

Understanding Parents' Perceived Barriers to Engaging Their Children in Out-of-School Computer Science Programs

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ABSTRACT

To address participation inequities among youth in computer science programs, this study examined how parents evaluate out-of-school time (OST) STEM programs for their children. We facilitated a workshop and conducted interviews with parents in Digital Youth Divas (DYD), an OST STEM program for middle-school girls who are underrepresented in computing. We found that parents prefer programs that are free, at accessible locations, and run by reputable educational institutions. Parents also identified barriers such as the lack of a parent network and conflicting schedules. Our results suggest several recommendations to address these barriers.

KEYWORDS

Out-of-school time; STEM programs; Parents

1 Introduction

Parents' values, knowledge, and interests have a significant impact on their children's learning in STEM fields [1], especially in how they consider and decide to enroll in programs. Despite the increasing number of computing programs targeting underrepresented populations, inequities have persisted. The goal of this study is to examine barriers parents perceive when they consider OST computer science programs for their children.

2 Background

An ecological view of learning addresses how interests develop through dynamic interaction across spaces of home, school, and community [2]. Prior research has identified structural barriers to participation in STEM programs, such as registration fees, lack of transportation, competitive application processes, and inability to

demonstrate preexisting interest in science [3]. This study extends prior literature by providing insight into parent perceptions of computing programs that can subsequently impact participation.

3 Methods and Results

We facilitated a 120-minute workshop for nine parents girls in DYD and took field notes. The workshop prompted conversations about the role that parents (i.e., guardians and primary caretakers) play in their children's learning. We conducted interviews with five parents and two DYD staff members to understand how parents evaluate OST programs. Using inductive coding, we analyzed field notes and interview data to develop themes.

Parents identified several barriers to their children's participation in computing programs. Affordability and location were the two main factors mentioned. Location was critical as parents are often the primary transport for middle-school aged children. There was also confusion about terms such as *STEM* and *computer science*; one parent stated, "[OST program advertising] isn't giving me a visual of what STEM is." In addition, unattractive promotional materials and receiving an overwhelming amount of information about programs were concerns. Parents also indicated that conflicting schedules and the lack of a parent network were also barriers to participation, citing the importance of getting program information from other trusted parents.

4 Conclusion

This work identified parents' perceptions of OST computer science programs which may impact their decisions to enroll their children. Designers and researchers of these types of programs must address these barriers in order to encourage participation.

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