Developing Focused Recruitment Strategies to Engage Youth in Informal Opportunities

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Introduction

Despite increasing jobs predicted in the areas of engineering and computer science, there is a well-documented and consistent drop in the number of women in these fields at each level of advancement, and these trends are even more profound for minority women (Hill, Corbett, & St. Rose, 2010). Decisions about participation are frequently made prior to high school, and have been linked to factors such as prior experience, interest, and sense of fit with community (Margolis & Fisher, 2002).

Out-of-school time has been identified as a potential space for STEM-related programming that breaks free of traditional models (NRC, 2009), and there is evidence of learning and engagement outcomes from such programs serving underrepresented populations (Barron et al, 2014). However, programs that happen out of school are often voluntary, presenting very real challenges of recruiting and retention. Inequities have been identified in student participation in out-of-school STEM programming, with males and dominant populations being more likely to access such opportunities (e.g. Maltese & Tai, 2010). To truly broaden participation, we need to not only design quality programs, but also work to develop and understand recruiting strategies that can encourage young people and families who are not already engaged to participate. The specifics of such efforts, even for programs that have been successful in recruiting, are often undocumented (Kauh, 2010).

In this poster, we attend specifically to the critical question of how to recruit young women from underrepresented populations who do not see themselves as engineers and computational thinkers to participate in opportunities that could spark interest, broaden social learning networks, and lead to the pursuit of further learning.

Methods

The Digital Divas program invites inner-city middle school girls interested in fashion and design to develop e-textiles and try out introductory programming during out-of-school time. In this poster we share program recruitment strategies from two implementations and compare participants in terms of general demographics, identity, and confidence with technology. Our methods included: (1) collection of digital and material program artifacts; (2) regular informal conversations with leadership; and (3) surveys of interest, access, and experience (Barron et al, 2014) administered to the girls during their first day in the program.

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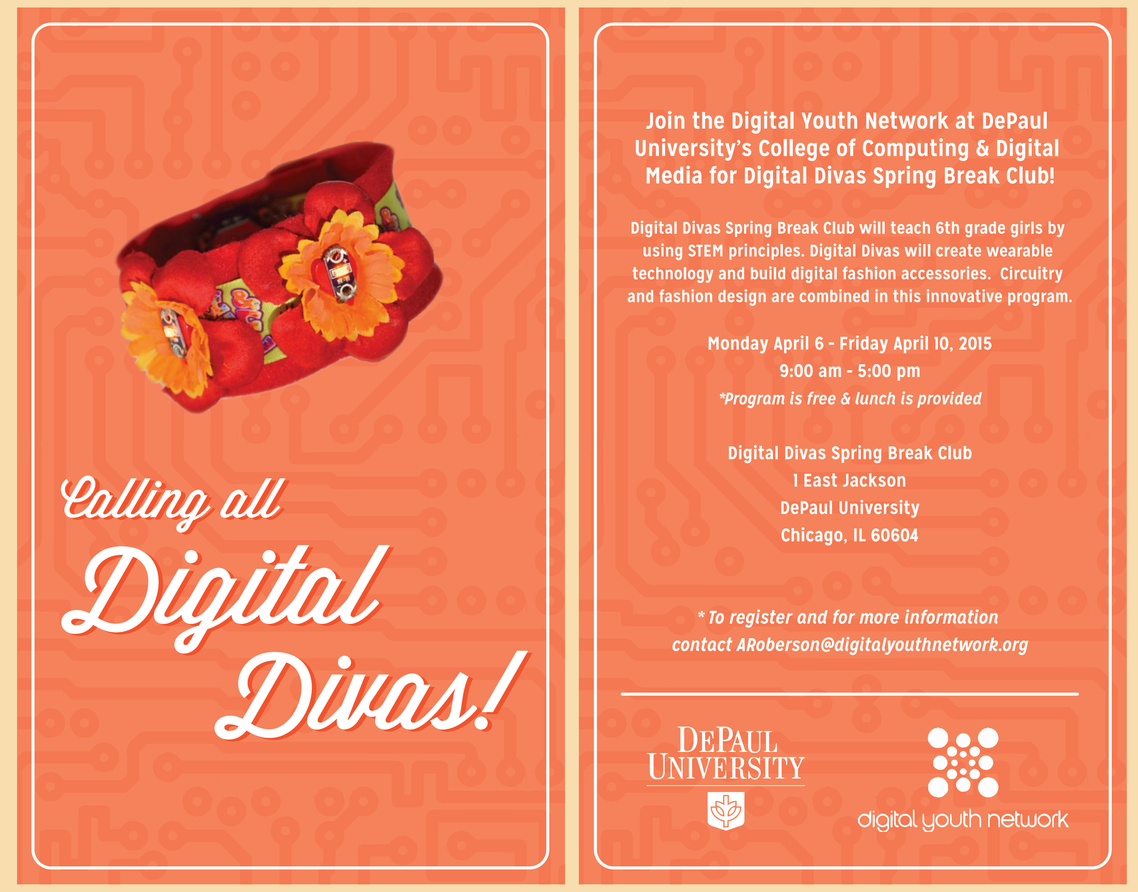
Spring Implementation Recruiting



Distribution channels:

- Flyers distributed to DYN partner schools in person and via email
- DYN staff emails to professional and personal networks

Summer Implementation Recruiting

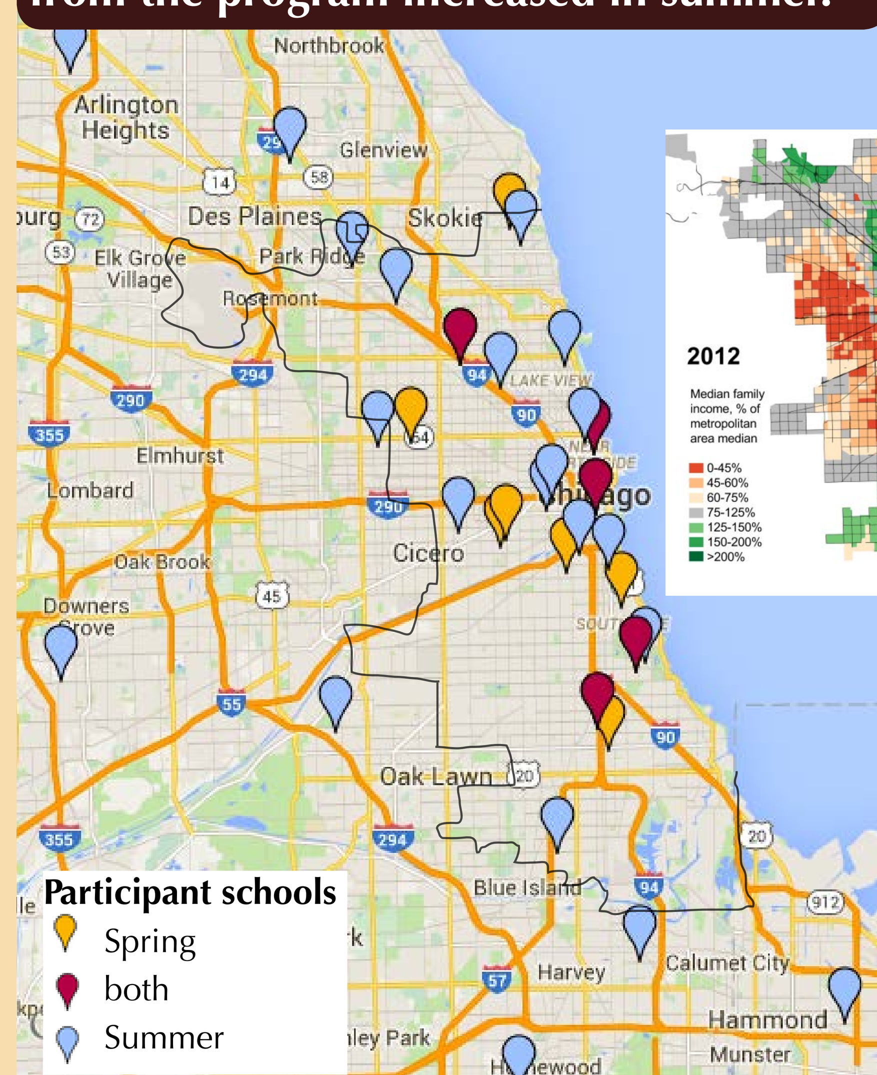
Distribution channels:

- Flyers to local public schools
- Flyers to targeted organizations
- Staff emails to individual connections
- Targeted ads on social media

Wider distribution, utilizing online networking

Participant Comparison: Spring (N = 17 girls) & Summer (N = 38 girls)

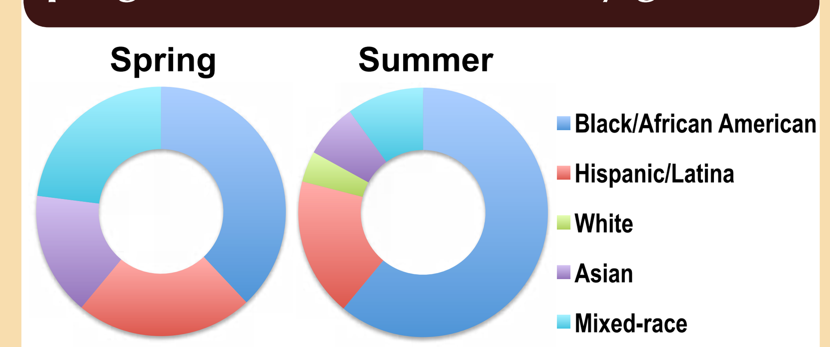
Location of schools attended: For both sessions, participants attended schools in diverse areas around Chicago. Distance from the program increased in summer.



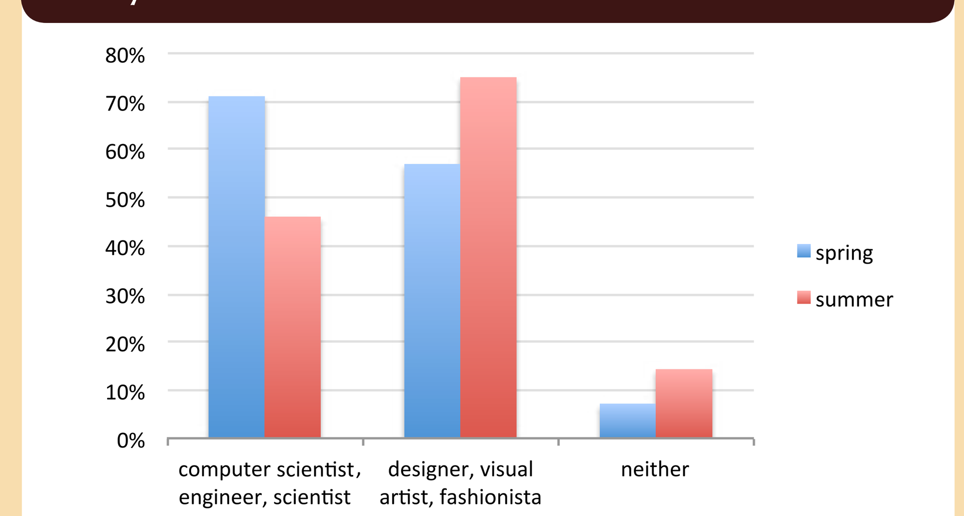
Types of schools attended: In the spring, 25% of girls attended gifted and talented schools, while in the summer this was true for 12% of the girls.

Home access: 93% of girls in the spring program reported having their own computer, compared to 57% of girls in the summer ($X^2 = 5.57$, $p = .018$).

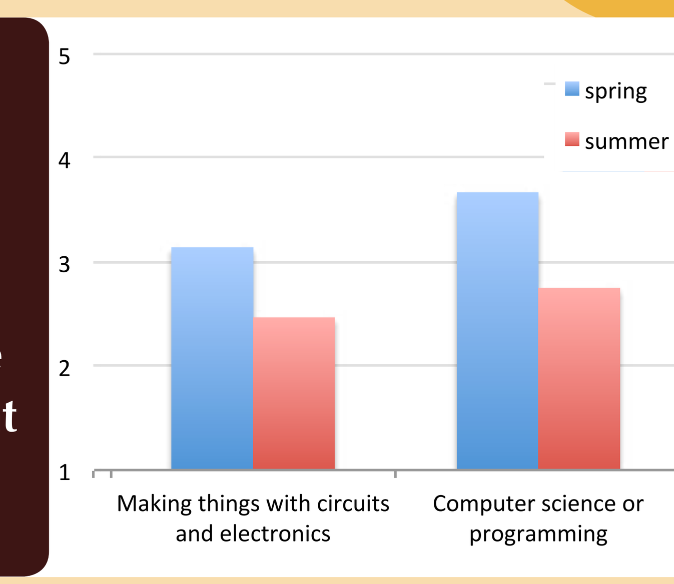
Ethnicity: Both spring and summer programs recruited minority girls.



Identities at pretest: When girls rated words to describe themselves, a higher proportion of girls in the spring program indicated "very much" for STEM-related identities.



Confidence at pretest: On a 5-point scale of self-rated expertise (1 = no knowledge, 5 = expert) girls in the spring had higher average ratings, the difference being significant for computer science ($F(1,38) = 4.98$, $p = .032$).



Implications.

Both summer and spring programs were successful in recruiting minority girls from around Chicago. Summer implementation, which followed a redesign of recruiting methods, evidenced participants who were additionally aligned with the program's target population: girls who signed up for the summer program suggested less access to computing opportunities at home and school and less incoming engagement and confidence with computer science and engineering than spring break participants. This work points to the importance of attending to strategies and materials for recruitment. Recommendations include: (1) close attention to language and imagery to engage families from non-dominant populations; (2) redundant, targeted, channels of distribution, utilizing online networks and local organizations.