

**APPLICATION OF USER NEEDS ASSESSMENT AND MATERIALS
RECOMMENDATIONS IN INCLUSIVE PLAYGROUND DESIGN**

**IMPACT OF COMMUNITY-BASED PLAYGROUND RESEARCH ON YOUTH'S
SELF-CONCEPTS**

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By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Community playgrounds have the potential to provide socialization opportunities that positively guide childhood development, but the needs of playground users with disabilities are not typically considered in existing design standards. This exclusion in the playground environment is detrimental to children's "social, emotional, cognitive, and physical development" (Dietze, 2013, p. 15). It is therefore imperative that playgrounds be designed to not only meet technical guidelines for accessibility but also the emotional and social needs of all guests (Burke, 2013, p. 91).

The tight coupling of the technical and STS research projects will address the underrepresentation of children's voices, specifically those with disabilities. The technical project involves a partnership with Bennett's Village, a Charlottesville-based organization, in supporting the design of an all-abilities, multigenerational playground at Pen Park. The project specifically focuses on collecting user research on the adolescent and young adult populations and creating materials recommendations for the track feature and general playground surfacing. We will not be involved in the actual construction of the playground, but these tasks will help guide Bennett's Village in making playground design decisions. General research for both the user research and materials recommendations will take place in the Fall 2020 semester while analysis will take place in the Spring 2021 semester. Figure 1 on page 2 shows the individual tasks and detailed timeline for the technical project.

The STS research project is focused on evaluating the smaller-scale, individual impact that community-based participatory research may have on youth with disabilities using the Actor Network Theory framework. The timeline for the STS tasks, which began in the Fall 2020 semester and will end in the Spring 2021 semester, can also be seen in Figure 1. The STS topic is tightly coupled with the technical project. This pairing will allow for a more complete

understanding of the user needs required to meet the multi-generational and all-abilities goals for inclusive playgrounds that promote socialization necessary for children’s social and emotional development.

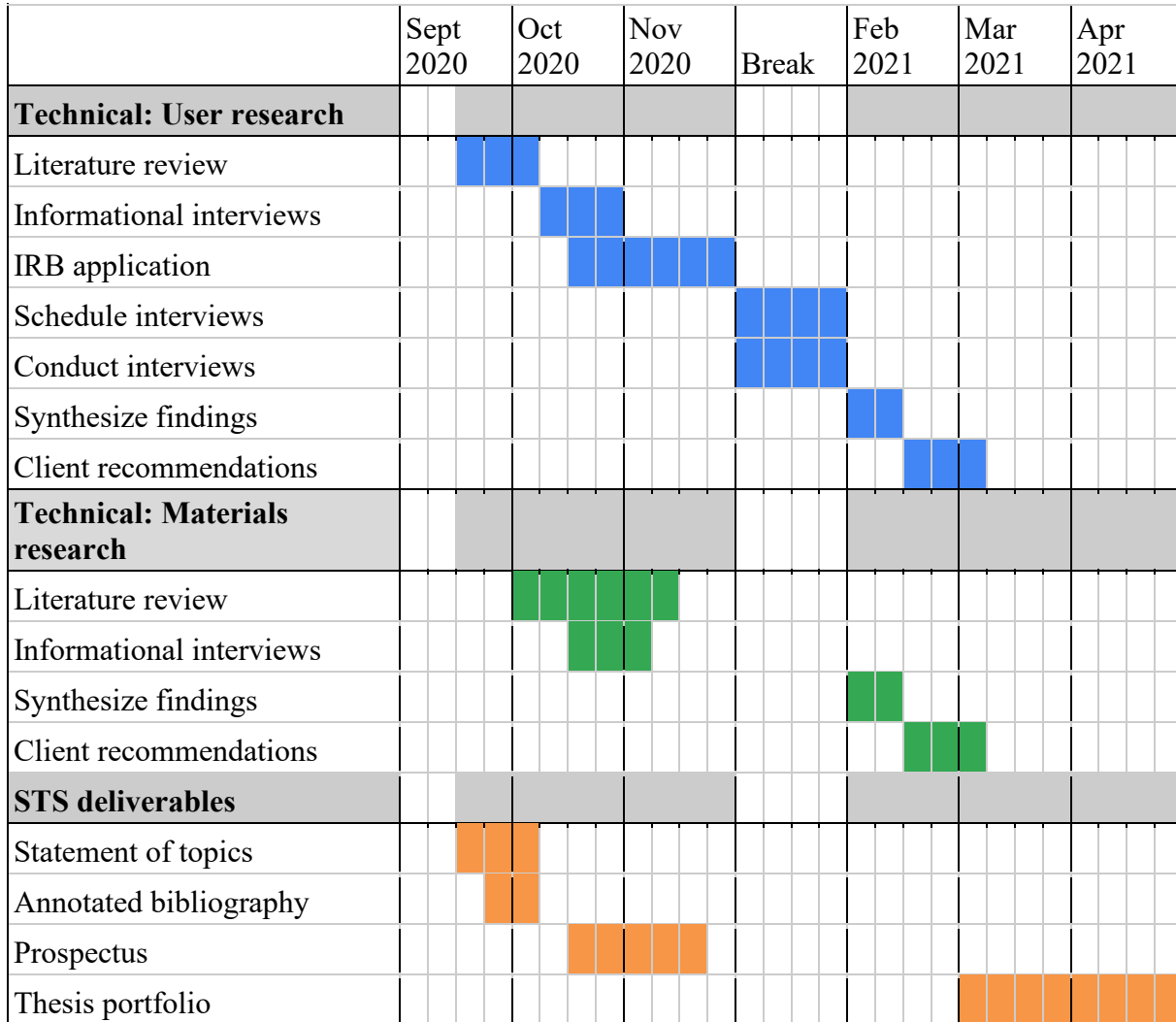


Figure 1: Technical and STS Research Project Gantt Chart. The chart shows a breakdown of the two portions of the technical project, the STS deliverables, and their respective timelines. (Luong, 2020).

APPLICATION OF USER NEEDS ASSESSMENT AND MATERIALS RECOMMENDATIONS IN INCLUSIVE PLAYGROUND DESIGN

Within the broader goal of creating a multi-generational, all-abilities playground with Bennett’s Village as our sponsor, the technical project will involve user research on the

adolescent and young adult age groups and materials recommendations for the track feature and playground surfacing. These findings will be synthesized in the form of a conference paper for the Systems and Information Engineering Design Symposium (SIEDS) and may serve as an information source for future inclusive playgrounds. The technical project is supervised by Rupa Valdez, an associate professor of the Department of Public Health Sciences and the Department of Engineering Systems and Environment and at the University of Virginia. She has extensive experience in conducting research related to disabilities, particularly in the context of community living, which will be helpful in guiding the design of an inclusive community playground. The two main tasks of the technical project will be completed by a team of Systems and Civil Engineering students that includes Reid Auchterlonie, Chloe Brannock, Victoria Jackson, and Kiley Weeks. Finally, the project team includes the expertise of Lisa Kinsman, a project manager and civil design engineer familiar with navigating materials selection and stakeholder priorities.

USER NEEDS ASSESSMENT

The user needs assessment of the adolescent and young adult age is one of the primary undertakings of the technical project. Adolescents and young adults are not typically given agency or power in decisions that concern them, and this lack of voice is intensified for adolescents with disabilities (Kembhavi & Wirz, 2009, p. 288). Lack of representation can be further seen in the research that has been conducted by Bennett's Village; their team has extensive insights regarding children with disabilities ages five through twelve and brief research on senior citizens, but there is a knowledge gap between these age groups, most notably in the adolescent and young adult populations. The multigenerational goal of the playground makes the needs of individuals across a wide age range especially relevant to creating an inclusive community. Therefore, the knowledge gap will be filled through user surveys and interviews

with adolescents and young adults that have disabilities or are involved in the disability space, specifically those between the ages of twelve and twenty-six. This research would then support the mission of creating a multi-generational playground that allows for understanding and empathy across age groups, which would benefit the entire community (Biggs & Carr, 2015, pp. 107-108). There is no single disability that is being targeted in the interview participant demographic because of the project's alignment to the all-abilities goal of the playground; we did not want to ostracize those with other disabilities by fixating on one or a select few disabilities.

To perform this user needs assessment, the team first familiarized ourselves with the inclusive playground domain. As part of the initial research, we examined existing literature to learn about the disability space and understand the gaps in general research and knowledge. Informational interviews were conducted with Charlottesville-based actors in the disability network such as adaptive recreational specialists, recreational therapists, park management personnel, playground directors and designers, and youth- and disability-focused researchers to learn what local resources, activities, and gaps currently exist. These two sources of information, existing literature and informal interviews covering both the general and localized spheres, will be used to inform the research plan and interview questions to be submitted for approval from the Institutional Review Board for the Social and Behavioral Sciences (IRB-SRS).

Once baseline knowledge has been established and IRB-SRS approval has been obtained, we will be conducting research with the target audience, synthesizing notes, and delivering actionable recommendations to Bennett's Village. The study will involve surveys and semi-structured interviews with adolescents, ages 12 through 17, and young adults, ages 18 through 26, with disabilities or in the disability space. This data collection is focused on learning about their lived experiences with community playgrounds. To recruit interview participants from the

targeted demographic, we are using a combination of convenience sampling and snowball sampling by distributing surveys and calling for interview volunteers through community outreach emails. Before each interview, we will obtain verbal consent from the interviewee. If they are a minor, we will obtain verbal consent from their parent(s) or guardian(s) and assent from the interviewee. Once all interviews have been collected, transcribed, and de-identified, the resulting qualitative data will be analyzed for key patterns using conventional content analysis (Prellwitz & Skär, 2007, p. 147). Based on these patterns, we can employ latent class analysis to distinguish various user groups with their associated preferences (Mertens et al., 2019, p. 5). These approaches do not require outside physical resources such as labs or equipment.

These insights will then be shared with Bennett's Village in the form of recommendations to guide the playground design and programming decisions towards the needs of adolescents and young adults currently underrepresented in research. Figure 2 on the next page shows how the literature review and informational interviews provide background and context for interview goals and questions. Figure 2 also demonstrates how surveys and user interviews with adolescents and young adults will drive the recommendations. The research and resulting recommendations may also serve as a pool of knowledge to be used for the development of future parks in the City of Charlottesville as well as the surrounding counties of Albemarle, Green, Orange, and Louisa.

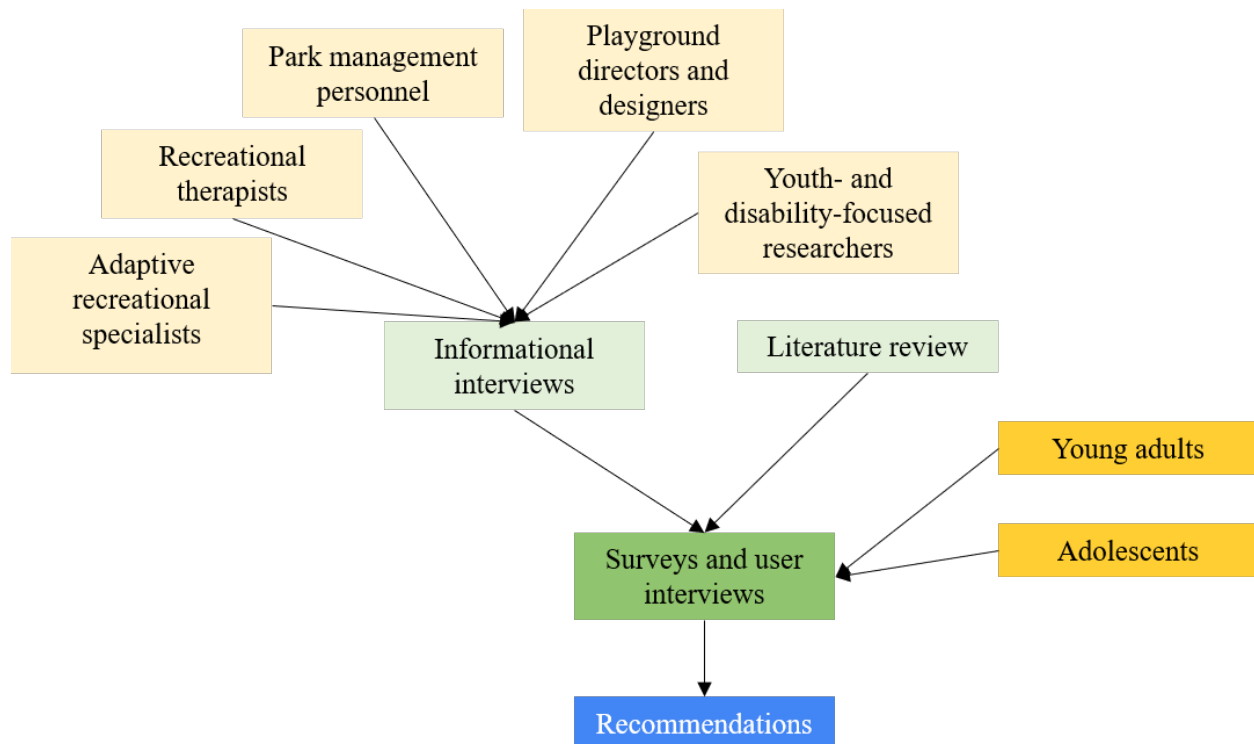


Figure 2: Visual Representation of Information Sources for Recommendations. Informational interviews and literature review inform user research with young adults and adolescents, seen through surveys and user interviews, which shape sponsor recommendations. (Luong, 2020).

MATERIALS RECOMMENDATIONS

A secondary component of the partnership is creating materials recommendations for the track that connects and surrounds the various park features as well as general playground surfacing. Existing guidelines and regulations such as the Americans with Disabilities Act (ADA) fail to address the diverse social and emotional needs of children (Burke, 2013, p. 91). For the Bennett’s Village park to serve as an example for other parks and to truly meet its goal of inclusivity, the materials under consideration must not only follow playground standards and guidelines but also consider the diverse sets of needs of potential playground users. For example, we need to account for the various modes of traffic ranging from visitors with mobility aids to visitors that may need extra fall protection. Additional dimensions that must be reflected in the recommendation are sustainability, durability, longevity, maintenance, cost, aesthetics, and local

sourcing. The need for an inclusive playground is crucial in the City of Charlottesville because very few community parks incorporate inclusive structures such as parking accommodations, accessible play spaces and components, and park paths or routes (Reiman et al., 2018, pp. 20-24). This portion of the technical project therefore builds on the user needs assessment of local adolescents and young adults.

To create the materials recommendation, we will be utilizing the same background analysis techniques as the user needs research portion with literature review concerning materials standards and informational interviews with inclusive park directors and designers to understand tradeoffs made by existing parks. From this starting point, we will use the decision-making processes shared by inclusive park personnel to identify various candidate materials. The criterion for materials selection will be weighted according to Bennett's Village expressed priorities of longevity, cost efficiency, and maintenance. This weighting will then be used to score candidate materials using decision matrix analysis. This approach does not require outside physical resources such as labs, equipment, or funding. The goal of this technical project portion is to offer a selection of materials that will be considered and used by Bennett's Village to create a playground that not only upholds the mission of inclusive play but is also practical in terms of maintenance and cost.

IMPACT OF COMMUNITY-BASED PLAYGROUND RESEARCH ON YOUTH'S SELF-CONCEPTS

The STS research paper will analyze how engagement with youth through community-based research for the inclusive playground may impact their self-concepts such as sense of confidence and belonging in the community. This analysis will take place within the framework

of Actor Network Theory (ANT) (Jolivet & Heiskanen, 2010, p. 6748). The goal of the project, written in the form of a scholarly article, is to push for community-based research with and greater involvement of youth with disabilities in the playground design process.

As mentioned in the technical project description, playgrounds serve as an important site for childhood development through play. Besides offering this functional benefit, they also hold emotional and sentimental value for youth (Prellwitz & Skär, p. 148). Those with disabilities, however, do not get to realize the full extent of the benefits and values that playgrounds offer compared to those without disabilities. For example, they are reliant on adult help when navigating the playground, are not given opportunities to take the same risks as those without disabilities, and do not have the same abilities to make and play with new friends (Prellwitz & Skär, 2007, p. 153). The unequal play experiences between children with and without disabilities fuel and are fueled by the social model of disability, “a socially constructed phenomenon that is the result of people with impairments being put in a position of disadvantage because they must overcome barriers that are not impediments to people without impairments” (Burke, 2013, p. 84). This demonstrates lack of consideration given towards the needs of youth with disabilities in the design of the playground itself. One of the emerging ways of thinking regarding exclusion of children is the new paradigm for the sociology of childhood, which challenges previous practices of excluding children’s voices in research (Prout & James, 1997, p. 11). Although this paradigm is typically used to promote the rights of the general child population, it can be used in the new context of advocacy for youth with disabilities by pushing for their involvement in the playground design process, specifically through community-based research.

The ANT framework can be applied to this playground space. ANT considers the technical artifact, in this case the playground, within the context of a network of sociopolitical

actors (Jolivet & Heiskanen, 2010, p. 6748). While there are many actors in this network of this new playground such as Bennett’s Village who is driving the push for inclusive features and the City Council who has to approve future funding for maintenance, this STS research paper will hone in on the actors that serve as users of the playground. The relevant social groups involved in the usage aspect of the playground include but are not limited to youth, babysitters or caregivers, siblings, grandparents, parents or primary guardians, and teachers. While youth are typically seen as the primary users, they may also be accompanied by other individuals in their lives such as their babysitters or parents, which means that these groups are also users of the playground. The relationship between the playground artifact and these social groups can be seen in Figure 3 below, although individuals may be associated or identify with multiple groups. For example, an older sibling can be a caregiver for their sibling with disabilities or a child’s parent might have a disability. Of these groups and their intersections, the most underrepresented are youth with disabilities, as discussed earlier. This group can then be further studied in terms of their perceived problems.

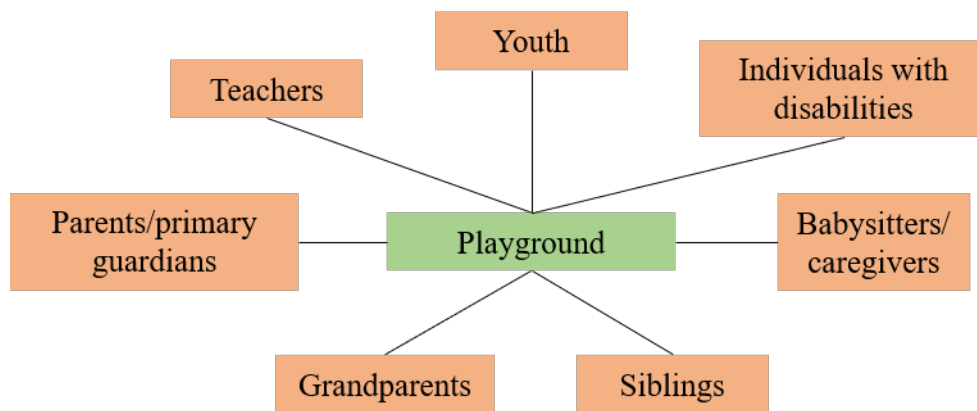


Figure 3: Relationship Between the Playground and Relevant Social Group Users. The playground is at the center as the technical artifact while relevant social group users surround it. (Luong, 2020).

Many gaps exist in terms of access to and experiences with functional and playful opportunities in the playground settings by youth with disabilities. These gaps include lack of

sense of belonging, independent play, risk-taking opportunities, socialization opportunities, and playful experiences (Prellwitz & Skär, 2007, p. 153). All of these gaps impact youth’s self-concepts, which are images that individuals hold of themselves. These self-concepts are shaped by environmental contexts and social interactions, both of which are affected by elements of the playground space. For example, if a child is consistently denied access to playground structures that facilitate fantasy play and creative development, they may not view themselves as or explorative and creative individuals (Woolley & Lowe, 2013, pp. 61-62). If a child is not supported in their social development, they may not feel included in their community. The relationships between youth with disabilities and these problems can be seen in Figure 4. Of these issues, a lack of sense of belonging may be addressed using community-based research methods promoted through the new paradigm for the sociology of childhood.

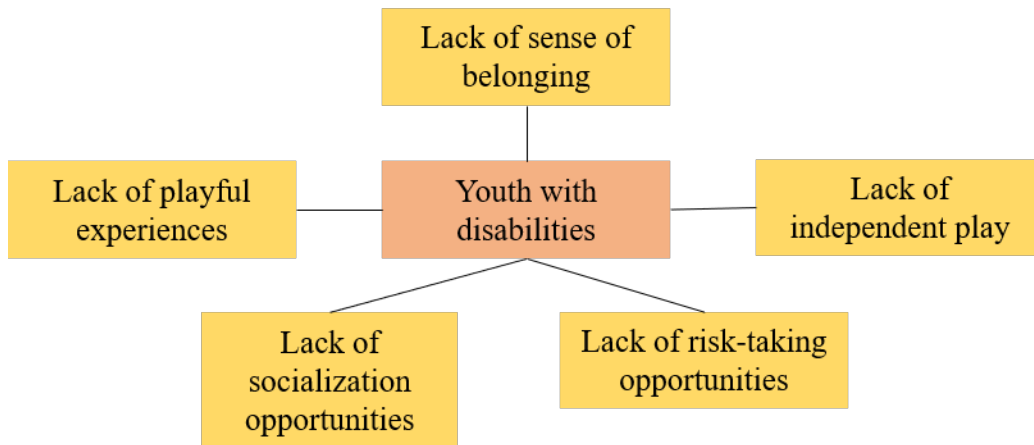


Figure 4: Relationship Between Youth with Disabilities and Perceived Problems. Youth with disabilities are centered as an actor in ANT with their perceived problems, which impact their self-concepts, surrounding them (Luong, 2020).

Community-based research offers a negotiation space for those in the playground design network such as urban planners and adolescents to understand social factors in adolescents’ lives from the playground user network (Derr & Tarantini, 2016, p. 1535). This consideration goes beyond standard ADA compliance, a form of technological determinism, because it accounts for

these youth's voiced needs. Compliance, on the other hand, creates access to play areas but not engagement in play itself (Stanton-Chapman & Schmidt, 2019, p. 510). Involvement of youth with disabilities in the design process of playgrounds through community-based research will broaden the inclusive playground design network and available knowledge, which will broaden diffusion of the use of the playground. These negotiations may then create positive self-concepts for adolescents by "empower[ing] children to be active change agents" in their own lives and in the community (Malone, 2013, p. 392).

IMPLEMENTING AND MOTIVATING YOUTH-CENTERED RESEARCH

Mainstream playground designs fail to meet the needs of playground visitors in terms of accessibility noncompliance and lack of play and interaction opportunities, especially for those with disabilities and those across different generations. The user needs assessment and materials recommendations from the technical project will allow the new playground at Pen Park to raise the standard for inclusive spaces in the City of Charlottesville as well as playgrounds across the country by demonstrating the all-abilities and multigenerational goals of Bennett's Village. The research may also serve as a pool of knowledge to be used for the development of future parks in the City of Charlottesville as well as the surrounding Virginia counties. The analysis of community-based research and its impacts on youth's self-concepts through the STS research project further motivates the importance of involving the voices of adolescents and young adults in the playground design process. Therefore, both the technical project and the STS research project must be conducted in tandem to understand and push for change in a space that has significant influence on children's lives, especially adolescents and young adults with disabilities.

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