

Guiding the Design of Inclusive Playgrounds through Needs Assessment and Materials Selection

(Technical Report)

Technological Politics & the Marginalization of Users Through Playground Design

(STS Research Paper)

An Undergraduate Thesis Portfolio

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Sociotechnical Synthesis: Inclusive Playground Design and the Marginalization of Users

My STS research and technical work are connected because they focus on the impacts of playgrounds. However, the STS research is more narrowly focused on the political aspect of playgrounds and how the current design of playgrounds within the City of Charlottesville, Virginia exclude select users. Whereas my technical work investigates the needs of playground users ages 12-24, to fill the gap of knowledge in the design of playgrounds. Additionally, this portion of the project determines which playground surface material is most conducive to users of all-abilities, particularly those with disabilities. Overall, my STS research and technical work center around how playground design shapes user participation and activity.

My technical report focuses on two crucial components that aid in designing an inclusive playground. First, my team conducted a needs assessment of the demographic group ages 12-24, as these stakeholders typically have little to no representation in playground design. Through conducting and analyzing surveys and interviews, it was demonstrated that participants value playgrounds that are conducive to relaxation and provide a sense of community. Additionally, there was an expressed desire for open, flexible-use spaces and features that included handrails, seating, shaded areas, natural features, and swings. Specific undesirable features included metal structures, loose surfacing materials, and loud or unmaintained settings. The second component of the technical work determined the optimal inclusive playground surface material. Surface material selection is a key component in exclusion as it can hinder users from entering or traversing the playground. Through a life cycle assessment and research, poured-in-place rubber (PIP) was determined to be the best playground surfacing material to maximize inclusivity. PIP rubber is a unitary surface that is smooth and accessible for users of all abilities, it is extremely durable, has a long life expectancy, and requires minimal maintenance. The technical report

provides design considerations and guidance that will enhance inclusion of users of all-abilities at playgrounds.

For my STS research, I argued through the framework technological politics, that Charlottesville playgrounds are both technical and political in nature. Further, through 2 design elements, ground surface material and play features, users with disabilities are excluded from these communal spaces. After analyzing 13 Charlottesville playgrounds, it was demonstrated that the common selection of loose filling ground surface material and the limited, a few or less, number of inclusive play features exclude users with mobility impairments and disabilities from accessing and utilizing these spaces. As a result, these users cannot reap the mental, physical, social, and developmental benefits provided by Charlottesville playgrounds and are consequently alienated from society and lack the ability to connect and grow with the community. My STS research exemplified the political power of playgrounds through the Charlottesville case study.

Simultaneously working on the technical and STS projects made me realize that technologies are invariably socio-technical in nature. For my project, it was clear how playground design can physically exclude playground users. However, I did not understand the larger user exclusion, which was shown through the social lens. For example, I did not understand the developmental impact playgrounds have on users, as they are social spaces where individuals can expand relationship building skills. Marginalized playground users have a disadvantaged opportunity to strengthen such skills and interact with other community members, which the technical perspective does not consider. Understanding the social function of playgrounds can help explain why exclusion created by playground design is so powerful and important to understand. This project has opened my mind to the complex nature of technologies and how they should always be viewed with a socio-technical perspective.

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