality computing teachers. Teacher education literature, especially teacher identity theory, suggests that a strong sense of teacher identity is a major indicator or feature of committed quality teachers. However, it could be a big issue to establish teacher identity for high school (HS) CS teachers under the current educational system in the U.S., without consistent certificate standards for CS teachers and with computing usually excluded from the core curriculum. The current system does not provide a *typical* context for teachers in the U.S. to build a sense of identity as a CS teacher.

This thesis work centers upon understanding the sense of identity HS CS teachers hold and exploring ways of supporting their identity development through a professional development (PD) program: the Disciplinary Commons for Computing Educators (DCCE). DCCE is an effort dedicated to supporting local computing educators, with a main focus on promoting reflection on teaching practice and community building. With scaffolded activities such as course portfolio creation, peer review and peer observation among a group of HS CS teachers, it offers opportunities for CS teachers to explicitly reflect on and narrate their teaching, which is a central process of identity building through their participation within the community.

In this work, I first conducted an empirical study exploring the teacher identities CS teachers held and factors that contributed to those perceived identities. I then designed and implemented the intervention program (DCCE) to explore how we can support their identity development as a CS teacher, through facilitating reflection on their teaching practices within a community of CS teachers. I used narrative inquiry as a methodological approach to investigating CS teachers' sense of identity through analyzing teachers' narrations on their teaching.

Current findings offer examples of different self-identification and identity features from those who saw themselves as CS teachers, Business teachers, or teachers in both CS and another subject (Math or Business). Overall, these results indicate that a sense of identity as CS teachers was not guaranteed among those who were currently teaching HS CS. These teachers felt isolated and felt the lack of peers and community. Some teachers were not committed to or confident in their CS teaching. Also, four factors were identified that contributed to these perceptions: their educational background and certification, perceptions about the CS field, curriculum and department hierarchy, and the availability of CS teacher communities.

The four cases in study 2 present different examples of participating teachers' identity statuses and changes that happened through their participation in DCCE. Current results indicate that these participants were able to develop a sense of affinity identity with a group of CS teachers, while they failed to build the institutional identity as a CS teacher under the current educational system. These teachers also experienced different self-identity statues and change trajectories along with their participation in DCCE. Results from this study also indicate a potential model of supporting CS teacher identity development through facilitating community building and promoting reflection and learning among those teachers. DCCE provided an inviting context for teachers to explore their identity and achieve a sense of identity as a CS teacher. Participants were able to affirm good practices, see similarities among their teaching, identify ways of improving and get inspired to grow CS programs. These affordances supported their CS teacher identity development by helping them become more confident and committed to CS teaching, get inspired to learn, and build a sense of belonging to a group of CS teachers.

Findings from this research suggest guidelines for designing teacher education and PD programs for building committed, quality CS teachers.