

RECYCLING AS PLAY:  
ENCOURAGING RECYCLING THROUGH A PARTICIPATORY DESIGN  
PROCESS WITH CHILDREN

by

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A REPORT

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# ABSTRACT

Recycling in many cities faces dilemmas with accessibility and education, especially within the public realm, which leads to a lack of participation in this sustainable activity. The City of Kansas City, Missouri does not currently provide recycling solutions for multi-family and commercial businesses and has minimal to non-existent recycling infrastructure within its downtown's public realm. Envisioning a new recycling system for a city requires many entities to come together in the design process. However, the city, landscape architects, and other designers frequently overlook incorporating children into the participatory community design process, even though children have knowledge, experiences, and ideas to offer (Speak, 2000). Incorporating many avenues of community input can benefit the design outcomes, and children should be included in the participatory design process when it engages their built environment.

The Kansas City Design Center (KCDC) produced a vision plan and conceptual site designs for downtown Kansas City's recycling system. Community input was part of the KCDC studio project's design process by utilizing a series of advisory council meetings, professional reviews, and open houses. This report integrated another form of community involvement into the project by working with children on designing urban space and playful infrastructure focused on encouraging participation in recycling. A series of design charrettes were conducted with 5th grade students from Kansas City's urban charter school Crossroads Academy due to the school's focus on immersion in the urban environment. The students' design charrette ideas added a new perspective to how urban space and recycling infrastructure could encourage participation. These ideas and perspectives were shared with classmates and utilized to further design development in the recycling project's streetscape "Links" strategy.

As the project developed, the researcher observed how the children's ideas impacted the "Links" strategy design coming through in playful ground plane designs, interactive elements, concepts of place-making, and considerations for a variety of users. The participatory process with the children was most influential on those involved directly with the children's process. This allowed the children's ideas to become inherent base knowledge when designing. Engaging youth's imaginative minds in the design process for urban space and recycling infrastructure sparked new playful perspectives on how to encourage participation and led to meaningful recycling design outcomes within the public realm.





# RECYCLING AS PLAY:

Encouraging Recycling Through a Participatory Design  
Process with Children

Amanda Santoro

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## **Recycling as Play: Encouraging Recycling Through a Participatory Design Process with Children**

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Masters Report submitted in partial fulfillment of the requirements for the degree of:  
Master of Landscape Architecture (MLA)

Major Professor: Jason Brody, Ph.D.  
Supervisory Committee: Vladimir Krstic and Katie Kingery-Page

Kansas State University  
College of Architecture, Planning, and Design  
Department of Landscape Architecture & Regional and Community Planning



LANDSCAPE ARCHITECTURE  
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THE COLLEGE of  
ARCHITECTURE, PLANNING & DESIGN // K-STATE

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Thank you all for helping me achieve this and making it such a great experience.



# DEDICATION

To children, I hope participating and being involved in design processes sparks new passions and to think about cityscapes and the environment. You are the future and you can make the changes you want to see.

To my mummy and dadee, for always encouraging me to do my best and raising me to follow my passions. And thank you for giving me my five crazy brothers who always challenged me as well.

To Lucas, my baby brother, who instilled the passion of a love for children's minds in me as I watched him grow up and was always in awe of what crazy thoughts he had.



# PREFACE

I have always had a life passion for working with children, and I believe their involvement and imagination could greatly benefit the design profession. I grew up surrounded by my five brothers, our friends, and myself covering our driveway in chalk lines. We delineated out streets and parking for our scooters, a lemonade drink vendor located closest to the “real” street, and arrows calling our lawn a park, which all created the Kline Klan’s City. Vision is needed in our profession to improve the future, and I have come to know vision as the art of seeing what is invisible to others. Children see and imagine what others cannot, even while just playing with chalk on a driveway, and they have the ability to think uninhibited by constraints. I want to bring my passion for children and design together, and children have vision that I seek to bring to the design profession.

This report focuses on a participatory design process with children in tandem with a collaborative interdisciplinary studio project conducted by the 2015-2016 Kansas City Design Center students. The overall studio project focus is on creating a vision plan and design solutions for downtown Kansas City which was done by the fourteen students. Much of the recycling research and the design work was done collaboratively, thus some of the work in this report is shared background writing, and collaborative design work. The author’s individual contribution was preparing and engaging in a participatory design process with local children and the analysis of how their input added new perspectives to the design outcomes of the KCDC studio project. This collaborative studio project allowed for a more holistic approach providing breadth and depth to a complex topic of recycling.

The Kansas City Design Center will be publishing a book documenting the outcomes of the entire studio project, which further explains the research and design, and may also bring deeper understanding to this report.





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# INTRODUCTION | 01



# PROJECT INTRODUCTION

One of the goals of many current day designers and planners is to better the quality of the urban environment and the quality of life within that environment. Kansas City's greater downtown area has plans to double the downtown population and with that comes a need for systematic planning. Currently, Kansas City does not provide recycling for multifamily dwellings and commercial businesses. This with the knowledge that the population hopes to double creates a need for a recycling system that is convenient and pleasing and that will function for the city as well as improve the quality of the urban environment (Kansas City Design Center 2015).

With this knowledge, the Kansas City Design Center (KCDC) set out to produce a vision plan and conceptual designs for a downtown recycling system. Such a large scale project needed to utilize all its resources and involve many community members to create a full understanding of what the design solutions needed to be successful. This report attempts to analyze how a specific group of community members influenced the design outcomes. Children are frequently overlooked by in a participatory design process when the project is beyond the typical realms of schools and playgrounds. However, children have knowledge, experiences, and ideas to offer that could benefit design outcomes (Speak, 2000). This is why the added community input came from children for this report.

With all the dilemmas faced by creating a downtown recycling system, the researcher conducted design charrettes with Kansas City's urban charter school Crossroads Academy focused on how to encourage participation in recycling through creative ideas for urban space and recycling infrastructure. After reflection and analysis of the charrette results, the researcher shared the results with fellow designers and then observed how these ideas filtered into the recycling project's streetscape design referred to as the Links strategy.

The participatory process and analysis of how impactful it was on the design outcomes lead to conclusions of how the children's ideas brought to light forgotten ideas and added new perspectives on how to encourage recycling participation to the design solutions.

By the end of this process, the hope is that this added community involvement improved the design solutions and make others consider involving children in other design projects when it involves an environment the children engage in as well.





# BACKGROUND | 02

This chapter contains collaboratively written information on the purpose of the Kansas City Design Center's Downtown Recycling project, its dilemmas, its framework and strategies, followed by how community involvement played a key role. Then it transitions into background information and literature on the researcher's focus of the importance of incorporating children in a participatory design process.

# KCDC AND THE DOWNTOWN RECYCLING PROJECT

## Design Collaborations and Public Partnerships at the KCDC

Located in downtown Kansas City, the Kansas City Design Center (KCDC) is a nonprofit program for students of architecture, landscape architecture, and planning at the University of Kansas and Kansas State University. Its mission is to “promote excellence in the design of Kansas City’s built environment.” This is done through educational programs in which “faculty and students form partnerships with local client groups and stakeholders to develop design concepts and implementation proposals addressing major architectural, urban design, and urban planning issues throughout metropolitan Kansas City (Kansas City Design Center 2015).” According to the KCDC’s website, collaborations with “community organizations, stakeholders and residents, local governments, and design professionals [have promoted] excellence in urban design and the built environment (Kansas City Design Center 2015).”

## Project Grant Purpose

The Mid-America Regional Council Solid Waste Management District offered grant funding during the fall of 2015 to the KCDC in exchange for work that could improve the recycling program in the Greater Downtown Area of Kansas City. Work was done in collaboration with an advisory council and includes research and analysis, a programming and vision plan, site studies, and system component designs. This stakeholder group represented the voices of many people with invested interests in the project’s outcomes. The grant completed by the KCDC set out to address the need for a “comprehensive, appealing and convenient recycling system” which could be used as “an instrument of betterment of the quality of urban environment.” Although the original grant proposal set forth requirements to guide the project scope, the wording was sometimes open to allow for flexible interpretations.

## Kansas City Solid Waste and Climate Plans

In 2008, Kansas City and the region produced several key documents outlining solid waste management, regional landfill waste compositions and the city’s future actions on climate change. This research led to the creation of the Long-Term Solid Waste Management Strategic Plan, The 2008 Missouri Waste Composition Study, and the Climate Action Plan of Kansas City Missouri. These plans constitute a large amount of data on current levels of waste generated, public perceptions, and goals that the city has set in order to improve its environmental impact. These reports helped to formulate and guide many of the decisions made while creating the KCDC [RE]Considered proposal.

## Studio Project Purpose

The specific vision, mission, and goals that were created by the students during the studio project drew from the original grant proposal, but were written to reflect the truer needs of an improved recycling system in downtown Kansas City (Figure 2.1).

Beyond the original grant proposal, the studio explored solutions within the public realm to integrate recycling and composting opportunities to improve quality of life and enhance the urban environment. The studio’s investigation to improve downtown Kansas City’s waste system took place over the course of two semesters. The first semester consisted of research and inventory of existing waste operations, policies, and infrastructure, leading to a comprehensive vision plan. Strategies were established and further developed into site design proposals in the second semester. These proposals were developed to create awareness, improve education about recycling, establish multi-family and commercial recycling infrastructure, and improve the aesthetics and convenience of recycling and composting in the public realm.

# VISION

Our vision is to create a livable downtown Kansas City through a thriving material waste system known for efficient, data driven, innovative design.

# MISSION

The mission is to build a positive public partnership by selectively investing in recycling and composting infrastructure downtown in order to improve participation and overall diversion rates, and contribute to a more convenient and amenity rich lifestyle in KC. This Proposed Framework will enhance public and private access, and waste system efficiency through the use of smart waste infrastructure, consisting of data-driven tools and innovative collection methods.

# GOALS

- Generate awareness and city pride for recycling
- Create multi-family & commercial recycling infrastructure
- Improve recycling convenience through accessibility
- Measure and publicize city goal progress regularly
- Increase participation through public education
- Create design standards for the overall system

Figure 2.1 KCDC Downtown Recycling Project's Vision, Mission, and Goals (KCDC 2015)



# DOWNTOWN RECYCLING PROJECT DILEMMAS

## Education

Individual unwillingness to take part in publicly provided recycling services may stem from a lack of education. According to a recent study, 22% of Kansas City residents, or 102,080 people, do not recycle weekly although they do receive city-provided services to do so. Many do not recycle because of common misconceptions or because they do not have convenient access (Kansas City Planning and Development 2015). For example, many do not understand the need to recycle or how and what to recycle (SCS Engineers 2008).

Expanded educational efforts may also increase people's willingness to compost. Education about proper composting processes could address common misconceptions that keep people from participating. Many people are often concerned about potential odors or pests associated with composting. If done correctly, the collection of organic food waste can be fairly safe and clean, contrary to what many may think (SCS Engineers 2008).

The strategies proposed by the studio offer possible ways to make recycling and composting more comprehensible. Education is an important element of the proposed open space and linkage strategies. Education about recycling and composting can take the form of not only outreach programs but also artwork, visual prompts, or various amenities in public space.

## Efficiency

Inefficiencies found in the regional study relate to waste collection and transportation. For example, multiple haulers drive many of the same routes to collect along similar waste streams from neighboring properties. If more recyclable waste streams are further separated to collect individual recyclable or compostable materials, then additional trucks may be on the roads and driving similar routes. Instead, waste could be collected at centralized locations and shared by multiple land uses clustered in a dense area. Many business or residential complexes downtown currently own individual bins for trash and recyclables. If organic, glass, plastic, or paper are collected in single streams, countless more bins may fill alleys and service areas. Waste haulers may be required to make many more routes and stops if multiple buildings do not share central waste collection points. Service and function is an important element of the proposed privately shared collection points, which are explained in chapter three. Data collection may help efficiently predict the needs and trends of Kansas City's waste production, and integrated technology can make data collection easier. The city has already invested in GPS trackers, which have been documenting the routes of all city-funded haulers. Further technology investments in sensor equipment could notify haulers when bins are full to minimize collection routes. Possible technology and data collection scenarios are later addressed alongside proposed waste system improvements.

## Accessibility

Although the city strives to provide trash and recycling opportunities to many residents, current collection services only reach 75% of Kansas City's population, who live in single-family housing. The remaining 25% of residents, or 116,000 people, do not receive such services (Kansas City Planning and Development 2015). This makes recycling inconvenient for many. Later proposals in this document explore outcomes if the current collection system expands to accommodate more people.

The city has considered an organics collection program, which has not yet been implemented. According to a previous study, the program would only serve residents living in single-family units (SCS Engineers 2008). Outcomes of a citywide organic waste program are later explored, with the intention that all residents are provided this service. Large events intermittently contribute to a large portion of the City's waste, however many events do not offer attendees accessible places to recycle or compost. Bridging the Gap has outlined several ways to plan a sustainable event, but few policies require recycling to be provided (Bridging the Gap n.d.). More waste produced at these events could be collected and diverted from landfills if the city asked all public events to promote more sustainable waste practices. Well-designed public spaces can integrate recycling and composting, create healthier urban environments, and improve the quality of life for local residents (Hou 2010). However, the inventory of the Greater Downtown Area shows how access to recycling and composting is limited in public spaces. Recycling is rarely an option where trash bins are provided in the public right-of-way and parks, and organic food waste collection is never offered. The application of recycled materials also rarely exists. If a strategic plan for public space prioritizes sustainable waste practices and the application of sustainable materials, then recycling and composting behaviors may be encouraged.

# DOWNTOWN RECYCLING PROJECT PROPOSAL OVERVIEW

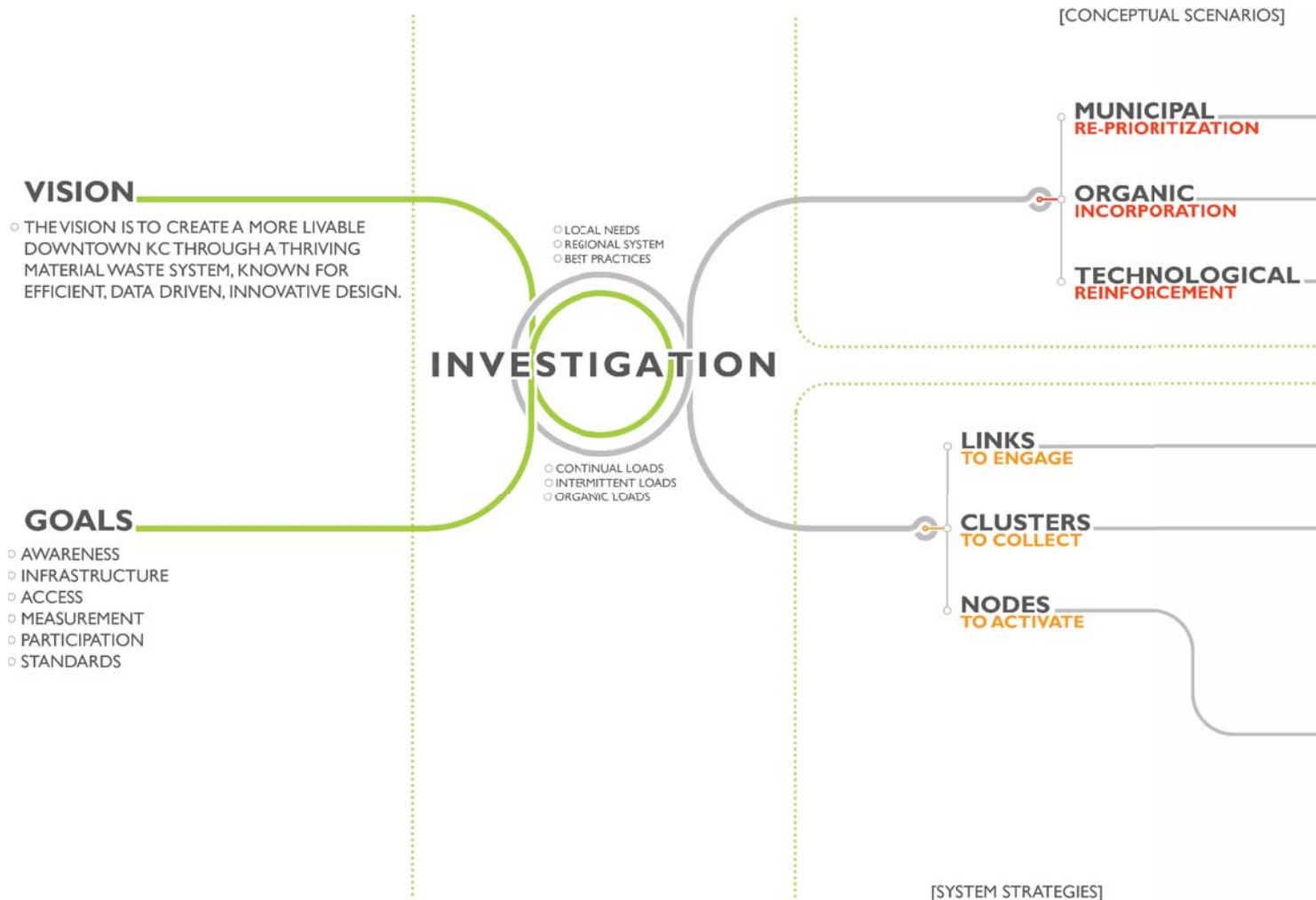
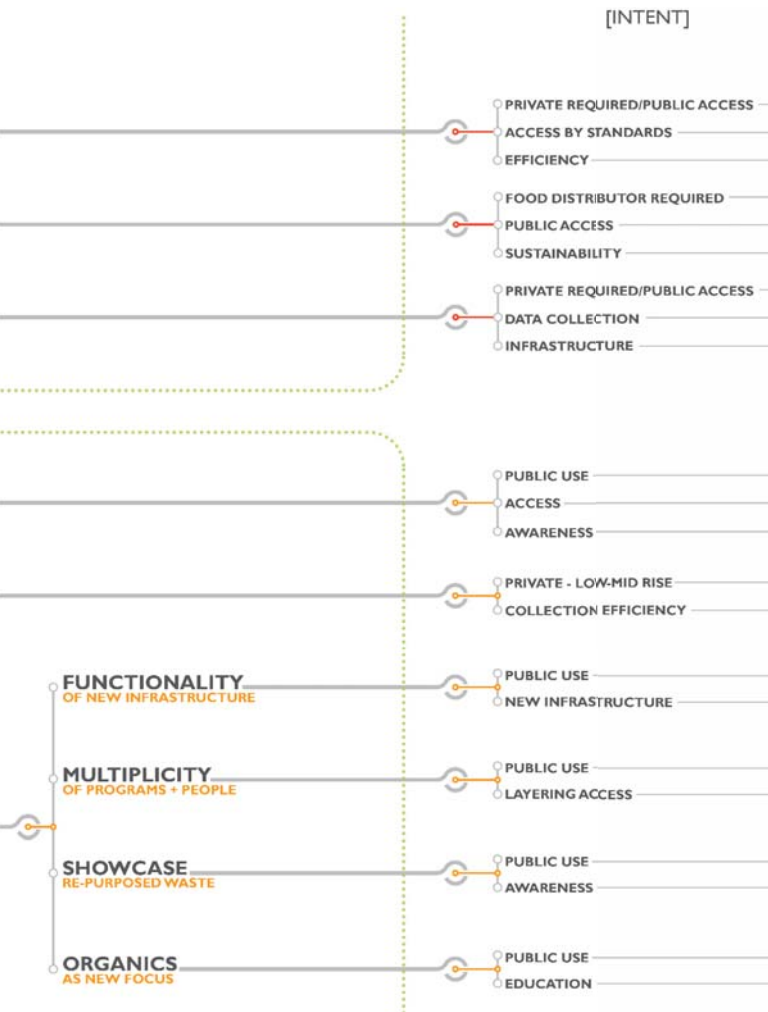


Figure 2.2 Vision Framework for Downtown Recycling Project (KCDC 2015)



## Project Vision Framework

The project vision framework was developed after substantial research and reflection had been done on recycling and composting in Kansas City. The framework was meant to guide the remainder of the research and design phases for the system strategies of Links, Clusters, and Nodes (Figure 2.2).

## Recycling Project Strategies Overview

### *Links to Engage*

Links are about engaging the people, bicyclists, and vehicles that are moving through public spaces in highly visible and creative ways. The design elements here make use of ground-plane, signage, and street furniture to make the City's identity and instill pride. They make noticeable statements about recycling in Kansas City and what it can do for the environment and local industries.

### *Clusters to Collect*

Clusters are about efficiently collecting trash, recyclables, and organic waste in the private realm. Businesses and apartments grouped within close proximity to one another can take advantage of the cluster's design elements to free more space in tight areas, leverage bargaining power with waste companies, and make a proud statement about their willingness to participate in sustainable practices.

### *Nodes to Activate*

Nodes are about activating an open space to bring new activity and awareness to a specific issue. Two types of node strategies have been chosen from the original four types proposed in the first semester of the studio project. The showcase node uses art to enhance its surrounding public space and bring people's attention to the topic of recycling. The organic node is a place where the community's organic waste can be collected and broken down into compost that can be used to benefit Kansas City.

# INVOLVING THE COMMUNITY

## Participants With Many Perspectives

Many people were involved in this downtown recycling project. Although primarily conducted by the students at the KCDC, it would not have been possible without the guidance from several people and organizations. With grant writing and funding support from the Mid-America Regional Council Solid Waste Management District, the KCDC project progressed with help from an advisory committee and professional review groups. Many people have a stake in this downtown project, and an attempt was made to consider the needs and opinions of all.

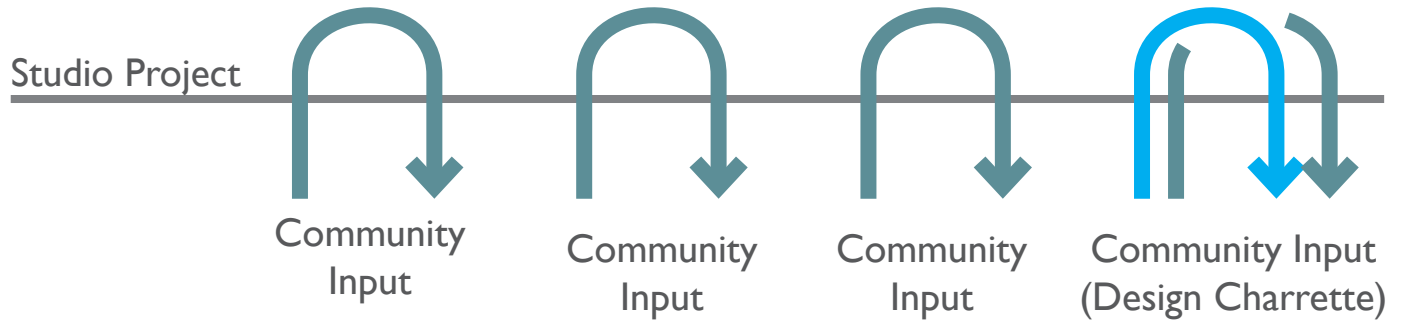
Each person or entity involved in the guidance of the project development played a slightly different but important role in the outcomes. Where some offered technical knowledge about the factors of waste management downtown, others provided broader thoughts about what the project could offer the entire metropolitan area or region. While some were more concerned with the feasibility and logistics, others were more interested in how the project could be shared with local leaders and the larger community to inspire change.

## Adding Another Community Perspective

As part of the grant, the studio project was to have community input from everyday residents, workers, and users of public space in Downtown Kansas City. The studio gathered this type of input from informal discussions at open houses and public meetings. There was the intention to have a more participatory process with public design charrettes, but that never came to fruition. Having more thorough input from the community users through participatory design would add another necessary perspective. This report focuses on integrating this other form of community input as that added perspective through a participatory design process with children (Figure 2.3).

## Participatory Design Involving Children

The design process and community participation are key aspects of landscape architecture, yet children are frequently overlooked by the participation process, even though they have knowledge, experiences, and ideas to offer (Speak, 2000). Children view the world differently, seeing a sidewalk bench as a mountain to climb or water running along the street as a raging river to send stick boats down. Urban environments are particularly stimulating for children in terms of noises, visual diversity, complexity, and social interaction, thus creating high potential for learning and development (Bartlett, 1999 and Wohlwill & Heft, 1987). Some children go to school, live, and play in urban environments, such as downtown Kansas City, so harnessing their imagination and creativity to design streetscapes that centered around recycling infrastructure could bring a different quality of interaction with the downtown environment. By engaging children in the design process, children would participate in making community design decisions and improving their environment like other user groups that designers typically engage for community-based designs.



**Figure 2.3** Integration of Community Input (Santoro 2016)

# LITERATURE RELATED TO CHILDREN'S PARTICIPATORY DESIGN PROCESS

## Importance of Children's Participation

As previously stated, children tend to be left out of the design processes, especially in environments beyond their school or neighborhood. Children have the right to participate in design decisions that affect them according to Article 12 from the United Nation's Convention on the Rights of the Child (CRC) (Landsdown 2001). Articles like from the CRC came around due to the advances in innovative neighborhood and city design/planning done by children in Europe (Francis 2002). For example, children have proven to be more generative, engaged, retained complex ideas, and act visionary during community design charrettes than adult participants who tend to focus on preconceived ideas about spaces (Sutton 2002). Additionally, there is evidence of young children (5 to 6 years old) being concerned with environment issues like crime and lack of amenities, while 8 to 11 years olds share the concern and are aware that they are under policies that may need fixing (Speak 2000). Another key importance for child participation is that there is the belief that this participation helps to build stronger, more informed professionals and adults making decisions in the future and for their future (Hart 1992).

## Child Development by Design

Robin Moore, an educator, researcher, architect and urban planner, writes about in how children use their urban environment and how they perceive their surroundings based on field observations conducted in London in the 1980s. A section of his book *Childhood's Domain: Play and Place in Child Development* discusses what Moore calls "the flowing terrain" or the pathways in the environment, which he observed that "children spend more time wandering around outdoors than most adults, and their patterns of interactions are more intimate, fluid, and intense" (Moore 1986). Moore's field studies provide evidence on how children interact and understand interconnection and pathways in outdoor

environments better. Studies like these indicate children's capabilities to understand their environment and notice their surroundings.

Additionally, children's developmental psychology is highly relevant in most of the participatory designs processes because different age groups are selected for various reasons and affect the outcomes of the design process. According to Severcan's research, children around 10 to 11 start to push for independence from parents, whereas the 6 to 12 age groups are the children likely to use outdoor spaces. Children in the upper end of these groups (9-11 year olds) have the capacity to look at situations from another person's perspective and can represent spatial environment arrangements that they are familiar with. This age group can comprehend abstract ideas like safe and friendly environments versus dangerous and messy environments. This age group tends to be the most commonly used in participatory design due to their more developed communication skills, yet they also are still attached to childhood experiences, memories, and creativity (Severcan 2012).

## Realms of Children's Participation

Mark Francis works for the Department of Environmental Design at University of California, and Ray Lorenzo acts as an environmental psychologist for the ABCitta social cooperative in Milan, Italy. They developed seven categories or "realms" of children's participation based on thirty years of various methodologies and theories, which is key to determining what participatory design process to engage in. Each realm has different techniques and beliefs in how children participate in design and planning with various benefits and limitations. There are seven realms of children participation: romantic, advocacy, needs, learning, rights, institutionalization, and proactive. The romantic realm

believed children to be the actual designers for cities and developed innovative ideas, but limited by the fact that no adults were involved and children do not fully understand the process. The advocacy realm considered participation of children's need by adult planners and develops sophisticated methods and theories, but lacks a holistic view and tends to be replaced by other realms. The needs and learning realms includes adults researching and addressing children's needs, but does not always directly involve children's participation. The rights realm has organizations or cities mandating children's participation due to their rights to be involved, but tends to not focus on environmental needs and just focuses on children's rights. The institutionalization realm has children planning within boundaries set by professionals or the clients and this realm tends to be the most common use of child participation, but these designs tend to have limited results depending on how the guidelines and rules are set up. Lastly, the proactive realm is considered to have the most effective results with the combination of research and engaging both children and designers in the design process (Francis 2002).

## Participatory Design Methodologies

There are many different methodologies used in participatory design with children as noted by Francis and Lorenzo's seven realms. A review of several case studies has informed that design charrettes are highly used as the participatory tool. For example, these design charrettes sometimes just involve children like a case in Europe where children developed neighborhood and city design plans (Francis 2002). Other times design charrettes include multiple age groups working together to solve a community design issue. For example, both schoolyard and urban village design charrettes at Washington University involved partnering elementary school children with university students and professionals (Sutton 2002). Additionally tied in with charrettes, many of the case

studies involved questionnaires or interviews to more fully understand the results and thoughts on the design process and child participation. The Washington University case study gave questionnaires to the teachers and children to see what they learned and thought of the solutions. Children's answers were similar to the adults in understanding, and an analysis on the perception of the design charrette was conducted through these questionnaires (Sutton 2002). The analysis of these charrettes looked at six different comparable components: design skills, organization, learning by example, interdisciplinary teamwork, community practice, and working with children. These components were asked about in the questionnaire, and they were placed in a negative or positive category to compare overall perception of the charrette.

Another method briefly researched for children participation is the use of cognitive mapping important outdoor spaces using cameras or drawings to understand what children thought was important for environments (Severcan 2012). A case study in Guadalajara took a proactive realm approach combining all these methods, where landscape architecture students conducted their own preliminary research and conceptual design for a site and then worked with children. There were interviews, favorite urban space photographs from children, collaborative design charrettes, and lastly a focus group on successes (Torres 2012).

Overall, literature supports the importance of incorporating children in the participatory design process because they have the awareness and capability to provide valuable community input and a different perspective not always blinded by preconceived notions.





## Background Summary

This background chapter aimed to briefly cover the KCDC Downtown Recycling project by explaining its intent, vision, framework and strategies transitioning into how community involvement was incorporated. With the understanding of how the community involvement at the studio project scale happened, the researcher wanted to connect how another form of community involvement could benefit the project by involving children in a design process and substantiating it with literature. The literature brings to light the importance of children's participation and provides a theory base for the various realms that one might engage with them in the design process. With an understanding of the studio project and the children's participatory theory, the following chapters will describe the researcher's approach and the methods developed from theory followed by the project development and design application in the KCDC's studio Links strategy, concluding with reflections on influence and impact connected to theory.



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# METHODOLOGY | 03

# RESEARCH APPROACH

## Report's Focused Dilemma

Throughout the project's research, the KCDC students have identified limited accessibility and education lead to a lack of participation in Kansas City's recycling system. Typically in Kansas City, the general public is disengaged with their surroundings and do not know how or why to recycle (SCS Engineers 2008). Many people will disengage or not participate if the activity is not fun, if they do not know the value of the activity, and if it is not worth their time (McKenzie-Mohr 2011). For many Kansas City residents, recycling is not incorporated in day to day life, and what little recycling service exists is hidden away. Within the public realm of downtown Kansas City, the sidewalks, plazas, and open spaces contain little to no presence of recycling infrastructure keeping the diversion rate from landfills low at 27 percent (Figure 3.1). Even if recycling infrastructure is nearby, behavioral and spatial barriers make recycling in public space non-existent due to lack of understanding and disengagement. One way to address these critical issues is designing infrastructure and the space around it to encourage participation. However, designing urban space and infrastructure that will be utilized requires understanding of how to engage and encourage Kansas City's users. Involving community users in a participatory design process could lead to this better understanding and increased engagement with the built infrastructure. Children are typically overlooked as community users, but this report looks to utilize their playful imagination and lack of preconceived notions in a participatory design process to provide solutions for urban space and recycling infrastructure that encourages participation of recycling in the public realm.

## Research Questions

- How does a participatory design process with children influence a recycling conceptual design?
- How does designing with children develop playful space and recycling infrastructure that can engage and increase participation in the general public?

## Goals and Objectives

- Provide viable solutions in the form of recycling infrastructure and urban space in the urban public realm based on evidence-based research and design with children.
- Harness children's creativity and imagination to create an innovative design solution for recycling in the public realm.
- Bring awareness and education of recycling through design, especially in the children participating in the design process.

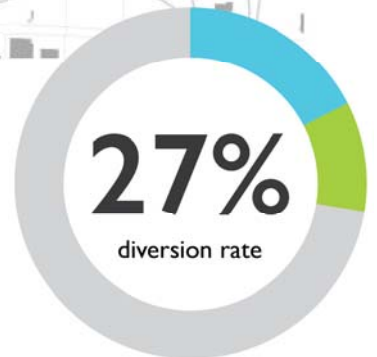
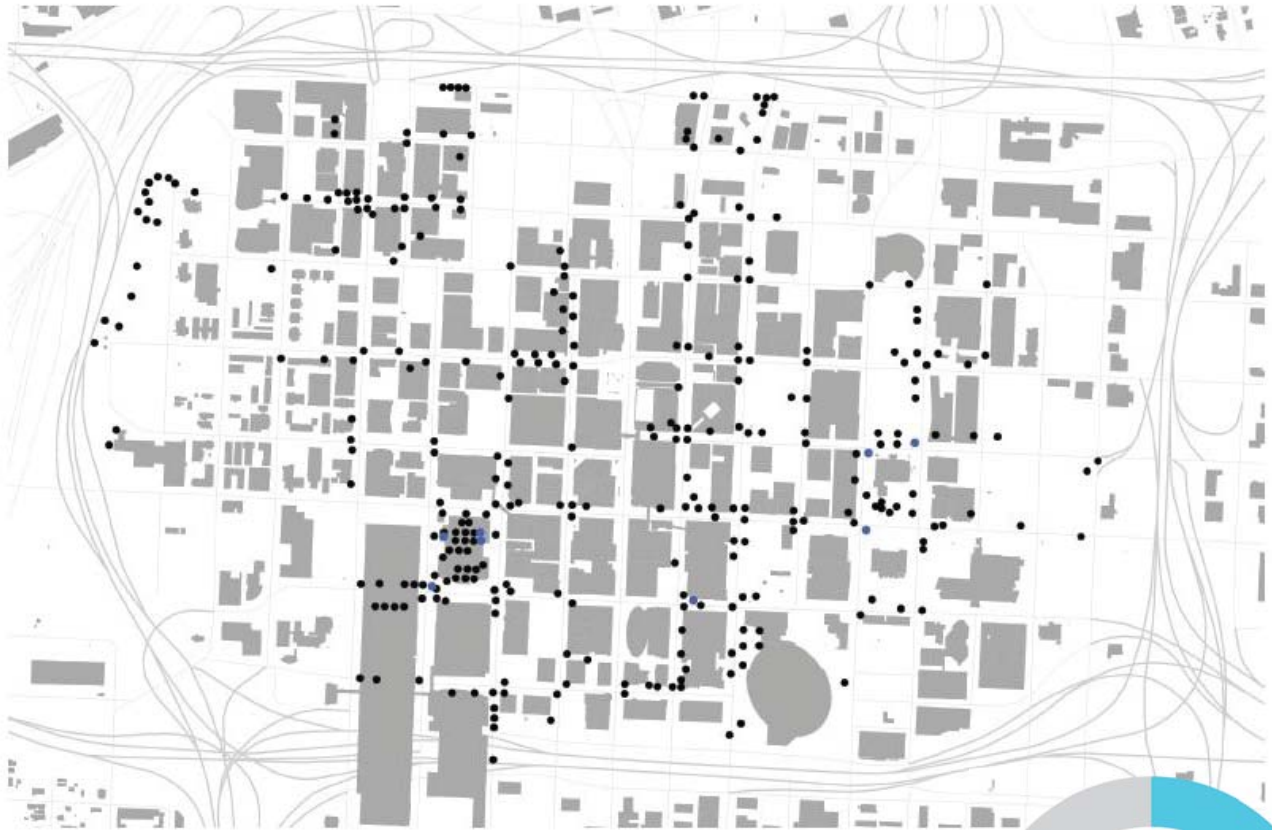


Figure 3.1 Inventory of Downtown Loop Waste Infrastructure and KC's Diversion Rate (KCDC 2015)

# METHODOLOGY INTEGRATION

## Participatory Process and Methodology

As previously mentioned, this report is an addition to the KCDC Downtown Recycling Project and is focused on integrating a participatory process involving children. Figure 3.2 depicts the focus of the project each semester and what types of community involvement were conducted. This report integrates into the overall studio project methodology by adding a community design charrette highlighted in the lighter color as another type of community involvement.

The beginning of this report is grounded in theoretical understanding of: research in Kansas City's recycling system and waste management, research in children's participatory design and children's psychology, and research in recycling infrastructure and public space. A literature review over these topics formed a base knowledge and structure for implementing a design charrette with children and developing a conceptual design for recycling infrastructure. Another literature review and precedent analysis over recycling and composting has been done as part of the KCDC project (refer to KCDC [RE]Considered).

The community design charrettes were conducted with 5th graders from Crossroads Academy, which is a public charter school located in Kansas City's downtown core. These 5th graders have had a teaching section on recycling and architectural design less than a year ago. Two design charrette sessions were conducted with this 5th grade group of students. Half of the students participated on March 8th and the other half on March 21st. The design charrettes were during normal school hours for a one hour period from 2:30 to 3:30, which is the students' individual growth and learning hour. The organization and structure of the design charrette was formed from a literature-based knowledge of creating successful charrettes, and is further explained later in this chapter. The researcher went through IRB at Kansas State

University to establish working with children in safe settings and receiving parental consent to work with children and use their photos within this report.

By using a design charrette, the intent is to stimulate innovative and creative thinking directed towards the single issue of how to make recycling infrastructure in a space more playful and interactive to encourage recycling participation in Kansas City's downtown core. Armed with the synthesis of these creative ideas from the children's charrette, a conceptual design for Kansas City's streetscape was produced to inform the relationships between urban space and recycling infrastructure. The conceptual design was developed as part of KCDC's Link strategy. For this report, the Link strategy was the focus because they were selected sites within the public realm key to increasing recycling participation through accessibility and education. The design ideas and synthesis from the charrette with the children were shared with classmates during the conceptual design phase as community input. After April 11th's professional review on conceptual designs, a reflective analysis on how the Link strategy reflected the community input from the children was conducted.

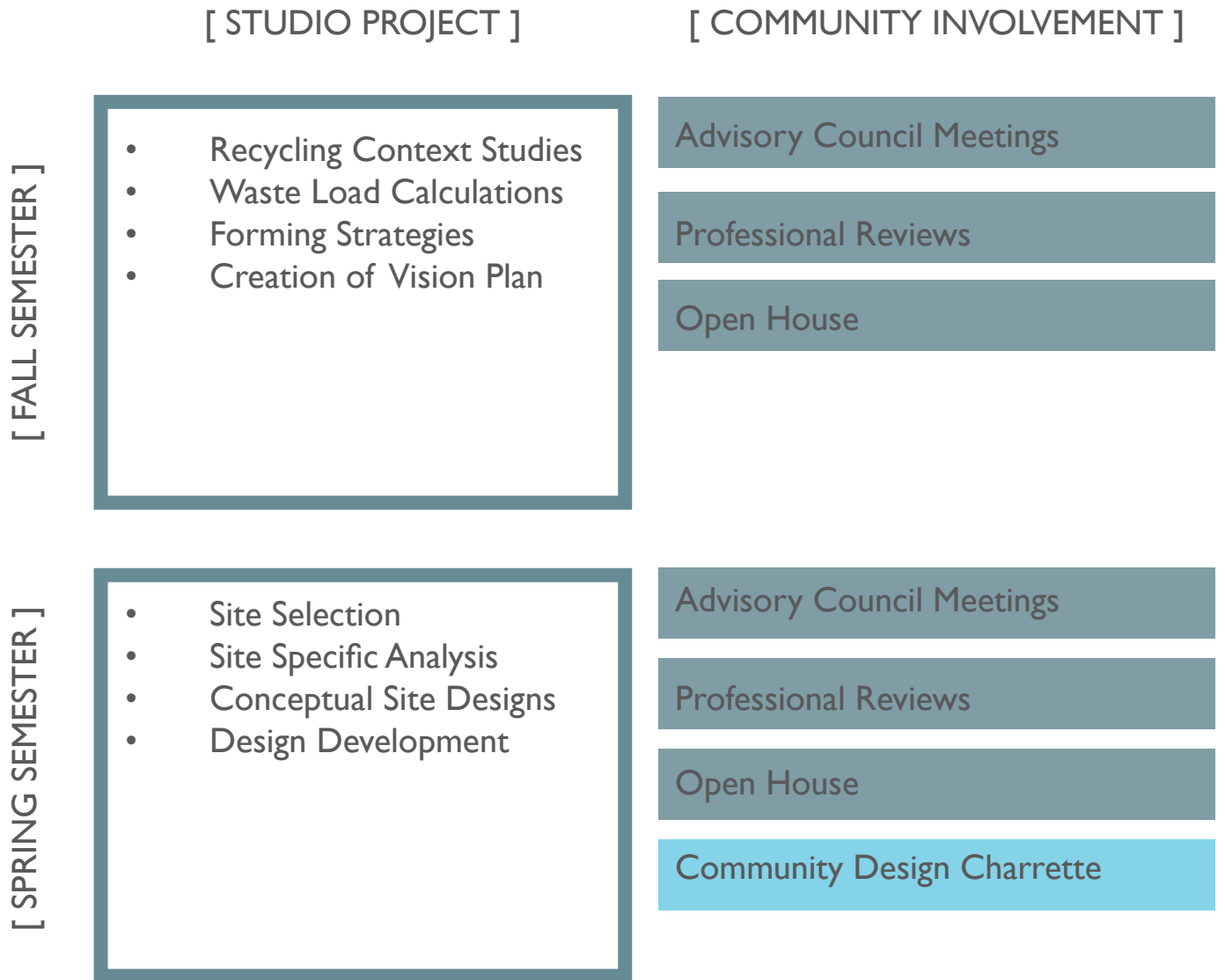


Figure 3.2 Integration of Community Involvement in Studio Project (Santoro 2016)



# CHARRETTE PROCESS

## Overview of Charrette Methods

Each charrette with the students was scheduled for a one hour session and required preparatory work. A series of handouts as well as a precedent imagery poster were prepared for the students containing educational information about Kansas City's recycling and as prompts for the charrette (Figure 3.3). Due to limited time, a strict schedule was made for the charrette to keep organized (Figure 3.4). The first ten minutes consisted of an introduction of the researcher and her classmate Lauren Heermann, followed by asking the students why they thought recycling was important, and a quick synopsis of Kansas City's current state of recycling. An explanation for what the student would be doing in tandem with the precedent imagery poster prepped the students for the actual activity (All precedent imagery and larger versions of handouts located in Appendix B). The charrette time was set for 35 minutes, which started by giving the students a recycling scenario as a prompt paired with an image that places the students in the situation (Figure 3.5). This was meant to help get them in a focused mindset of encouraging recycling in public space. The scenario was as follows:

“Say you're walking down the street drinking some soda from a can or water from a plastic bottle. You finish it and start to look around on where to toss it. You see a trash can a few feet ahead. Now what would make you go over here and recycle that instead of throwing it away? How can you distract someone from throwing the can into the trash can? It can be anything from something on the ground to an object/contraption that moves, maybe you get something back from it; anything you can dream up.”

Students then began the charrette activity using the drawing sheet provided or a chipboard base on which they could build their ideas from the miscellaneous art supplies. After this charrette period was up, the following ten minutes



Figure 3.3 Charrette Handouts (Santoro 2016)

## INTRO

10 minutes

- Introduce myself to students
- Ask students why they think recycling is important
- Talk about why recycling is important and how Kansas City currently deals with recycling
- Tell them about what they will be doing
- Show them precedent imagery to inspire them
- Let them know they have time limit

## CHARRETTE TIME

35 minutes

- Stage the scenario with handout imagery
- Students have blank sheet with a reminder at the top of what they are to do and the beside it. State that they can draw, build, or write their ideas connecting the space or what the recycling infrastructure might look like.

## DISCUSSION

10 minutes

- Have students go around and explain their ideas
- Take notes and record their explanations

## WRAP-UP

5 minutes

- Explain to students what I will be doing with their ideas
- Ask them if they have questions
- Let them know I'll be back to show them my design that is informed by their ideas
- Thank them for their help!

Figure 3.4 Charrette Schedule (Santoro 2016)

were spent having the students go around and explain their ideas. The researcher recorded what was said and how they interpreted their creations. In the last five minutes, the researcher explained to the students that their ideas would be shared with the fellow designers at KCDC and that their ideas will help to inform innovative design decisions.

Throughout the charrette, observation and note-taking helped to create better understanding of the process and the results the children produced. Also, each session was video-recorded to help accurately capture all that was said by the students and help with analysis of their ideas. After the charrette, the students' creations/drawings and their explanations were categorized to help synthesize and reflect on what design elements could influence the KCDC studio's design outcomes for the recycling study and encourage recycling participation in a public space. There would be two board categories, one for recycling infrastructure and one for spatial qualities. With the possibility to change based on the charrette's outcomes, the starting infrastructure subcategories were the following: standard bins, sorting bins, streetscape amenity, technology, games, and play equipment. The spatial qualities subcategories were the following interventions: ground plane, structure, art, and signage. In addition to the categorizing of the outcomes, a reflection over the behaviors, the process, and my takeaways was also made. Additional information was gathered during the charrette by noting the demographic of age and gender as well as noting who recycled at home and whether they lived in single-family or multi-family housing. After the charrette data had been processed and categorized, the material was presented to the KCDC students as community feedback and design ideas on how to engage and encourage recycling in the public realm.



Figure 3.5 Charrette Scenario Image (Santoro 2016)

# WORKPLAN

## Project Timeline vs. Report Timeline

Fall semester focused on understanding and researching KCDC's Downtown Recycling Project and creation of the vision plan. This report's timeline focused on the spring semester with obtaining IRB approval and prepping for the design charrette in the beginning months. The design charrettes needed to occur in March to align with the progress of the studio projects' conceptual designs and allow for multiple weeks to observe the charrette results' impacts. April 11th's professional review would be the end of observation and design development for this report to allow time for reflection.

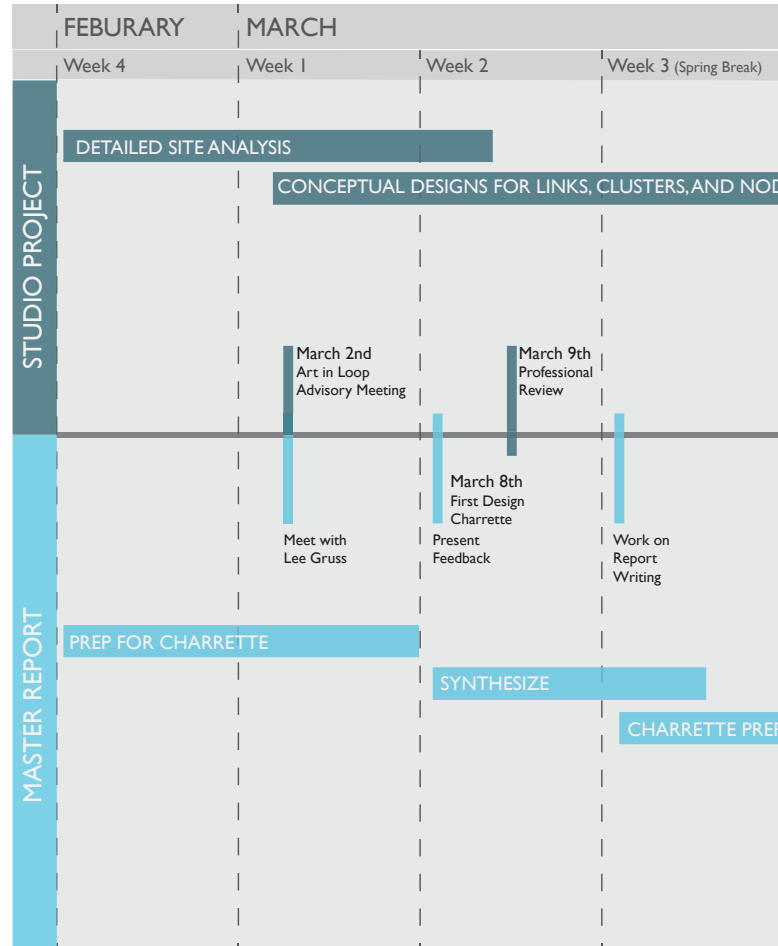
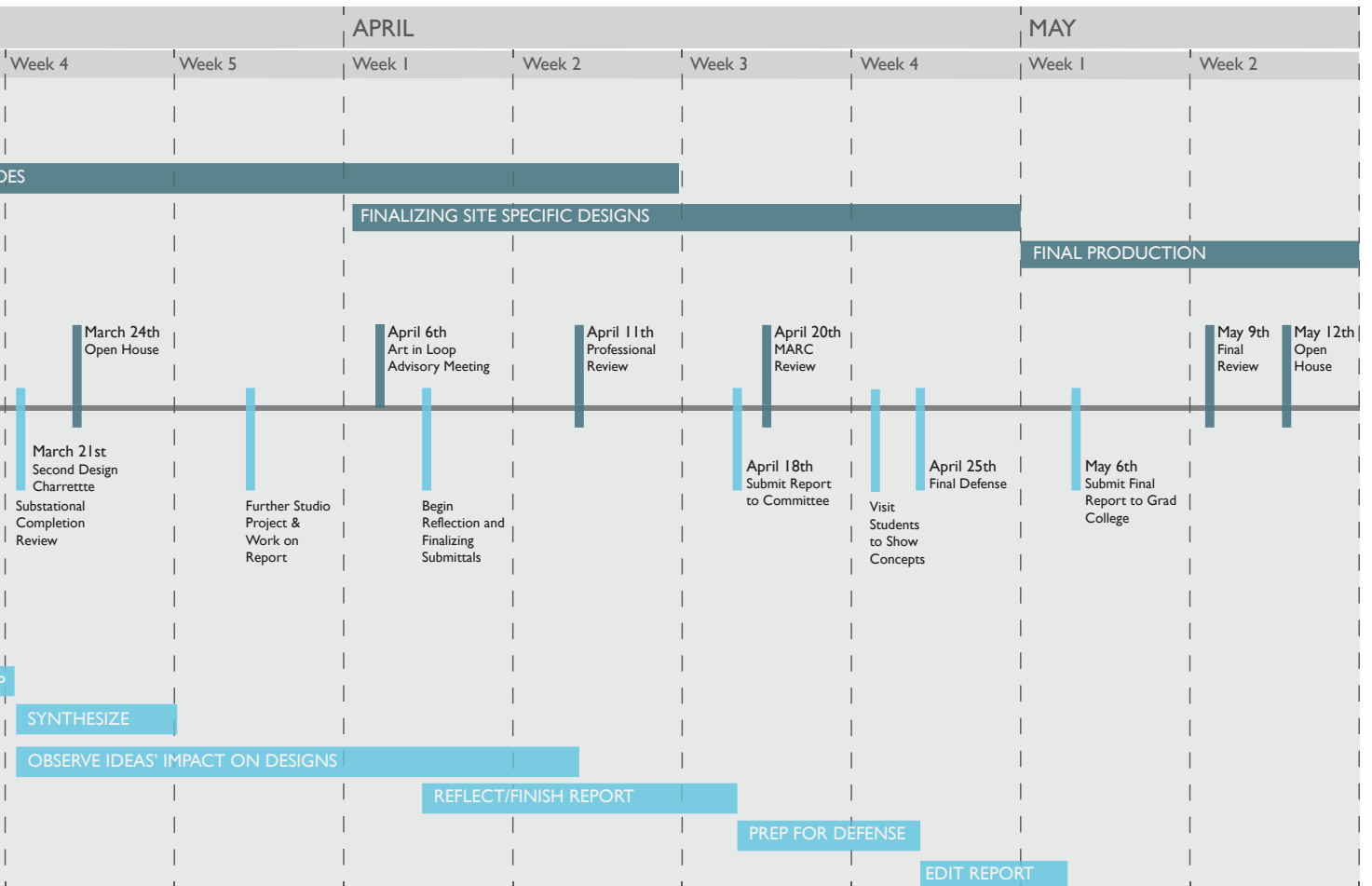


Figure 3.6 Semester Timeline (Santoro 2016)







# PROJECT DEVELOPMENT | 04

This chapter is split into two subparts. The first part focuses on a brief case study of Crossroads Academy students and how they use the city, followed by a synopsis of the two charrettes and their synthesized outcomes. The second part focuses on KCDC's Link strategy design development up until April 11th with observations of how the children's ideas influenced it.







# PART 4.1: CHARRETTE DATA

This subpart begins with a brief case study over Crossroads Academy to substantiate why these students' input is beneficial to the overall project. Following that is the overviews and syntheses of both design charrette sessions.

# CASE STUDY: CROSSROADS ACADEMY

## Crossroads Academy History and Children in Kansas City

Opened in 2012, Crossroads Academy is a charter school in downtown Kansas City “immersed in a civic, artistic, financial, a historic heart” of the city (Crossroads Academy of Kansas City, 2016). Their mission is a rigorous academic curriculum preparing students for high school and their vision is to be a “premier urban school serving Kansas City’s youth, and a destination for other educators seeking inspiration and best practices” (Crossroads Academy of Kansas City, 2016). The school is located in an urban setting to allow for exceptional learning opportunities and engagement with an urban community and its members. Community Engagement is one of the academy’s educational pillars, which means that students’ academic studies are project based learning where their service projects involve them in their community and teach them civic responsibility. This community engagement academic pillar along with another pillar focused on professional development create a culture of collaboration instilled in these students. The academy’s fifth graders have already had a teaching unit on recycling and architectural design. Crossroads Academy’s learning and teaching approach makes the students good candidates for involvement in a community design process.

## The City Is For Children

Beyond the academic stature created by the academy, students engage in Kansas City’s urban environment on a regular basis. Students utilize many cultural resources like the downtown library and transform spaces like Barney Allis Plaza into their urban playground (Figure 4.1). These students engage in the urban environment differently than many of the typical users such as workers and visitors. Additionally, by being immersed in the city, these children are exposed to the interdependence of businesses, a diverse demographic of people, and the ever-changing conditions of the public realm. According to International Making Cities Livable, “children who experience a good livable city are all the more likely to understand what a livable city needs, and may become the guardians of the city’s livability for future generations” (2016). If children are exposed and aware of all these conditions and active community members, then their input is needed to fully understand what can improve the city’s environment, and they can add a different perspective. Cities are for children because of these reasons, and Crossroads Academy’s students are evidence for this.



**Figure 4.1** Crossroads Academy Students Playing in Urban Environment at Barney Allis Plaza (Crossroads Academy of Kansas City 2016)

# CHARRETTE - MARCH 8TH

## Overview

The first charrette session was conducted with six students pertaining of four girls and two boys (Figure 4.2). The session started off with the teacher telling the students that this was still learning time and how in the classroom we value learning time. The researcher noticed that this statement kept the students more focused than if the researcher had tried a similar approach because of the students' respect for their teacher. The overall attitude of the students was enthusiastic and ready to engage in the activity. The predetermined charrette schedule was followed giving the students an introduction, asking why recycling was important, prompting the activity with the scenario and precedent imagery, followed by allowing the students to draw, write, or build their ideas. The precedent imagery seemed to help this group in sparking ideas because they immediately began to discuss ideas before the researcher was even done talking. From the start of the thirty-five minute charrette period, students began with drawing and writing first, but after about ten minutes all but one student wanted to build their ideas. This group was very talkative, which made the researcher have to remind them to stay focused. However, the discussion during the charrette was typically very fruitful in helping this group iterate their ideas or dive deeper into one. The last ten minutes of the charrette consisted of the researcher encouraging the students to wrap up their concepts and stay focused. Each student presented their multiple ideas, which were recorded to ensure the researcher clearly understood their concepts. The session ended with the researcher asking what the students learned, which consisted of the students stating "you can be the change you want to see."



Figure 4.2 Students Drawing Ideas During 1st Charrette Session (Santoro 2016)

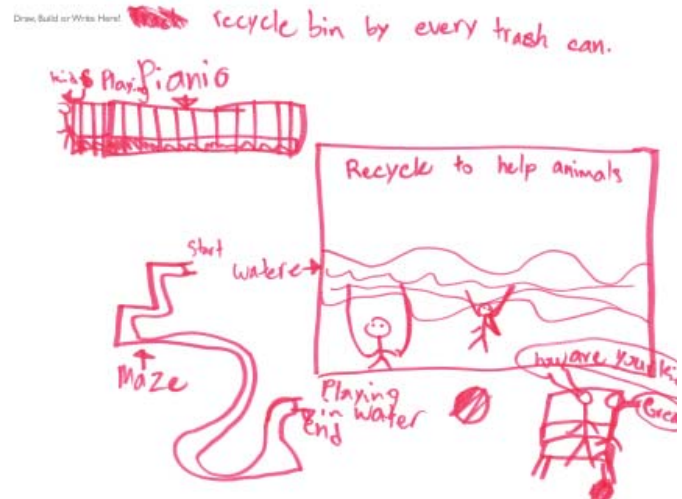
# SYNTHESIS OF CHARRETTE

## Analysis of Design Elements

The researcher began with two broad categories of infrastructure and spatial outcomes. After the charrette, a third broad category of incentives was added, which the researcher had contemplated adding earlier, but did not think it would be so prevalent in the design outcomes. Figure 4.3 depicts an example of each broad category from the students' creations; however, the researcher found it difficult to isolate the categories because many of the students ideas overlap all three categories.

After the charrette, the researcher went back and analyzed the students' drawings and creations as well as transcribed the students' descriptions. From that, each subcategory was marked if applicable corresponding with the individual student in Table 4.1 on the following page. Students' typically had multiple marks in each broad category, which lead to the total marks for the infrastructure category at fourteen, spatial category at twelve, and incentives category at eight. Within this group, the infrastructure category focused on bin types as well as play equipment. The spatial design category had the most marks on signage followed by ground plane prompts, and lastly, the incentives category was fairly distributed with receiving a ticket for something taking the lead. All the students' drawings and creations paired with their quoted descriptions can be found in Appendix A.

## Spatial



## Infrastructure



Figure 4.3 Examples of Student Work for Broad Categories (Santoro 2016)

Incentives





Infrastructure						
	Standard Bins	Recycle Sorting Bin	Streetscape Amenity	Technology	Game/Puzzle	Play Equipment
Student 1		X - Compost	X-benches	X - floor piano	X - laser tag	X
Student 2	X					
Student 3	X					
Student 4	X			X - robot		
Student 5		X			X - dichotomous key	X - obstacle course
Student 6		X - Slots				X - basketball hoop

Spatial Design						
	Art	Structure	Signage	Ground Plane Prompt	Place-making	Use Recycled Material
Student 1			X - help animals	X -maze	X	X - rubber
Student 2	X		X			
Student 3		X -building	X			
Student 4						
Student 5			X	X - maze		
Student 6			X	X - location directions		

Incentives					
	Ticket	Candy Bar	Money	Coupon/Voucher	Prize
Student 1	X - laser tag				X
Student 2	X - movie		X		
Student 3			X - machine		
Student 4					
Student 5	X - Powerball				
Student 6		X			X

Totals	Infrastructure	Spatial Design	Incentives
	14	12	8

**Table 4.1** Synthesis of March 8th Charrette Ideas (Santoro 2016)

## Reflection on Charrette

In addition to the analysis of the design elements the researcher reflected on the charrette process, students behavior and other observations.

In this charrette, there were various aspects of the discussions and behaviors that the researcher had not expected or that the students gave a new perspective to. The students surprisingly knew about compost and some had done so in their back yard, whereas the researcher had strayed from mentioning compost because she worried the students would have no previous knowledge of what compost was. Another intriguing moment of the charrette was when one student recognized the water bottle brand used in the scenario image even tho the label had been removed. This left the researcher contemplating how to apply such recognition of product to a recycling infrastructure design as a way to encourage people to recycle.

Also during the charrette, there was a student talking about how there should be recycling by every trash can or we can go out and collect old bins and make them recycling bins. This concept of transforming old trash infrastructure into recycling infrastructure as a way to enforce a change in behavior and increase access to recycling was a new perspective the researcher had not previously contemplated. It's a whole idea of actual reuse and recycling tied into one design and a more subtractive replacement method of the less desired infrastructure rather than just an additive method of additional infrastructure.

This student group really brought up many ideas on incentives. However, students recognized that if you wanted to get money or a prize, then you would have to recycle triple or more than what the product costs, such as recycling five plastic bottle to get one dollar. One student was even saying that rewards like candy and money were too big. This

discussion was somewhat of a surprise to the researcher because she was not sure how much of an understanding the students would have of the economics of such incentives.

Another observation made by the researcher was that the student who didn't recycle at home was the one living in an apartment, which is supportive of the KCDC project's research that typically multi-family housing does not have access to recycling. Additionally, discussion between students when working was truly beneficial because students gave each other ideas and sparked new thoughts for the researcher.

# CHARRETTE - MARCH 21ST

## Overview

The second charrette session was conducted with five students pertaining of three girls and two boys (Figure 4.4). The session started off a little more chaotic due to students coming back from being outside, and the overall attitude of the students seemed a little unfocused due to coming back that day from Spring Break. The same schedule was followed for this session. The precedent imagery did not seem to engage the students as thoroughly, but still seemed to help put the students in the right mindset. From the start of the charrette time, the students quickly moved to building and writing within the first five minutes. This group did not talk very much during the charrette, which lead the researcher to go around and engage in dialogue to help students iterate ideas and make sure they did not have questions. Additionally, a couple of the students wanted to sit idle during the charrette, so the researcher used this approach to keep students engaged. The last ten minutes consisted of encouraging the students to wrap-up their thoughts and write about their concepts. When time was up, each student explained their concepts, which seemed to excite the group in seeing what their classmates had come up with for designs. The session finished off again with asking what the students learned, which consisted of learning “that there is not a lot of recycling bins in Kansas City and we should try to recycle” and “We should really recycle cause if we don’t recycle there will be a consequence if we don’t have any air that means its suffering in the landfill because we aren’t recycling or composting.”



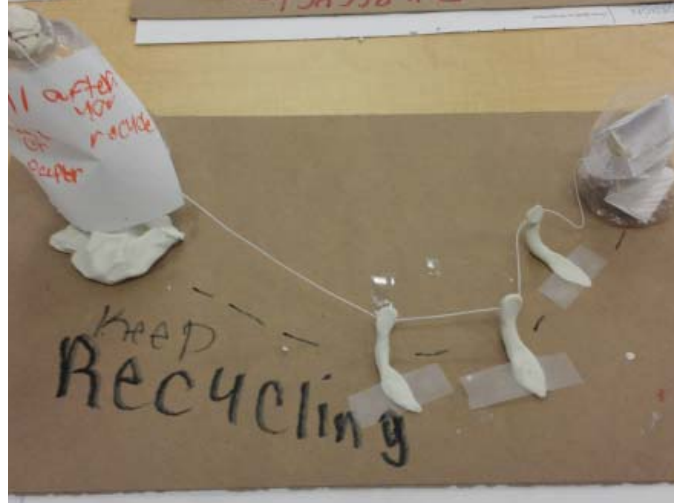
Figure 4.4 Students Building Ideas During 2nd Charrette Session (Santoro 2016)

# SYNTHESIS OF CHARRETTE

## Analysis of Design Elements

The analysis of the second charrette followed the same methods of categorizing the design elements into the broad categories and subcategories. Figure 4.5 depicts another series of examples from this second charrette of the broad categories for this synthesis. The researcher again documented the student's design ideas and transcribed their descriptions (see Appendix A for complete documentation). Table 4.2 on the following page indicates the results from each of the students. The totals resulted in seven marks for the infrastructure category, twelve marks for the spatial design category, and seven marks for the incentives category. This student group focused on the bins and games in the infrastructure subcategories and the ticket, prize, and money subcategories for incentives. The spatial design category had the most prevalence in these charrette results, with every student having some indication of signage and some focused on the use of recycled material and its display in an artistic way.

## Spatial

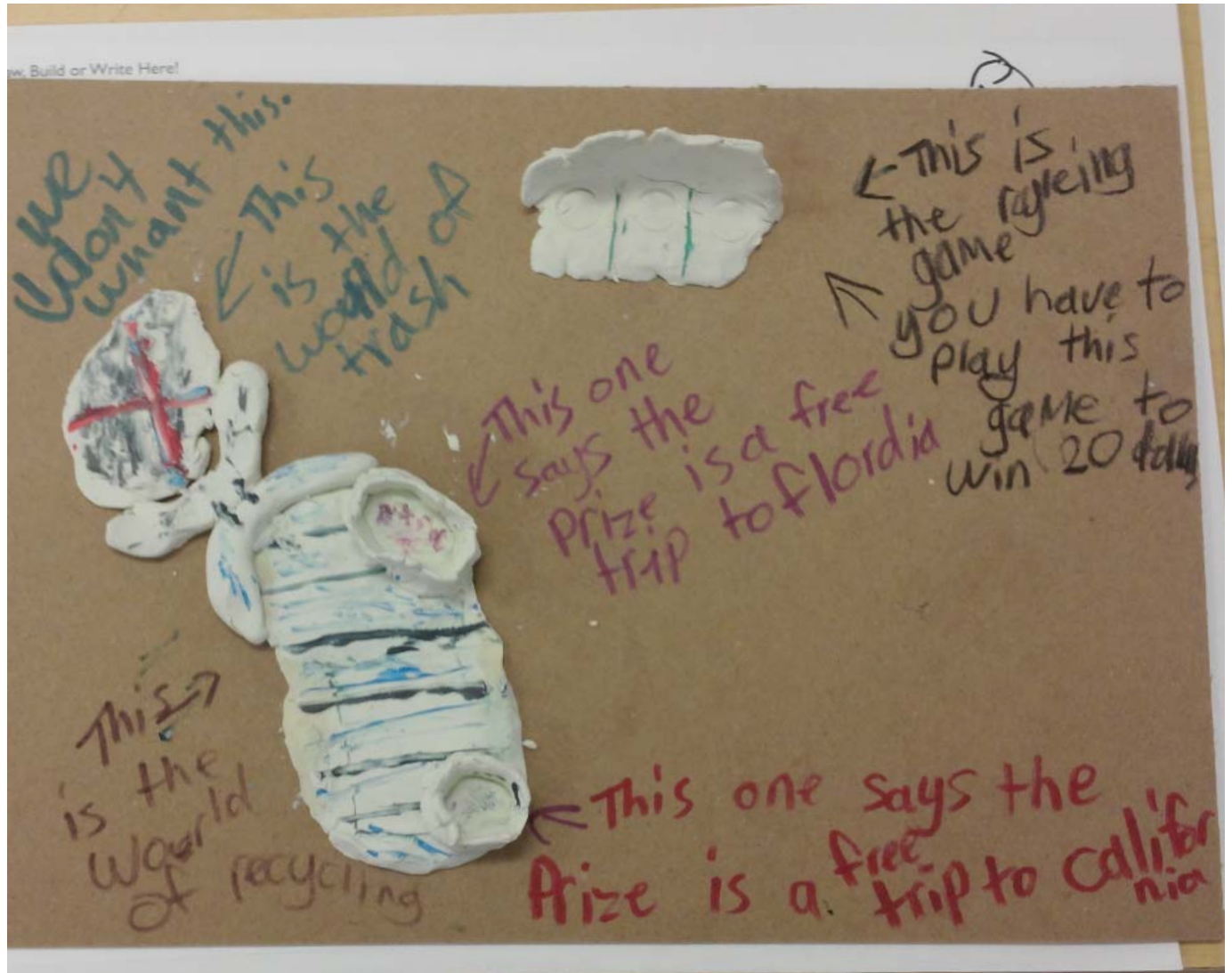


## Infrastructure



Figure 4.5 Examples of Student Work for Broad Categories (Santoro 2016)

## Incentives



Infrastructure						
	Standard Bins	Recycle Sorting Bin	Streetscape Amenity	Technology	Game/Puzzle	Play Equipment
Student 7	X					
Student 8	X					
Student 9		X - compost			X- sorting game	
Student 10	X - bins at war				X	
Student 11	X					

Spatial Design						
	Art	Structure	Signage	Ground Plane Prompt	Place-making	Use Recycled Material
Student 7			X	X		
Student 8	X - recycle wall	X	X- ultimatum			X - wall
Student 9	X - recycle wall		X			X - wall
Student 10			X			
Student 11		X - fence	X - directional			

Incentives					
	Ticket	Candy Bar	Money	Coupon/Voucher	Prize
Student 7			X		
Student 8					X
Student 9	X - trip		X		
Student 10					X
Student 11	X - trip	X			

Totals	Infrastructure	Spatial Design	Incentives
	7	12	7

Table 4.2 Synthesis of March 21st Charrette Ideas (Santoro 2016)

## Reflection on Charrette

As previously noted, this student group was quieter, so the researcher engaged in going around to have one on one conversations, and reflected more on her observations. There was one instance of a student who talked about different worlds, which in her mind were groups in Kansas City with opposing views on recycling. These worlds were part of her design, so the student was not focused in a physical design situation, but the researcher found it intriguing the student's awareness on how there's always going to be differing opinions on certain aspects. This made the researcher try to think deeper about why recycling was important and if the designs help emphasize the importance to help change behaviors.

The results of this charrette lead to a differing observation on the incentives category with this group of students' design having more extravagant rewards for recycling. A lot of the incentives were free trips to places like Hollywood or Florida if you recycled. This added the perspective and new thoughts about how maybe the recycling infrastructure design could keep track of how much and often individuals recycle and enter them into a raffle to win some larger reward like a free trip. These observations on incentives mostly indicated how participation based on incentives might differ for some people, and when designing ways to incorporate incentives, one needs to consider a variety of incentive levels to encourage people to participate.

One key takeaway from this group's results were that they really wanted to use words to entice people to recycle as well as display the recycled materials. All five of the students had some sort of text or signage paired with their design. Typically these words were more forceful in telling people that they were hurting the environment if they did not recycle, which was an interesting approach as some

marketing campaigns have a similar approach or as a way to help enforce a behavior.

Other observations were that one of the three students who live in single-family does not recycle, while one of the two students who lives in apartments does recycle. This was a little change of perspective that even if people do have access to recycling, they might not participate, while others will still find a way to recycle even if it is not convenient and paid for by the city. Building on that, the researcher gleaned that providing access in the public realm near multi-family housing might be a beneficial design solution to help bridge that gap of access in public and private spaces.





## PART 4.2: DESIGN OUTCOMES

This subpart explains the KCDC Downtown Recycling project's design application of the Link strategy, and how the researcher observed the impact of the children's charrette ideas at various points within the design development up until a design review on April 11th. Some of the design descriptions were written collaboratively and elaborated on by the researcher to make connections to the children's ideas.

# KCDC'S LINK STRATEGY

## Design Application and Connection to Downtown Recycling Project

As explained in the background chapter, there are three strategies of Links, Clusters, and Nodes addressing the vision and goals for KCDC's Downtown Recycling Project. The design development was conducted in small groups made up of the KCDC students, including the researcher. This report focused on the design development of the Links strategy as where to incorporate the community input from the children due to the Links design intent to engage (Figure 4.6). Links are street corridors that connect the areas of activity around the city with the design intent to engage people in the public right-of-ways through increased awareness and education as well as increased access to recycling. The children's design charrette ideas on how to encourage people to participate in recycling through playful and engaging urban space and infrastructure seemed to likely be most influential in the design outcomes of this strategy.

### VISION

- THE VISION IS TO CREATE A MORE LIVABLE DOWNTOWN KC THROUGH A THRIVING MATERIAL WASTE SYSTEM, KNOWN FOR EFFICIENT, DATA DRIVEN, INNOVATIVE DESIGN.

### GOALS

- AWARENESS
- INFRASTRUCTURE
- ACCESS
- MEASUREMENT
- PARTICIPATION
- STANDARDS

- LOCAL NEEDS
- REGIONAL SYSTEM
- BEST PRACTICES

### INVESTIGATION

- CONTINUAL LOADS
- INTERMITTENT LOADS
- ORGANIC LOADS

Figure 4.6 Vision Framework for Downtown Recycling Project (KCDC 2015)

ION

[CONCEPTUAL SCENARIOS]

[INTENT]

**MUNICIPAL**  
RE-PRIORITIZATION

- PRIVATE REQUIRED/PUBLIC ACCESS
- ACCESS BY STANDARDS
- EFFICIENCY

**ORGANIC**  
INCORPORATION

- FOOD DISTRIBUTOR REQUIRED
- PUBLIC ACCESS
- SUSTAINABILITY

**TECHNOLOGICAL**  
REINFORCEMENT

- PRIVATE REQUIRED/PUBLIC ACCESS
- DATA COLLECTION
- INFRASTRUCTURE

**LINKS**  
TO ENGAGE

- PUBLIC USE
- ACCESS
- AWARENESS

**CLUSTERS**  
TO COLLECT

- PRIVATE - LOW-MID RISE
- COLLECTION EFFICIENCY

**NODES**  
TO ACTIVATE

**FUNCTIONALITY**  
OF NEW INFRASTRUCTURE

- PUBLIC USE
- NEW INFRASTRUCTURE

**MULTIPLICITY**  
OF PROGRAMS + PEOPLE

- PUBLIC USE
- LAYERING ACCESS

**SHOWCASE**  
RE-PURPOSED WASTE

- PUBLIC USE
- AWARENESS

**ORGANICS**  
AS NEW FOCUS

- PUBLIC USE
- EDUCATION

[SYSTEM STRATEGIES]

## Vision Plan to Design Development

From the vision plan developed in the fall semester by the KCDC studio, four sections of the Links were selected to further design (Figure 4.7). These Links were centered on the core of Kansas City's downtown with a diversity of scale, surrounding land uses, and neighborhoods. The corridors of 12th street and 9th street were selected for their east-west connections and change in urban densities. Main street was selected for its high visibility and streetcar infrastructure within a smaller right-of-way, whereas Grand Blvd. was selected for the opposite in physical conditions with a generous right-of-way and fragmented urban edge.

## Links Strategy Design Goals

A group of KCDC students, including the researcher, were focused on developing the design solutions for the Links strategy. The design developed through a set of design goals:

- To engage the public and raise awareness about the need to recycle and compost
- To increase recycling accessibility in public spaces downtown
- To create a standard approach to downtown public infrastructure and amenities that cohesively includes recycling bins
- To spur local material recycling industries that bring jobs and an economic boost
- To “close the loop” on more materials manufactured and used locally

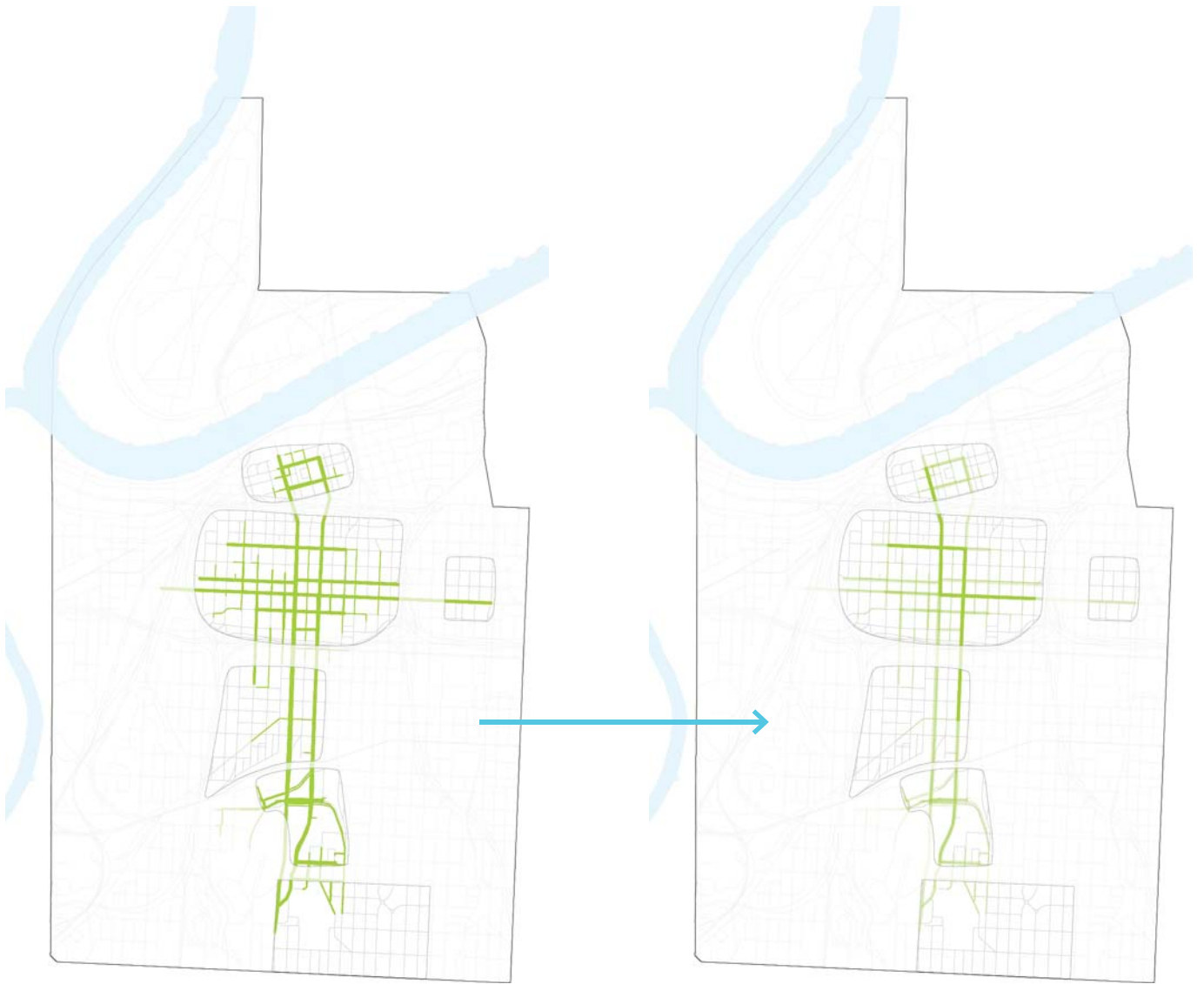


Figure 4.7 Narrowing of Links Strategy for Design Development (KCDC 2016)

# PROCESS FOR LINKS STRATEGY

To achieve those goals, the Link strategy had an overall process the group went through, which is diagrammed in Figure 4.8. The process began with a mapping series of the existing conditions on the intensity of use and physical conditions within the selected street corridors. All the existing condition mapping over intensity of use and physical conditions can be found in the KCDC studio project's final publication. Using the knowledge base from the existing conditions, a series of placement strategies were developed to help guide how the new recycling infrastructure and the organization of existing infrastructure related to pedestrian movement and its frequency. The placement strategies are further explained later as they are how the design solutions are explained. Design strategies focused on the function of the new infrastructure and the materiality. From the functionality, a kit of parts was designed as a series of cohesive infrastructure pieces, which configure in multiple ways depending on the use needed and arranged based on the movement strategy associated. This process led to the design outcomes for prototypical sites associated with the movement strategy and a kit of parts. The charrette synthesis and results were shared with classmates during this process when classmates were iterating the design of the kit of parts and what each movement strategy meant.

## Existing Conditions

### Intensity Of Use Mapping

Lunchtime Hour  
Restaurants, Commercial, Office, Parks

Special Events  
Event Locations, Residential,  
Restaurants, Events Walking Radii,  
Transit Stops

Visitors  
Attractions, Transit Stops, Restaurants,  
Hotels

### Physical Mapping

Building Heights

Right of Way

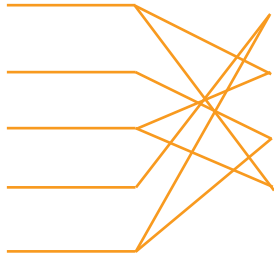
Distance Between Facades

**Figure 4.8** Process from Research and Analysis to Programming and Design (KCDC 2016)

## Placement Strategies

### Movement Strategies

Slowing  
Interrupting  
Guiding  
Maintaining  
Connecting



## Design Strategies

### Functionality

Passing  
Socializing  
Learning  
Resting



### Kit of Parts

Bench  
Table  
Signage  
Ground  
Bike Rack  
Bin - applies to all

### Use

Lounge Seat  
Bench  
Leaning Bar  
High Table  
Low Table  
Sign  
Smart Board  
Paint  
Material  
Interactive  
Bike Rack

### Standard Strategies

Existing Infrastructure Organization  
Wayfinding on Streetcorners  
Recycling and trash bins on corners, every 66" along the block  
Minimum two benches per block  
Ground markings to indicate bin locations

### Materiality

Recycled HDPE (Plastic) composite, 40% post-consumer, and 60% post industrial content  
Regionally and locally collected and manufactured  
Steel metal, min 2/3 recycled content

### Frequency Strategies

100% Spread  
50% Spread



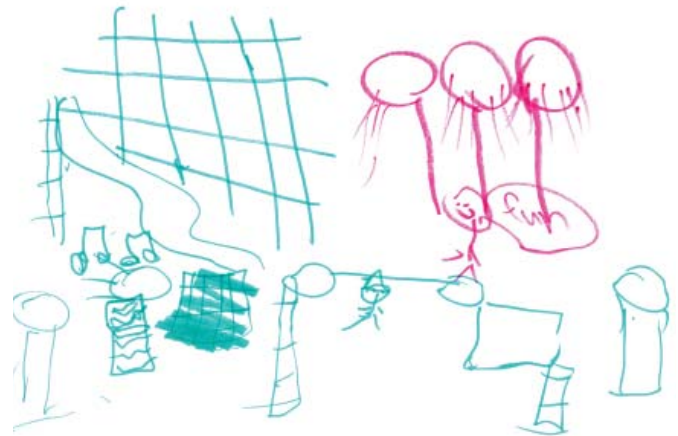
# DESIGN APPLICATION AND OBSERVATIONS

## Closing the Recycling Loop

One of the issues with recyclables is that the materials tend to leave the local economy for a global markets creating a more open loop system where the local markets do not benefit from the recycling process as much. Using ongoing infrastructure improvements and demand to seed new markets is one of the reasons why the street infrastructure in the Links strategy is made of recycled materials.

The group set out designing a kit of infrastructure parts that were centered around the recycling receptacles. With recycling as the core of the design, the materiality of the new street furniture needed to be addressed and use recycled materials to help close the loop and boost local economy. Through research, the group selected high density polyethylene (HDPE) boards and locally milled steel as the two main highly recyclable materials. These materials can be easily manipulated and configured to form the desired street infrastructure (Figure 4.10). The nature of these recycled materials also allows Kansas City to easily replace damaged pieces, and those damaged pieces can be melted, molded, and reused again in the street infrastructure.

Before the charrette, the group had previously discussed using recyclable materials for the reasons above. What the researcher discovered was that the Crossroad Academy students also cared about the reuse of materials as described in a couple of the charrette results. The students wanted to make walls out of recyclable materials or pave pathways with recycled rubber. Although the translation was not literal to the design, the researcher noted the design team dove even deeper into understanding the recycled materials and their origins because the charrette results supported that city users wanted to see the reuse of materials. Additionally, the researcher as part of the team began to look at recyclable materials for the ground plane, which was not previously researched until after the students had mentioned the recycled rubber as part of the spatial design in one of their drawings (Figure 4.9).



**Figure 4.9** Student 1's Drawing with Recycled Rubber Paving(Santoro 2016)

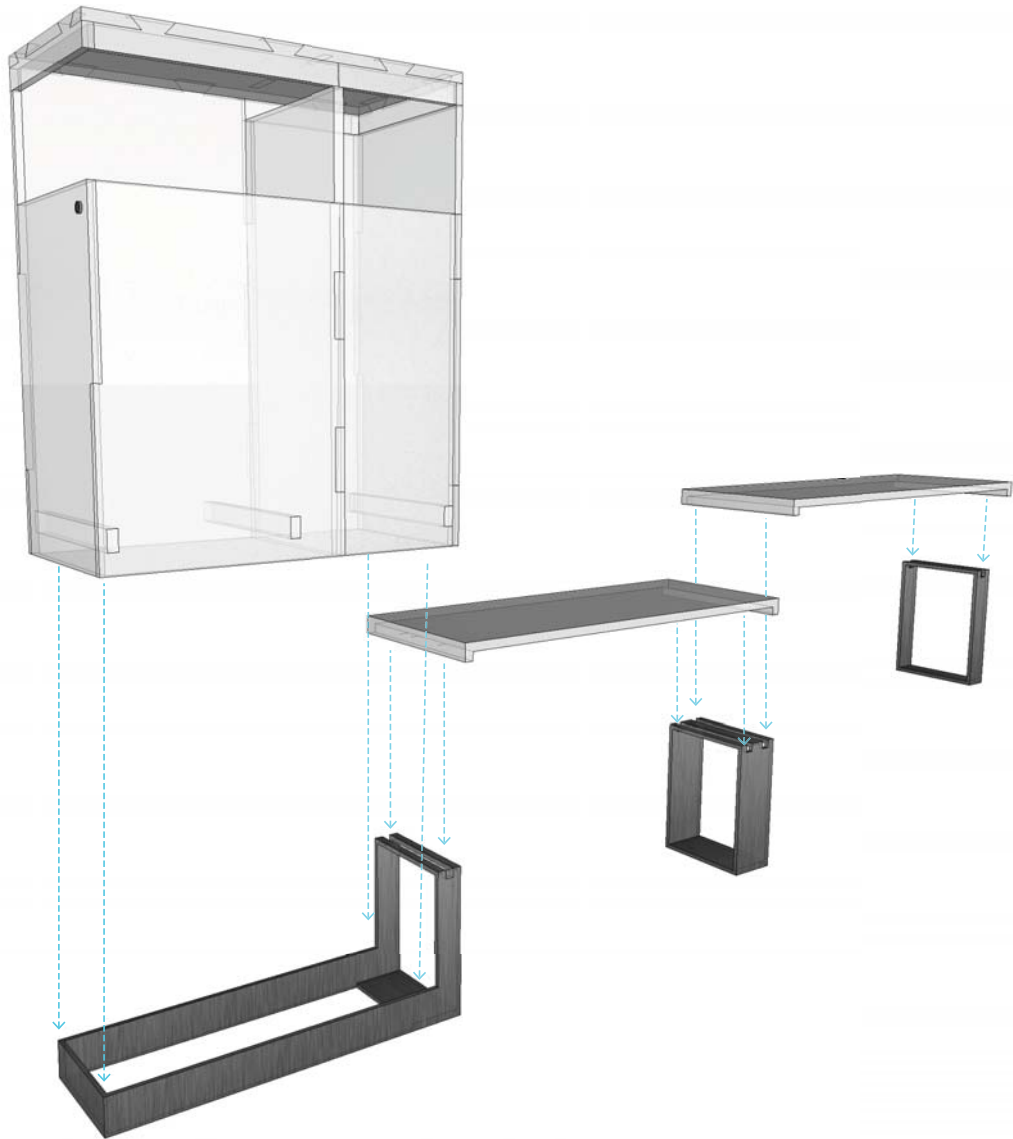
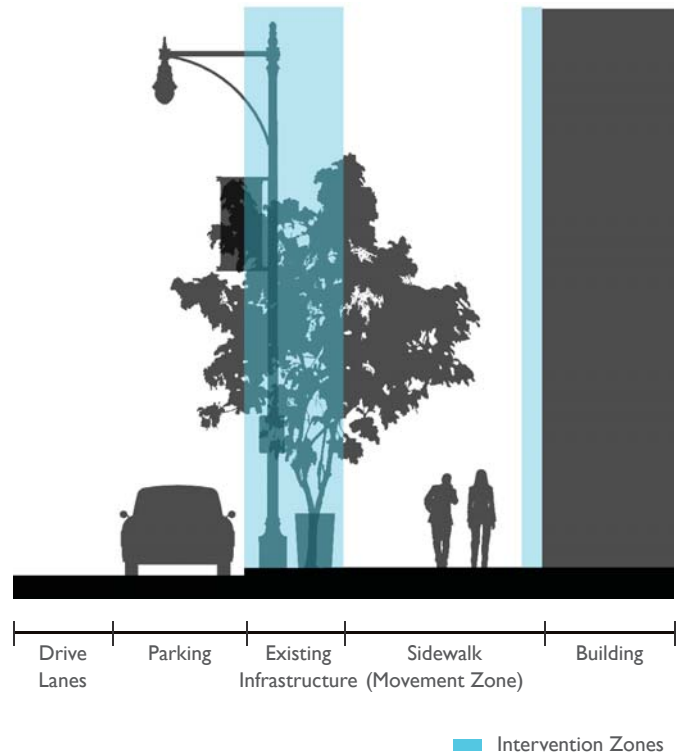


Figure 4.10 Bin and Bench Configuration Out of Recyclable Materials (KCDC 2016)

## Movement Strategies

Beyond the materiality of the design interventions, there was consideration of the strategic placement of the street infrastructure. There was a general standardization of street furniture into zones to one or both sides of a pedestrian movement zone and placed at regular intervals as well as five types of movement intervention strategies. Figure 4.11 depicts the standard zoning of infrastructure in a street section. Each type of intervention was derived from a series of urban spatial conditions, and are meant to concentrate different types of public amenities with a focus on waste collection and engaging a public in motion. Figure 4.12 illustrates an overall spatial movement plan for the selected Links with the five movement intervention types of connecting, maintaining, guiding, interrupting, and slowing.

Following this, each strategy is explained in detail with its corresponding configuration of the street infrastructure, alongside the researcher's analysis of how the children's charrette results tied into the design outcomes.



**Figure 4.11** Standardization of Infrastructure Zones (KCDC 2016)



Figure 4.12 Links Spatial Movement Diagram (KCDC 2016)

## Standard Strategy

The standard strategy is an approach to a typical city sidewalk and street infrastructure that provides a minimum baseline necessary access to recycling, way-finding, and seating amenities. This strategy focused on moving existing infrastructure into a designated zone near the street edge so that the pedestrian movements were uninterrupted. With the recycling infrastructure as the focus co-mingled recycling bins paired with proportionally smaller trash bins are suggested for every 66 feet along a block. Bins with signage would be placed on corners at an angle to allow for access from multiple directions. Figure 4.13 depicts a prototypical Kansas City block length and how the new infrastructure would be strategically placed. The kit of parts is also depicted to show the physical configurations and the pairing of the receptacles with streetscape amenities such as benches and signage. Lastly, part of the standard strategy is painted ground plane strips to visually indicate the location and frequency of the recycling infrastructure. The increased access and visual indication are used to encourage the participation in recycling within the public realm.

Results from the charrettes reflected the strategic thinking for this standard strategy. The students had the same thoughts on the frequency and placement of the waste infrastructure with their suggestions of having bins on every corner and that a recycling bin should always be paired with a trash bin. This encouraged the group's design thinking with how placement of infrastructure is key to a system functioning in the desired way.

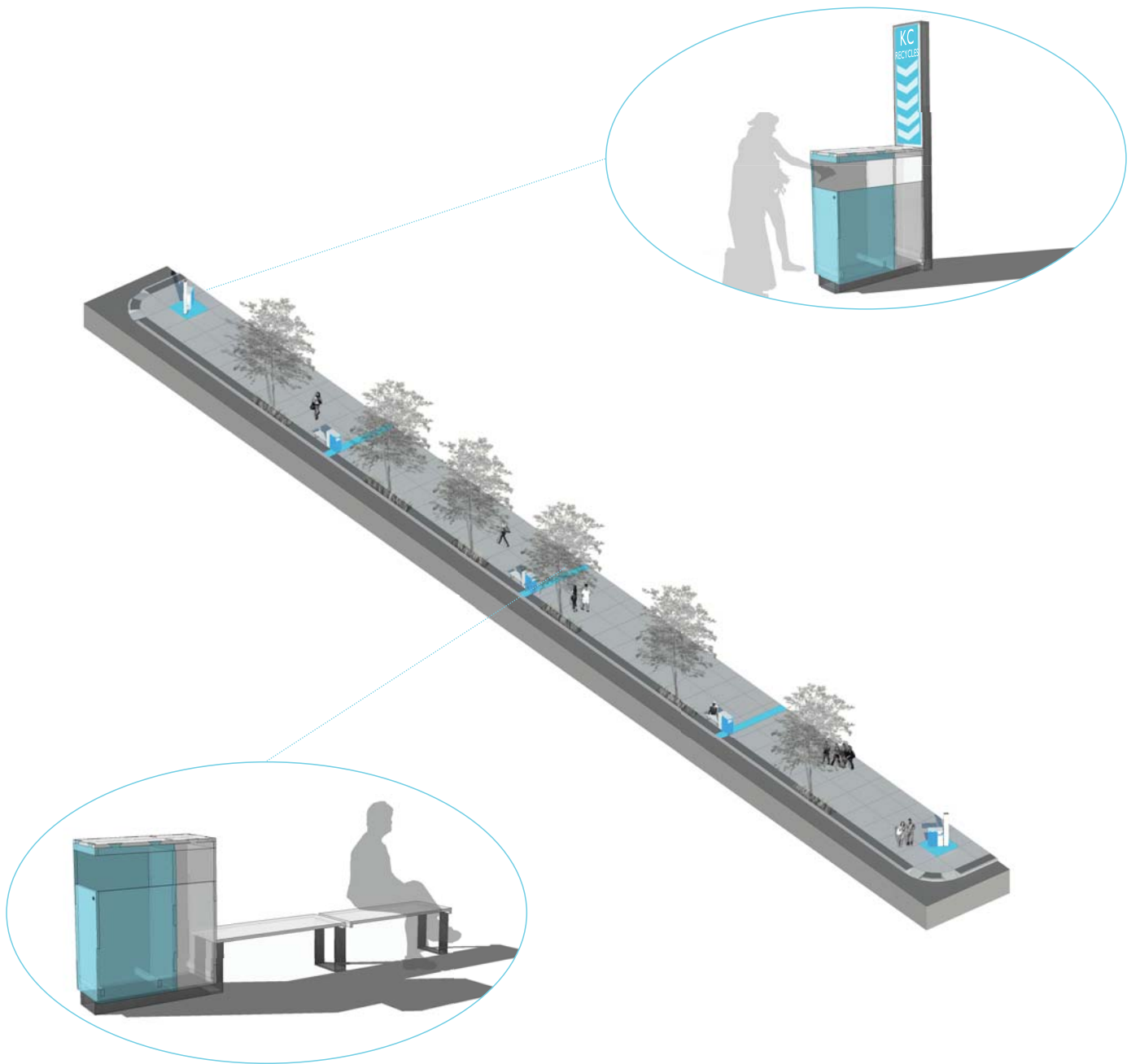


Figure 4.13 Prototypical Kit of Parts for Standard Strategy (KCDC 2016)

## Connecting Strategy

The connecting strategy is about education and engagement pieces, which connect open spaces on both sides of an intersection through visually striking and cohesive installations, each focused on raising awareness and public participation in recycling local materials that are produced in high volumes. Figure 4.15 shows the prototypical situation and its related kit of parts. The infrastructural pieces focus on signage and interactive kiosks that emphasize and direct people to the showcased recycling infrastructure. Extended recycling bins allow for the capability of larger collection paired with a containers that display the recycling commodity of the area. These recycling displays would house the actual commodity and have educational visuals about that commodity. The ground plane is painted in a large swath on both the road and sidewalks to create a connection of space and to encourage people to move from one recycling point to another.

The display of recycled materials paired with signage was one of the elements that was more engaging from the charrettes. Figure 4.14 depicts one of the street infrastructure configurations and a student's charrette idea. The student's idea focused on displaying recycled materials and signage as a way to engage the people interacting with the infrastructure and to educate users and bring awareness. This approach was similarly adopted for those reasons, but also because of how this idea connected and engaged people with recycling ideas beyond just that motion of collecting. The children's charrette ideas like this helped unearth new thoughts of multiple ways to engage a user about an issue.

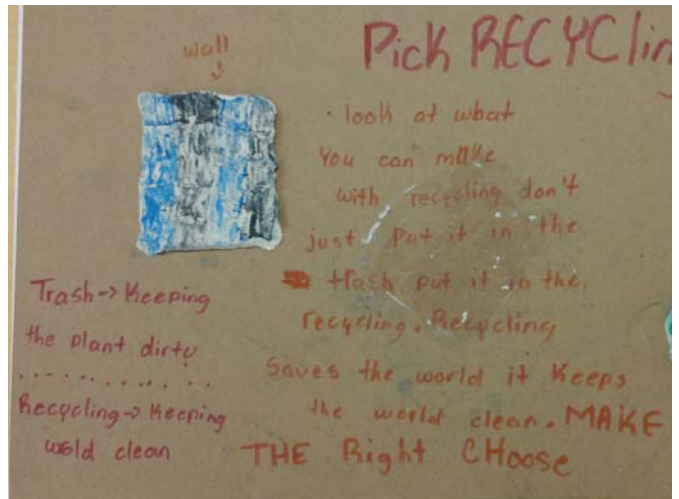
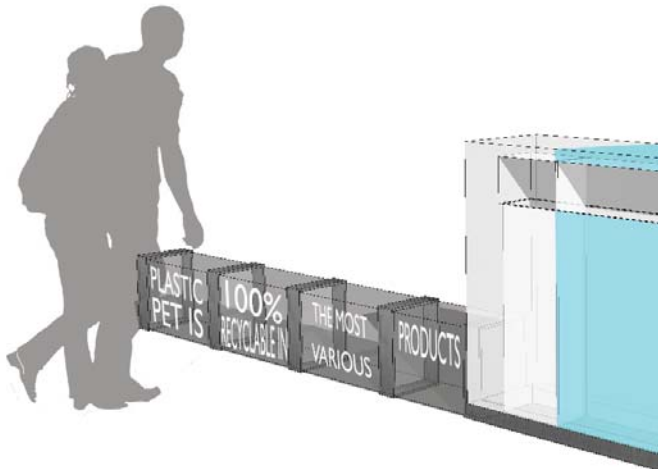


Figure 4.14 Example of Educational Signage and Display of Materials from Charrette and in the Design (KCDC 2016 and Santoro 2016)

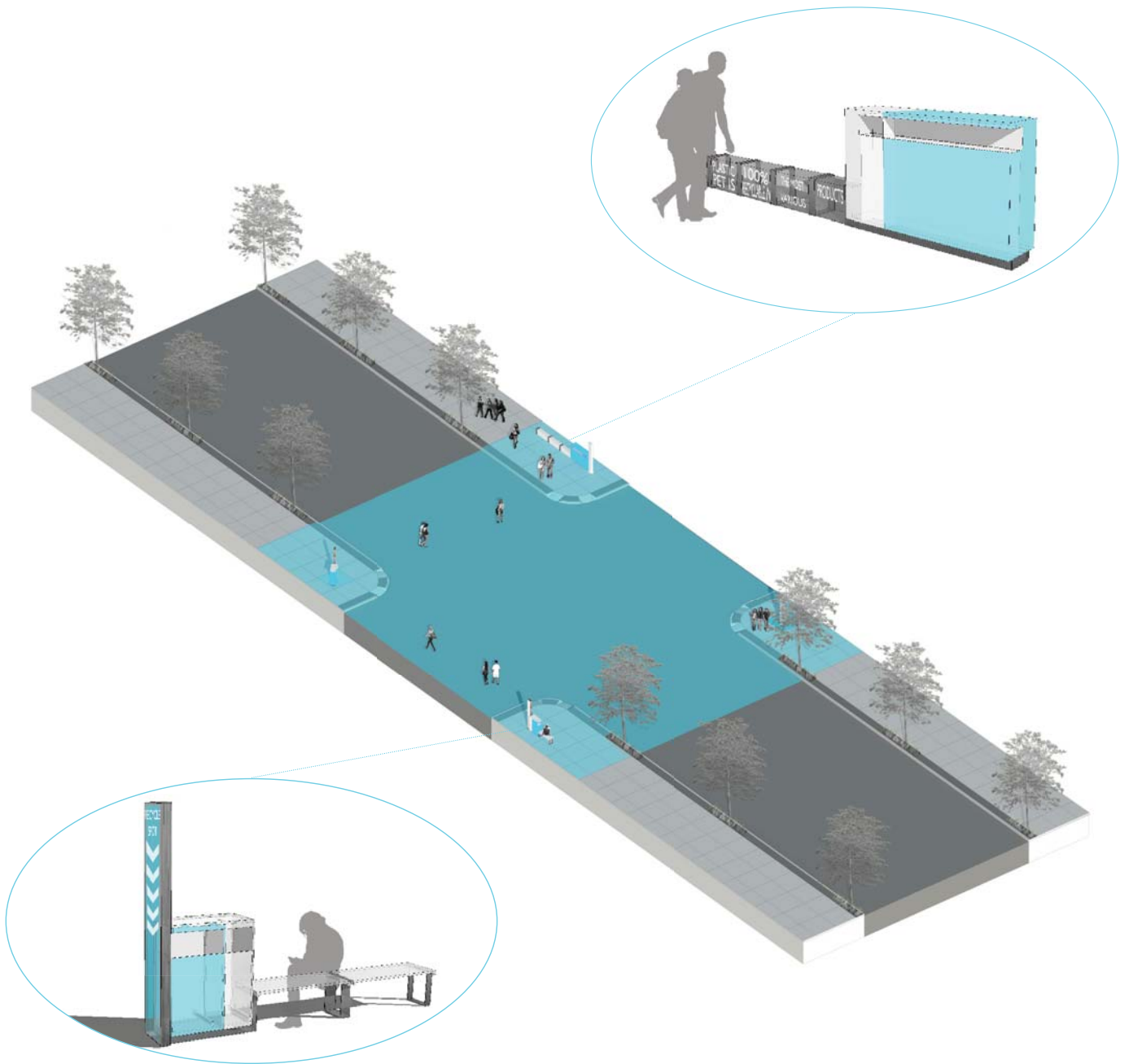


Figure 4.15 Prototypical Kit of Parts for Connecting Strategy (KCDC 2016)



## Maintaining Strategy

The maintaining strategy focuses on the definition of urban space where parking lots create gaps between buildings, while also bringing attention to recycling through large ground plane info-graphics and signage. Signs, bike racks, planters, and edge defining elements maintain a defined sidewalk edge and can screen open or recessed space beyond. These elements should orient pedestrian motion to the sidewalk and away from movement into the recessed space, aligning with adjacent building fronts and other defining urban features in order to create a clearer view of the interface between public space and private zones. Figure 4.16 illustrates how the placement of these street elements would define the edge with ground plane graphics. Additionally, the image depicts how the standard strategy would pick back up after the end of the open space. The kit of parts would utilize the extended recycling bin to encourage the people in motion to recycle due to a larger opening allowing them to maintain their forward movement.

This strategy was more focused on creating an edge and increasing accessibility to recycling while in motion than creating playful or engaging infrastructure. However, the children's ideas with ground plane still played that role with changes in paving texture and frequency to engage passerbys' attention and indicate where recycling infrastructure was located. This idea of using solar pavers that light up at night to create engaging ground patterns was gleaned from this inherent need created from working with the children to add some playful elements to encourage others to recycle.

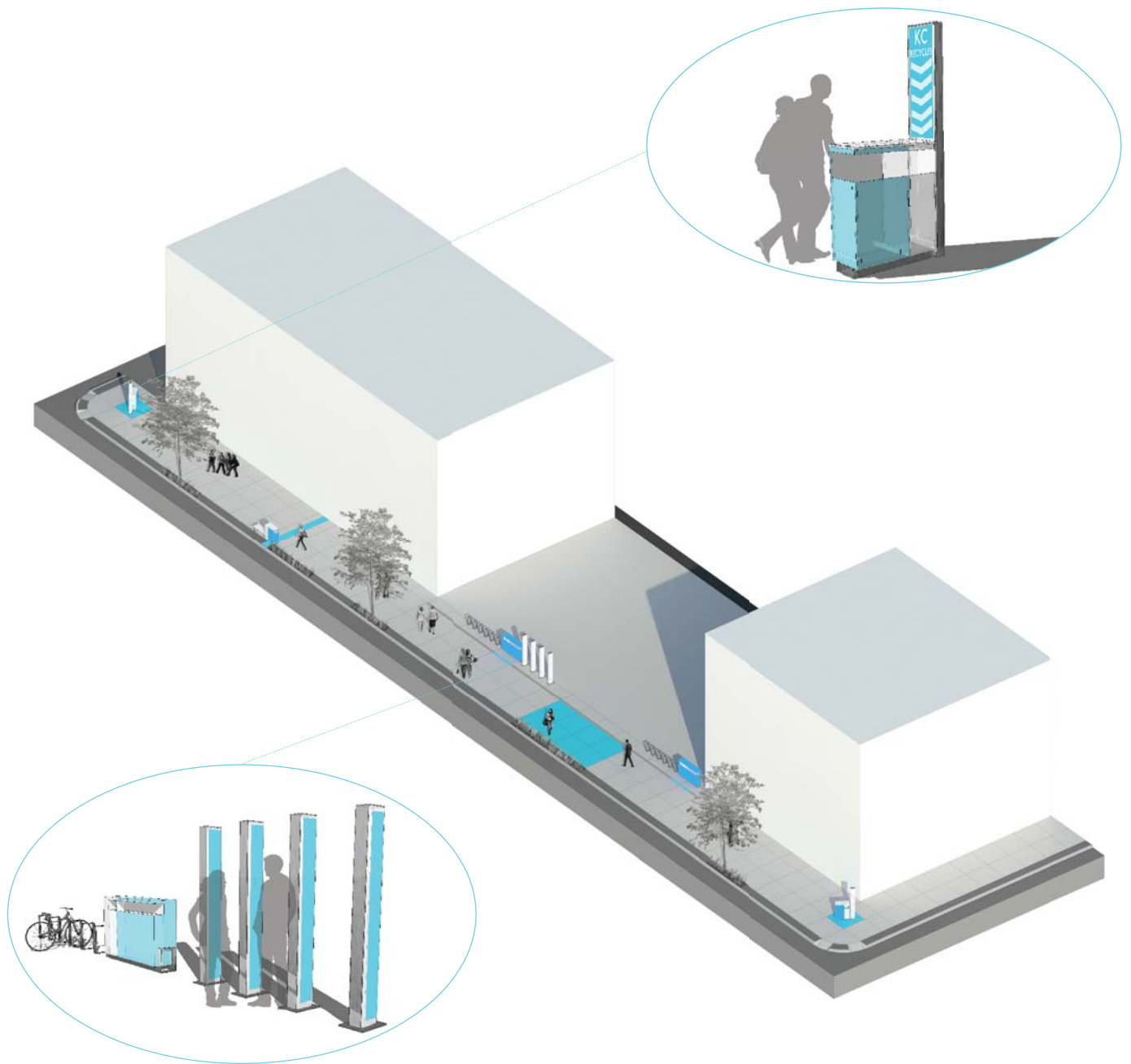


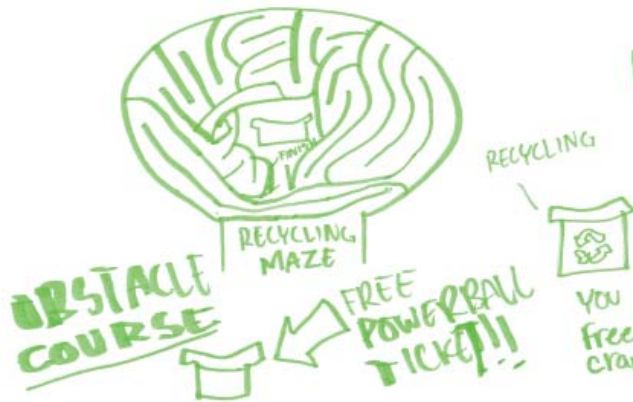
Figure 4.16 Prototypical Placement and Kit of Parts for Maintaining Strategy (KCDC 2016)

## Guiding Strategy

The guiding strategy focuses on guiding pedestrians into existing adjacent spaces that can further emphasize the importance and accessibility to recycling infrastructure. Guiding interventions claim additional space for public occupancy in the right of way where the built edge of the right of way recedes. Similar to Maintaining, these elements consist of bins, benches, tables, and signage. The primary difference is that Guiding elements shift away from typical sidewalk setback to claim additional land for public use as shown in Figure 4.18. Also shown is that the standard strategy is still applied where the guiding strategy is not taking place.

The students many times used the ground plane prompts as directional guides to the recycling infrastructure, which became infused in the guiding strategy to lead people into adjacent open space and to the added recycling infrastructure. Figure 4.17 illustrates one of the students'

drawings of a maze that guides you and encourages you to find the recycling bin. The playfulness of the maze idea lead the some of the design group to make bolder playful moves with some of the ground plane and signage ideas to encourage a variety of users to recycle. By making this more playful and bold, people's curiosity could be sparked leading them into the space and searching for the recycling infrastructure because it becomes a game of where does this lead. The children's ideas of directional ground plane prompts helped to spark thoughts of how to create curiosity to draw people in and engage them with recycling.



**Figure 4.17** Example of Student Drawing Using the Ground Plane to Guide Users to Recycling Infrastructure(Santoro 2016)

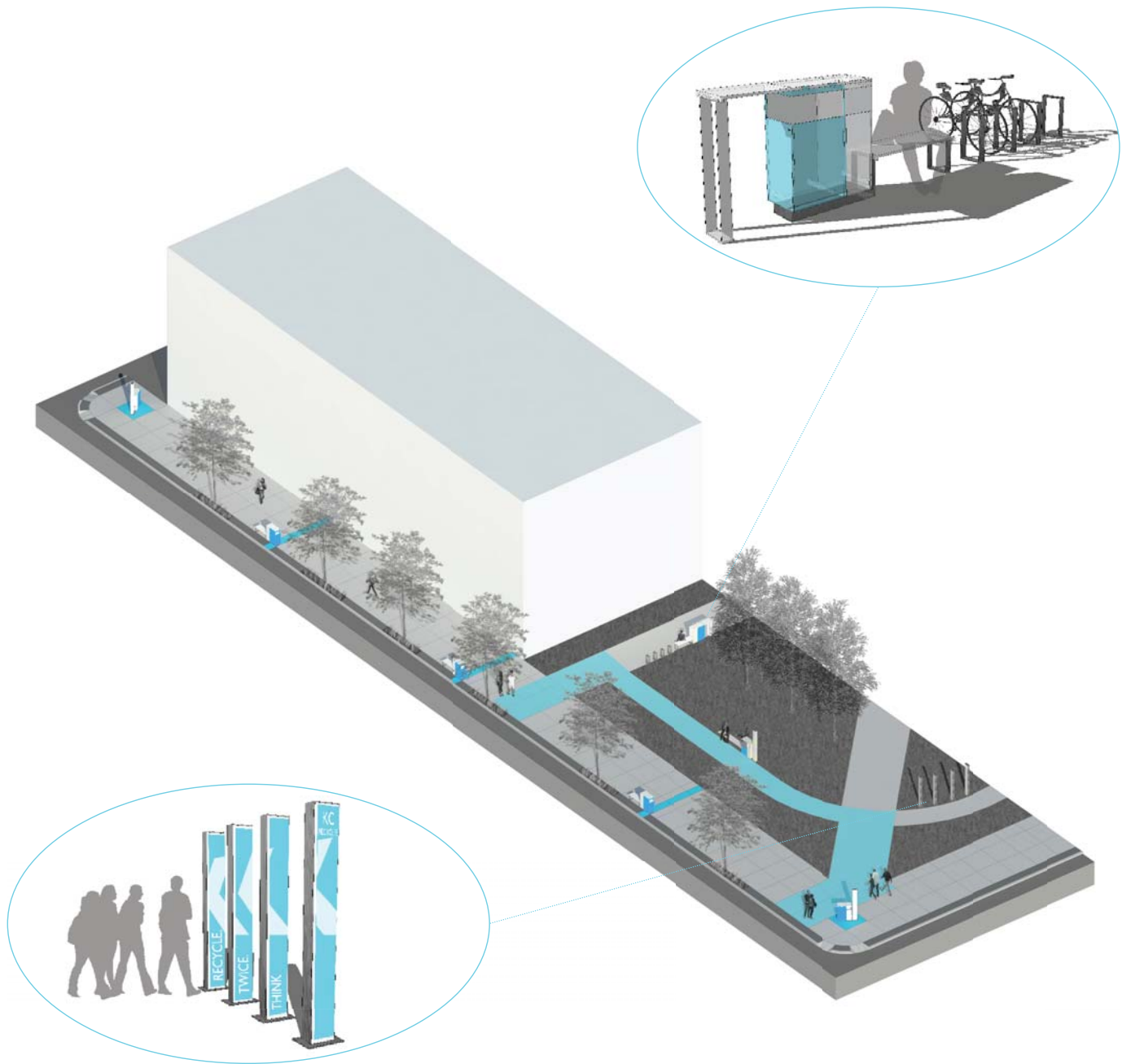
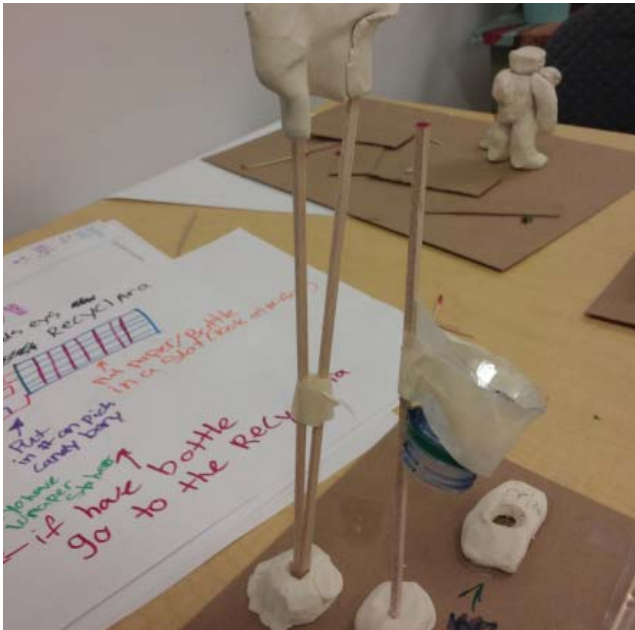


Figure 4.18 Prototypical Placement and Kit of Parts for Guiding Strategy (KCDC 2016)

## Interrupting Strategy

The interrupting strategy is typically in areas of sudden setback along blocks with a narrow right of way. The infrastructure designs intentionally disrupt the path of pedestrians with kinetic objects meant to engage the public through interactive features. Figure 4.20 depicts this intentional placement and the series of parts. This set of infrastructure parts incorporate the typically amenities like seating and bike racks, but additional elements with eye-catching displays of light, spinning play equipment, and touch screen games were added to encourage recycling behaviors in engaging and creative ways. For example, the relationships of a recycling bin with a smart touchscreen kiosk would activate a free game to play if someone properly recycled, which would be tracked through a bin sensor.

Aspects of this particular strategy seemed directly affected by the charrette process. Including urban play equipment and interactive technology was influenced by how the students' had many ideas on how game-oriented and playful infrastructure could help encourage people to recycle (Figure 4.19). These ideas began to give a more concrete understanding of what might occur in the interrupting strategy, and led to many iterations of what these playful interactive features might be. Creating this strategy to help increase awareness and education in a playful way was really brought to light by the children's ideas.



**Figure 4.19** Charrette Example of Playful and Game-Oriented Recycling Infrastructure (KCDC 2016)

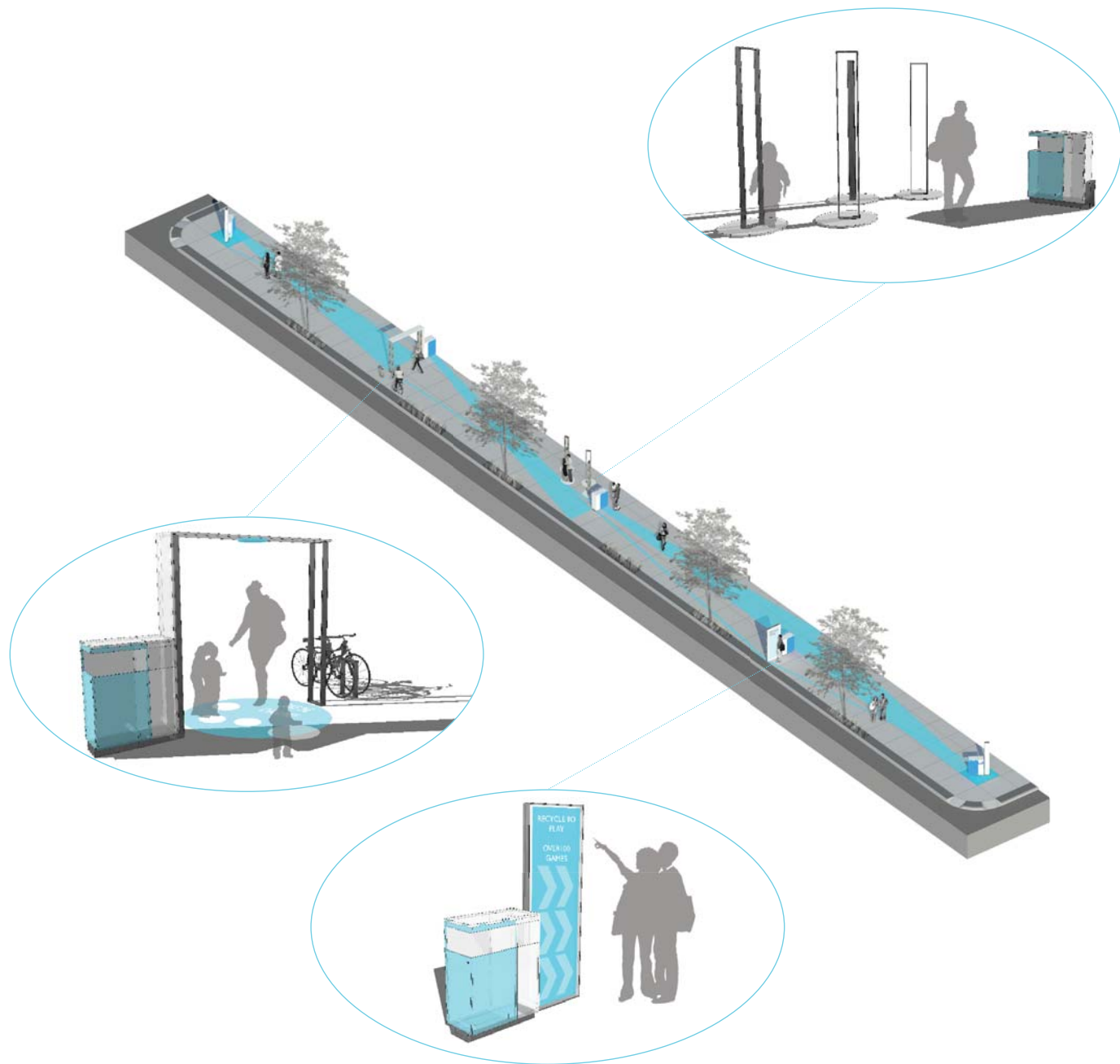


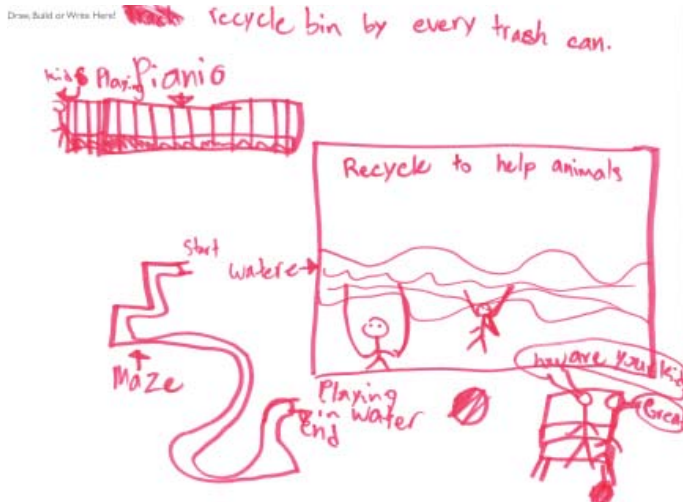
Figure 4.20 Prototypical Placement and Kit of Parts for Interrupting Strategy (KCDC 2016)

## Slowing Strategy

The slowing strategy occurs where the pedestrian right-of-way expands on one side of the road in an area of fairly wide overall right-of-way. These often occur along surface parking lots between destinations. The strategy is focused on slowing pedestrians down with amenities and stopping places where people can socialize and relax. Configurations of benches, bar top seating, charging stations, and signage centralized around the recycling infrastructure as seen in Figure 4.22. These arrangements allowed for small social places within the public right-of-way slowing the pedestrian movement to engage with educational signage. By creating these spaces, people are encouraged to stay where there is readily access to recycling bins and signage to teach them.

The relationships between the infrastructure pieces was key to making this strategy function as a place to stay and socialize. Figure 4.21 depicts this student's idea of

place-making focused on recycling by drawing a series of relationships between an interactive piano, a directional maze, a bench, and recycling bin and how kids and adults might utilize that space. The design team gleaned from this charrette idea to cluster the infrastructure pieces as small social hubs instead of solely as linear configurations as seen in the other strategies. Having people group together and interact near recycling infrastructure could encourage them to recycle when they see others recycling. Additionally, the student's idea of creating places that multiple users will engage in allowed the design group to think more about their audience, and how a city is for both adults and children with infrastructure that accommodates both audiences.



**Figure 4.21** Example of Student Drawing Creating a Social Place Encouraging Recycling (Santoro 2016)

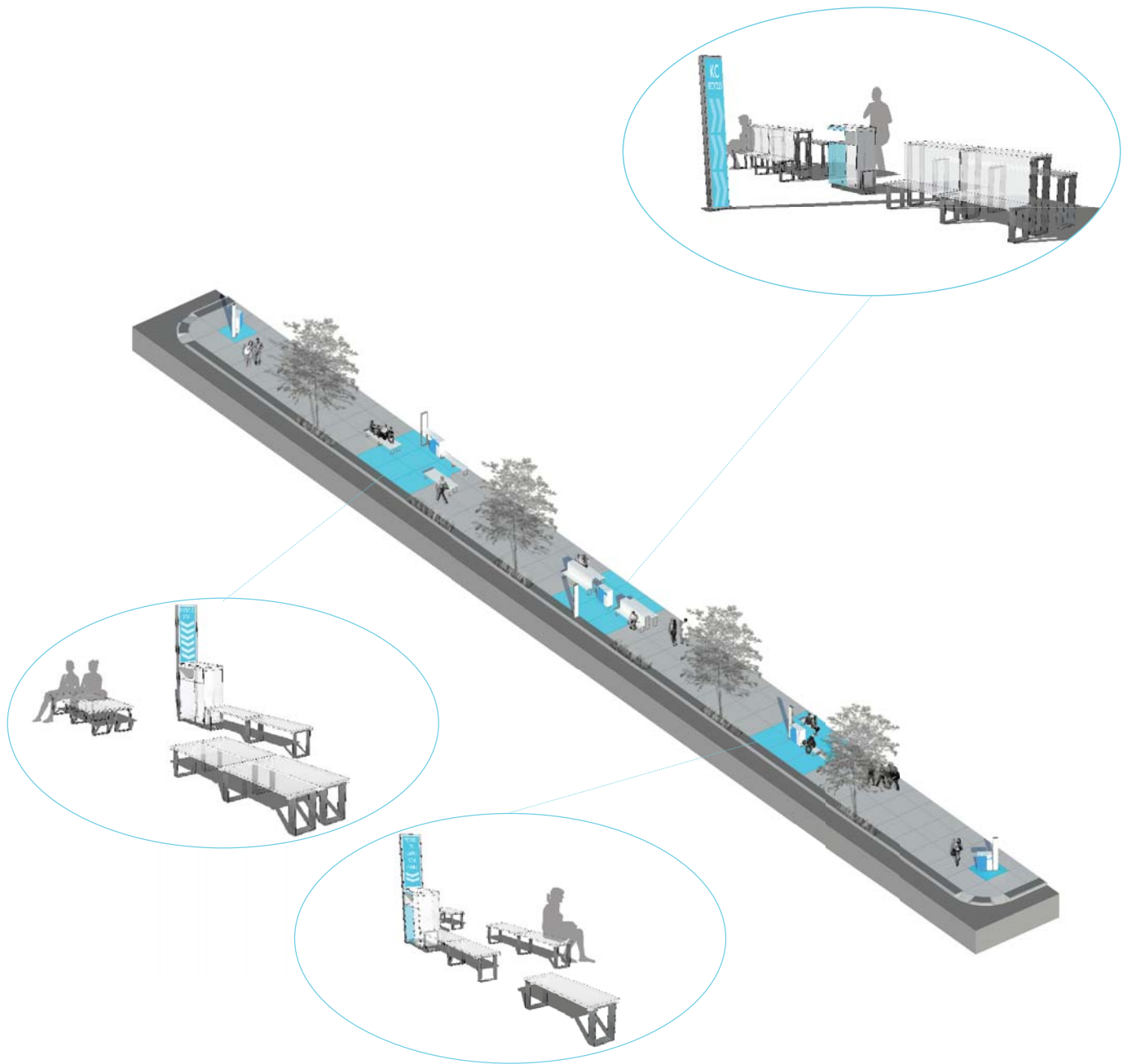


Figure 4.22 Prototypical Placement and Kit of Parts for Slowing Strategy (KCDC 2016)



## Ground Plane Prompts and Signage

The design of the ground plane prompts and signage was pushed near the end as an emphasis from what the design team saw the students thought would encourage people to recycle. It was this experiential aspect that the students' charrette results seemed to focus on, and the Links strategy needed more layering of how people would experience the recycling infrastructure. The researcher noted that some of the ground plane text used in the site-specific designs like "Recycle. It's your duty" were reminiscent of how the children's signage had a forceful tone to encourage people to recycle opposite of what might be considered playful (Figure 4.24). Besides supergraphic text, colorfully painted ground patterns were designed to lead to and indicate to people the recycling infrastructure in a visually bold way. Additionally to the ground plane prompts, this concept of branding the infrastructure with an educational aspect came as a variation to the charrette's results of displaying recyclable materials. The students had discussed art walls of

recycled materials with signage of how much material there was on display. From this, the design team gleaned that if our street infrastructure was made entirely of recycled materials, users might want to learn how many plastic bottles it took to create the amenity as seen in Figure 4.23. The branding idea hoped to trigger people to make connections between the action of recycling and what can come out of it, thus encouraging them to participate.



**Figure 4.23** Branding Concept of Amount of Recycled Materials (KCDC 2016)

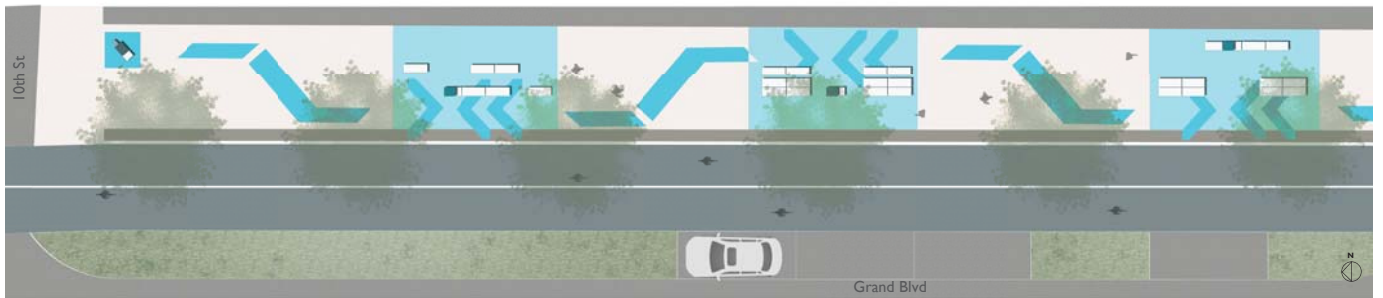
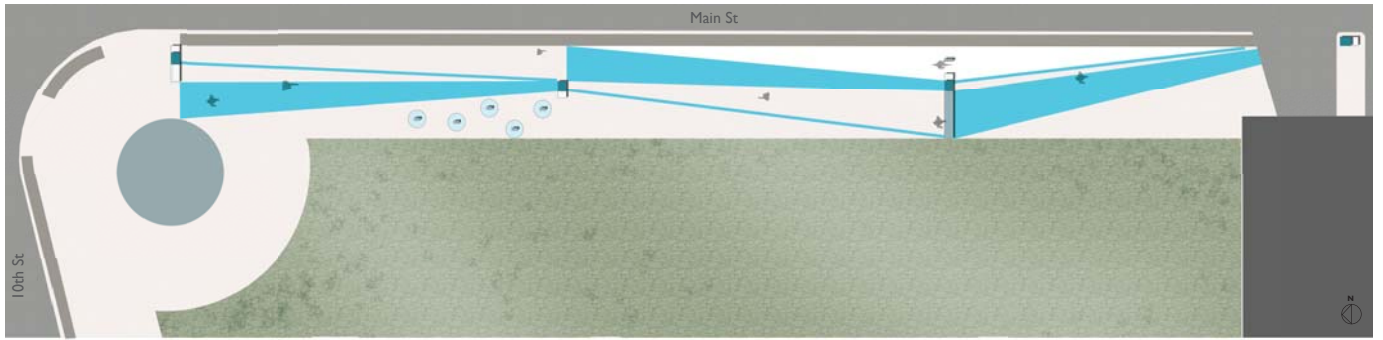


Figure 4.24 Ground Plane Supergraphics Concepts (KCDC 2016)



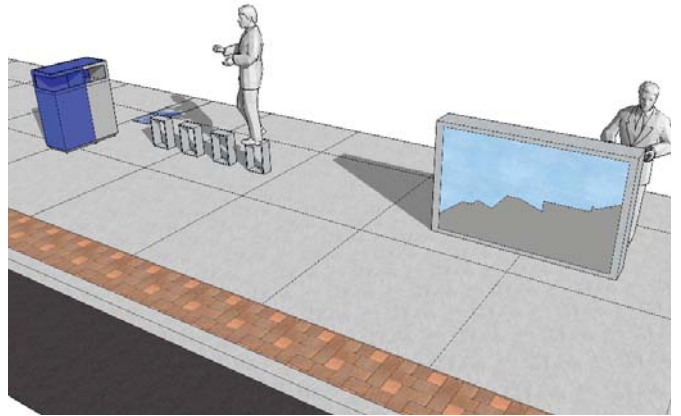
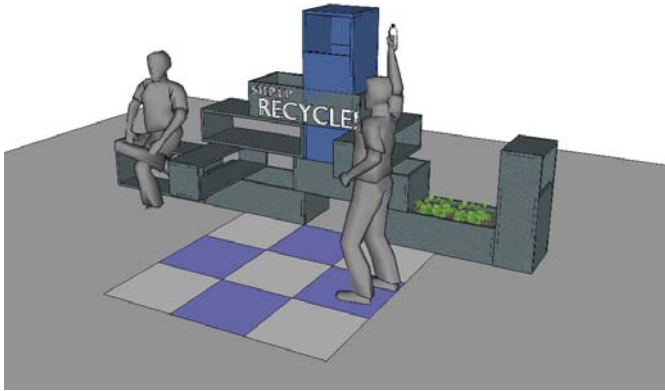
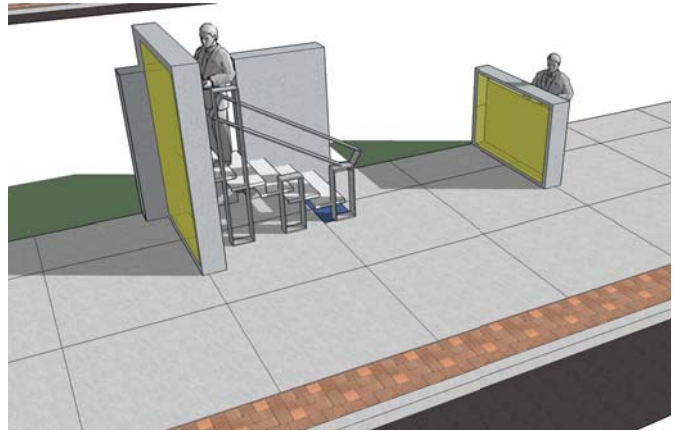
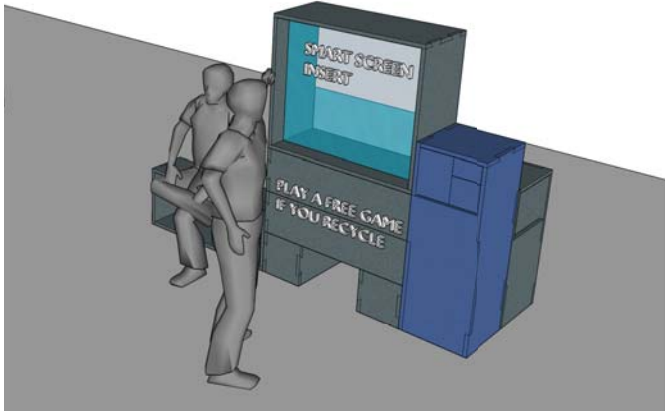


# CONCLUSION | 05



## Brief Summary

Envisioning a new recycling system for Kansas City brought many entities together in the design process. Community participation is valuable to glean new perspectives and influence design solutions that will hopefully lead to the community engaging. However, community involvement should be inclusive to all, including children. Overall, literature supports the importance of incorporating children in the participatory design process because they have the awareness and capability to provide valuable community input and a different perspective as they are not as likely to be blinded by preconceived notions. With this knowledge, the researcher set out to engage in a participatory design process with Crossroads Academy students, which led to a series of design charrettes. The design ideas and the researcher's analysis of these charrettes was then shared with fellow classmates working on the studio project. Along with the project design development of the Links, the researcher observed how the children's ideas influenced the designer's ideas of interactive features, playful ground plane, concept of place-making, and consideration for a variety of users. To conclude this report, the researcher wanted to reflect on how she viewed the overall process and the impact of the children's ideas on the conceptual design for the Links strategy in hopes of answering the question she set out to answer.



**Figure 5.1** Children's Ideas Impacting Design Development (Santoro and Heermann 2016)

# IMPACTFULNESS OF CHILDREN'S INFLUENCE ON DESIGN OUTCOMES

## Participation Can Dictate Influence

The researcher set out to understand how a participatory design process with children influences a conceptual recycling design. The relationship of observations between some of the design decisions and the children's were similar as explained in the previous chapter, thus answering the question that children's ideas can influence design outcomes. It is harder to directly say how it influenced the design because it was not as easy to analyze whether the children's ideas directly correlated with a design decision made by the group. Sharing the synthesis with the other design classmates and the researcher continually mentioning of how the students made her think was only impactful on the design to a certain degree. However, it seems the most impact of the children's ideas were on the researcher and classmate Lauren because we were directly involved in the participatory process. Figure 5.1 depicts how the children's ideas of having playful infrastructure came through in design iterations done by the researcher and Lauren. Inherently, we tried to incorporate games or displaying the recycled materials into the Links strategy of a way to engage and encourage people to participate in recycling.

By being involved in the participatory process, the children's ideas became part of that inherent base knowledge when designing, whereas the other designers who did not partake in the process seemed to only use it as supplementary information that is easily forgotten. This concept is reminiscent of the literature about the realms of children's participation in design. The researcher's methods fell into the institutionalization realm of children designing within set boundaries with a crossover into the proactive realm of a combination of researching and engaging children and designers in the design process (Francis 2002). However, that only applied to those involved. The other designers not directly involved utilized the charrette synthesis as additional research for design application. This is more

along the concept of needs and learning realms of children participation, where it is thinking about designing solely from research and not necessarily direct involvement limiting influence (Francis 2002). Supported by the theory of the realms of children's participation and reflection of the design outcomes, the researcher concludes that direct participation in the design charrette process does dictate the influence it has upon the design.

Additionally, the researcher noted that the participatory process is not going to give the designers a final design and might not seem obvious in the design outcomes, but going through the process is important and can provide new perspectives to the design situation that designers can utilize.



Infrastructure						
	Standard Bins	Recycle Sorting Bin	Streetscape Amenity	Technology	Game/Puzzle	Play Equipment
Student 1		X - Compost	X-benches	X - floor piano	X - laser tag	X
Student 2	X					
Student 3	X					
Student 4	X			X - robot		
Student 5		X			X - dichotomous key	X - obstacle course
Student 6		X - Slots				X - basketball hoop

Spatial Design						
	Art	Structure	Signage	Ground Plane Prompt	Place-making	Use Recycled Material
Student 1			X - help animals	X -maze	X	X - rubber
Student 2	X		X			
Student 3		X -building	X			
Student 4						
Student 5			X	X - maze		
Student 6			X	X - location directions		

Incentives					
	Ticket	Candy Bar	Money	Coupon/Voucher	Prize
Student 1	X - laser tag				X
Student 2	X - movie		X		
Student 3			X - machine		
Student 4					
Student 5	X - Powerball				
Student 6		X			X

**Table 5.1** Added Categories After Charrettes (Santoro 2016)

# COMMUNITY INVOLVEMENT PROVIDES NEW PERSPECTIVES

## Altered Perspective And New Considerations for Design

Throughout the project, the researcher noticed that the alteration in perspectives or new thoughts brought to light by reflecting on the charrette outcomes are what filtered into the design approach for the Links strategy.

One of the new perspectives provided from the charrettes was clearly seen in how the researcher ended up adding design element categories to the charrette data analysis. Table 5.1 illustrates that the entire third category of incentives was added after the first charrette and that two sub-categories within spatial design were added. These categories seemed like obvious things to consider and had been discussed throughout the project, yet the researcher had not originally thought to include them. This indicates to the researcher that community involvement brings to light ideas that can be incorporated into a design, like incentives, that are important. Whereas designers might overlook incentives because they are focused on the physical design or had not considered it to be a factor to focus on. Children seemed to think incentives encourage people to recycle, whether it was getting a physical reward or by it being fun like a game. There are a variety of forms of incentives that needed to be considered and incorporated, and the reflection on the charrette results supported that need.

Additionally, the researcher observed that one of the critiques from a professional review was that the design had not fully explored the experiential qualities of the Links strategy. This made the researcher consider how the sub-category of “place-making” had been added to the charrette results due to one of the Crossroads Academy students considering the experience of a space and how recycling was incorporated into that. Between the students and professionals, the community input provided perspectives of

what the designs lacked and needed.

Originally, the KCDC studio project had intended to do other design charrettes with community members, but it never happened. Thus, having the focused community input from the children was a good decision and seemingly beneficial in understanding what might encourage people to recycle within the public realm.



# TAKEAWAYS AND LIMITATIONS

After reflecting on the outcomes of this participatory process and the design solutions, the researcher had some takeaways from the limitations she faced and recommendations for future research.

## Continuously Prep and Plan Accordingly

For designers and planners conducting a design charrette, prep what one is going to say to ensure one is not pushing ideas one way or another. Carefully plan timing of the charrette days as not to align with school breaks or other timing issues that might influence the children's attention capacity. Additionally, constant coordination on when the community input from the children is going to actually be beneficial and influential is key. With the time constraint of the semester and waiting on IRB approval, the researcher was continuously worried that the children's charrette results might be presented too late in the conceptual design phase. However the timeline worked out, and this report's timing was not too late into the conceptual design phase for the studio project, yet it might have been more deeply influential if charrette results were shared earlier.

Additionally, one of the limitations to this study was that time constraints left the researcher with no time for a pilot study to test methods and outcomes with children. However, the smaller scale of this charrette allowed the researcher to dive deeper into the analysis and reflection of the charrette outcomes without being overwhelmed.

## Be Open to Outcomes. Connections Are Not Clear-Cut

Going into a charrette, one might expect to come out with design ideas one can apply directly to a project. However, this does not typically seem to be true when working with adults or children as the researcher discovered. The project continued to evolve based on how the input was received by the designers. One should be open to the outcomes of the charrette and how the results filter into the design solutions. These connections between the participatory design process results and how they filter into the design are not clear cut. This does make the analysis of the how the children's ideas influenced this project's design hard to evaluate. However from this process with the children, the researcher could follow some of the change in perspectives and the synthesis of what the children focused on that helped push new thoughts rather than the direct application of ideas. For future research would suggest moving beyond just an individual reflection and analysis of the outcomes and ask her fellow designers to reflect to get a more holistic understanding.

## Involve More People In the Process

If it is a group project such as this downtown recycling project, then involve more people in the design charrette. The researcher found upon reflection that those involved in the participatory activity were the most influenced by the children's ideas and it altered their perspectives. The input from the recycling advisory committee involved all the KCDC students, thus the input seemed to more readily filter into the project. So the researcher suggests involving more of the design team in the participatory process to have deeper influences. In hindsight, the researcher could have used this scale of design charrette as a pilot study and then had a larger scale charrette involving more children and fellow KCDC students.

## System Strategies

## System Objectives

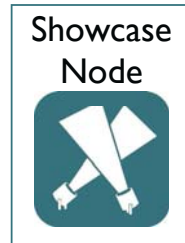
### Clusters to Collect

Clusters are about efficiently collecting trash, recyclables, and organic waste in the private realm. Businesses and apartments grouped within close proximity to one another can take advantage of the cluster's design elements to free more space in tight areas, leverage bargaining power with waste companies, and make a proud statement about their willingness to participate in sustainable practices.



### Nodes to Activate

Nodes are about activating an open space to bring new activity and awareness to a specific issue. Two types of node strategies have been chosen to fully design from the original four types proposed in the first semester of the studio project. The showcase node uses art to enhance its surrounding public space and bring people's attention to the topic of recycling.



### Nodes to Activate

Nodes are about activating an open space to bring new activity and awareness to a specific issue. Two types of node strategies have been chosen to fully design from the original four types proposed in the first semester of the studio project. The organic node is a place where the community's organic waste can be collected and broken down into compost that can be used to benefit Kansas City.



### Links to Engage

Links are about engaging the people, bicyclists, and vehicles that are moving through public spaces in highly visible and creative ways. The design elements here make use of ground-plane, signage, and street furniture to make the City's identity and instill pride. They make noticeable statements about recycling in Kansas City and what it can do for the environment and local industries.



Increases **education** about how to recycle and why it is important through engagement

Increases **accessibility** by adding more recycling infrastructure that is convenient to more people

Increases **efficiency** by creating shared collection points for many users

Figure 5.2 Strategies Coming Together to Address Main Dilemmas (KCDC 2016)

# CONTINUING DESIGN DEVELOPMENT

## Expected Final Outcomes

The report covered the Links design development and observations of the children's impact up until a professional review on April 11th; however, the studio project continued to develop the designs past that date. With that in mind, the researcher wanted to note some thoughts on how the children's ideas continued to impact the designs and some future design application.

The Links strategy continued to refine the street infrastructure designs, ground plane designs, and branding ideas. Beyond that there is still many smaller details that could be applied to the overall design and have continued to come up in discussions. For example, digital signage that indicates the changing environmental conditions in the area, while also keeping track of how much is recycled on that one block. Strategically placing and designing signage to inform and educate users on recycling. Another discussion on having some of the community's voice on recycling, such as some quotes from the Crossroads Academy students, be applied throughout as a type of branding on the infrastructure pieces and ground plane, to encourage people to participate and humanize the spaces. This continued design development still could benefit and be influenced by the children's ideas as the project wraps up for the semester.

The Links strategy will end up fulfilling its goals of engaging people in the public right-of-ways through increased awareness and education as well as increased access to recycling through the completed design of a set of infrastructure pieces, strategic placement strategies, and these educational and branding details. These design solutions become a piece of the entire recycling system that KCDC set out to address the dilemmas of accessibility, education, and efficiency with the Links, Clusters and Nodes strategies (Figure 5.2).

“You can be the change you want to see”

~ Favorite Crossroads Academy student quote about what they learned from the process



## Final Reflection

The most rewarding aspect of this report was the interaction with the Crossroads Academy students during the design charrettes. Current day, many people might consider community involvement as one of those buzzwords like sustainability or resiliency, and that everyone is doing it to say that they did. However, people do want to be involved and heard, including children who interact in urban environments. The involvement of children in this participatory process was valuable, and the researcher hopes that they continue to be asked to participate in projects such as this one.

To encourage behavior change and increase participation in Kansas City, this report intended to provide design solutions for playful and engaging urban space and recycling infrastructure in the public realm with design concepts informed from a community-based process with children. Working with the children from Crossroads Academy added a new perspective of downtown's public realm and involved outside input of how to improve spaces the community uses. By engaging youth's imaginative minds in the design process for urban space and recycling infrastructure, the researcher is excited to see how the KCDC downtown recycling project moves forward in making changes as it is presented to Kansas City's public and the city's officials.

**Figure 5.3** A Researcher Very Enthusiastic About Working With Students (Santoro 2016)







# APPENDICES | 06

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# IMAGE CITATIONS

All figures and tables are by author, except for the following listed in this section. Parental consent was given to author for children shown in photographs.

**Figure 2.1** KCDC Downtown Recycling Project's Vision, Mission, and Goals  
KCDC 2015, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 2.2** Vision Framework for Downtown Recycling Project  
KCDC 2015, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 3.1** Inventory of Downtown Loop Waste Infrastructure and KC's Diversion Rate  
KCDC 2015, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.1** Crossroads Academy Students Playing in Urban Environment at Barney Allis Plaza  
Crossroads Academy of Kansas City. 2016. "Pillars & Principles." Crossroads Academy of Kansas City. Accessed March 17. <http://crossroadsacademykc.org/about/pillars-principles/>.

**Figure 4.7** Narrowing of Links Strategy for Design Development  
KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.8** Process from Research and Analysis to Programming and Design  
KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.10** Bin and Bench Configuration Out of Recyclable Materials  
KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.11** Standardization of Infrastructure Zones

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.12** Links Spatial Movement Diagram

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.13** Prototypical Kit of Parts for Standard Strategy

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.15** Prototypical Kit of Parts for Connecting Strategy

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.16** Prototypical Placement and Kit of Parts for Maintaining Strategy

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.18** Prototypical Placement and Kit of Parts for Guiding Strategy

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.20** Prototypical Placement and Kit of Parts for Interrupting Strategy

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.22** Prototypical Placement and Kit of Parts for Slowing Strategy

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.23** Branding Concept of Amount of Recycled Materials

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 4.24** Ground Plane Supergraphics Concepts

KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.

**Figure 5.1** Children's Ideas Impacting Design Development

Santoro and Heermann. 2016. Digital model image of design iterations. Sketchup.

**Figure 5.2** Strategies Coming Together to Address Main Dilemmas

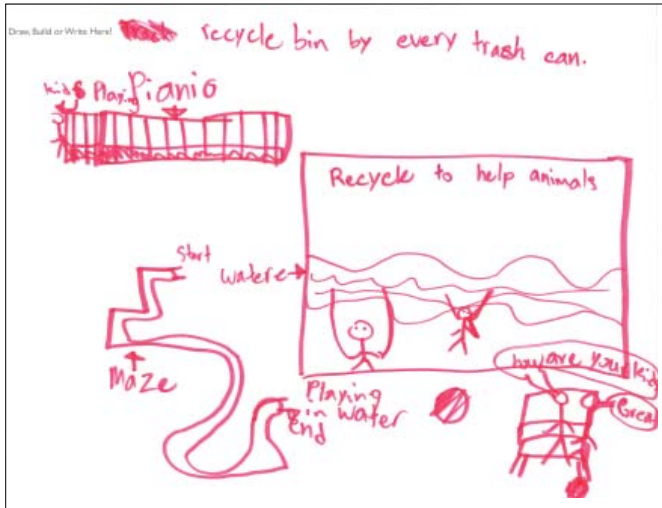
KCDC 2016, Amanda Santoro, Andrew Rostek, Halima Shehu, Jeremy Knoll, Joel Savage, Jazmin Perez-Flores, et al. 2015-2016. [Re]considered. Edited by Vladimir Krstic, Jason Brody, and Sarah Kraly. KCDC.





# APPENDIX A

## CHARRETTE - MARCH 8TH



Student 1 - 1st idea "There should be a recycle bin by every trash can. Activity is like a small river for toddlers to play in water with rubber ducks and the parents have a bench (another kid interrupted with adding a charging station). There's a sign saying recycle to help animals that represents the duck."

2nd Idea - "This one is a maze. If you find all the recycling bins...you'd have to search and there would be a clue to find the next recycling bin. But then you put the clue back for others. At the end their would be a reward. For the parents it would be like a whole bag of cleaning supplies, but for the kids it could be like paint or tattoos."

3rd Idea - "There's a playground with a rope, a slide, a music thing for different age groups, also like a monkey bar zip line. And these are recycling bins with bench beside it and a water feature. Also bins would have landfill, compost, and recycling slots." "This is basically a laser tag for the whole family and there's two recycling bins at each end. You get a ticket if you donate at least three recyclables or more."

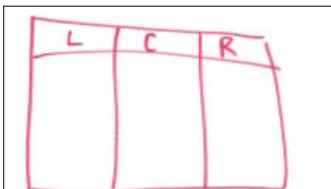
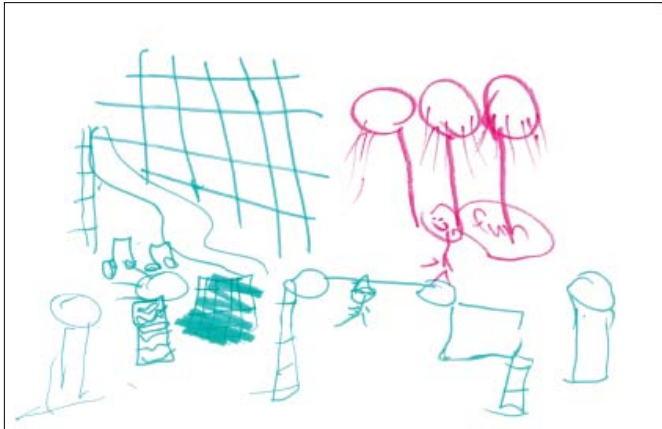
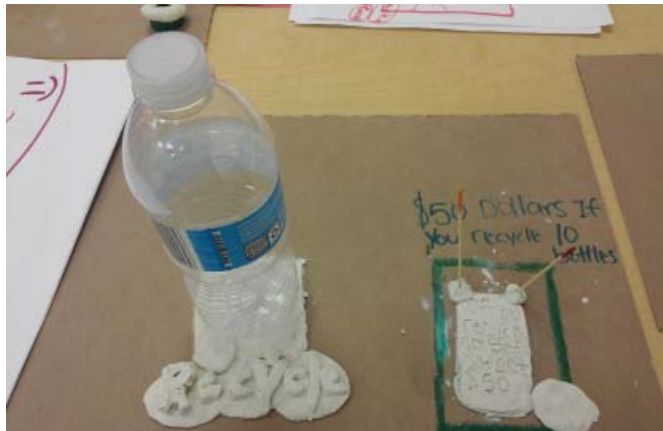
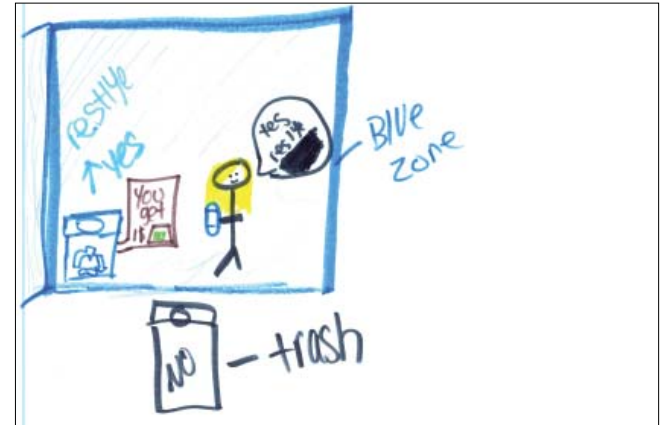


Figure 6.1 Student 1 Concept (Santoro 2016)

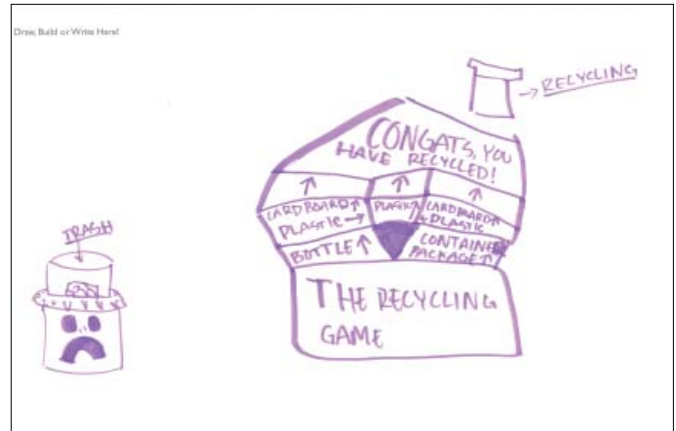
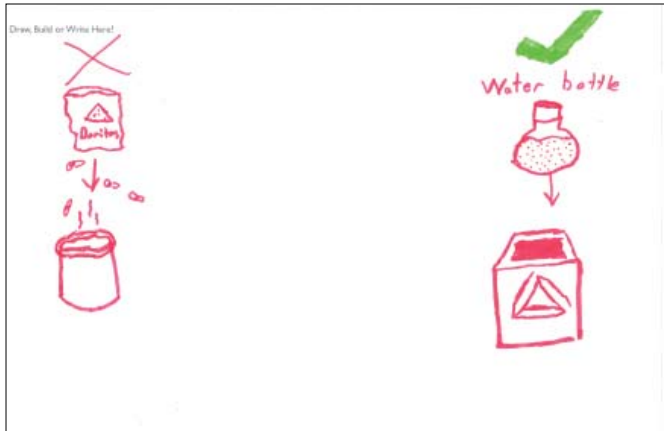


Student 2 - "Made this artwork that if you put in ten or more bottles into the recycle bin then you get \$50. My second idea was that if you recycle bottles or cans you get a ticket to your favorite movie."

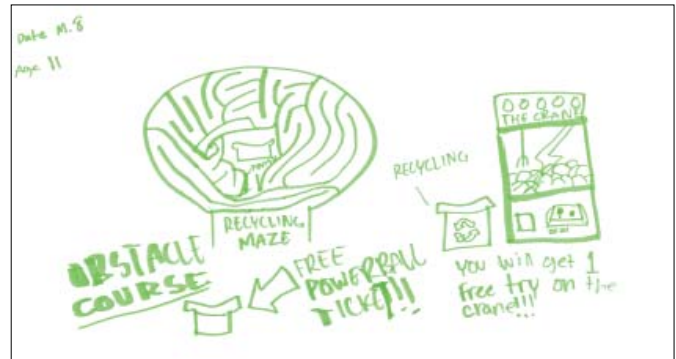
Student 3 - "Mine was like a building where if you have recycle stuff you go in and put your recycling in it. And once you come back out there would be a machine where you say how much you recycled and you get a dollar."

Figure 6.2 Student 2 Concept (Santoro 2016)

Figure 6.3 Student 3 Concept (Santoro 2016)



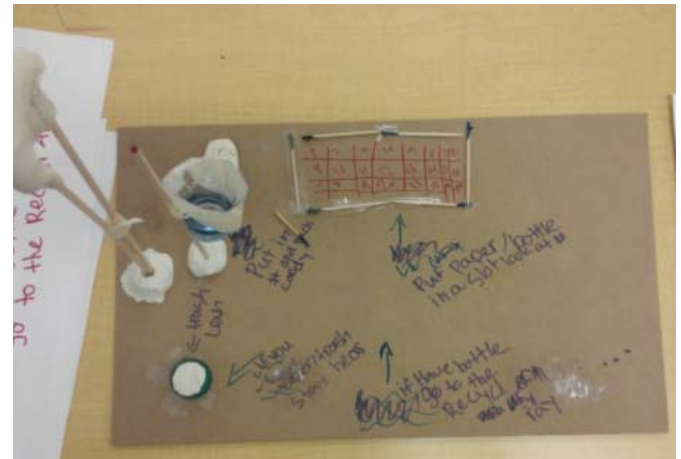
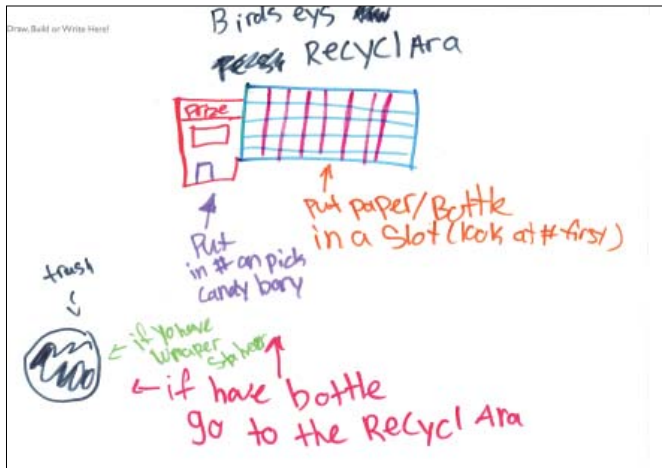
Student 4 - "The water bottle in the recycling bin would be good, but the Doritos in the trash can would be bad because there's more trash bins in Kansas City than recycling bins. My design is of a robot eating a water bottle to recycle it."



Student 5 - "I drew one that was a maze and one would be an obstacle course. One would be you get a free Powerball ticket if you gave like 5 or 10 bottles and then if you give more recycling you get more tickets which you could use for a crane machine thing (claw machine). My other one was a dichotomous key for the recycling game where if you had a bottle you would go here and if you had a package or wrapper you would go here or if it was cardboard you would go here. Then it would say congratulations you have recycled!"

Figure 6.4 Student 4 Concept (Santoro 2016)

Figure 6.5 Student 5 Concept (Santoro 2016)



Student 6 - "So basically you have a trash can and you're looking around for hey what can I use to throw this away. So you see the trash can right, if you look down you see if you have a bottle go to the recycling rig or if you have a wrapper or trash stay here. So you would walk up here and it says put your paper or bottle look at number it matches so you could get your prize later. And then put in number and pick a candy bar. You get to pick one you like. Another idea is a basketball hoop with a recycling bin, but if you aren't really good at basketball then there would be a tall backboard or it's just on a wall. And in it if you don't make it is still a recycling bin that way if you don't make it you are still recycling. The whole game is going to be the bin."

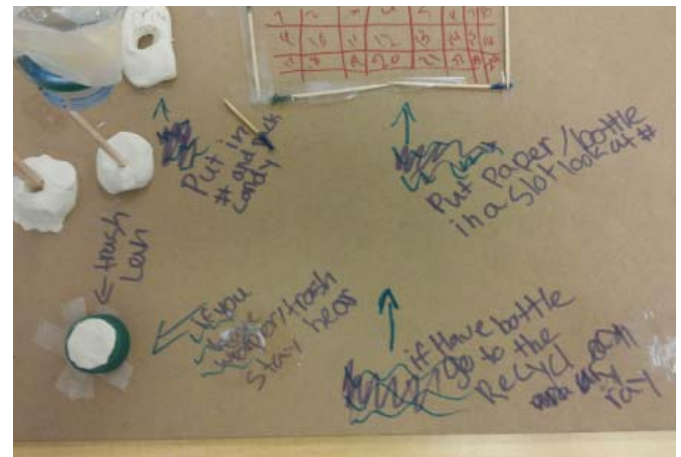
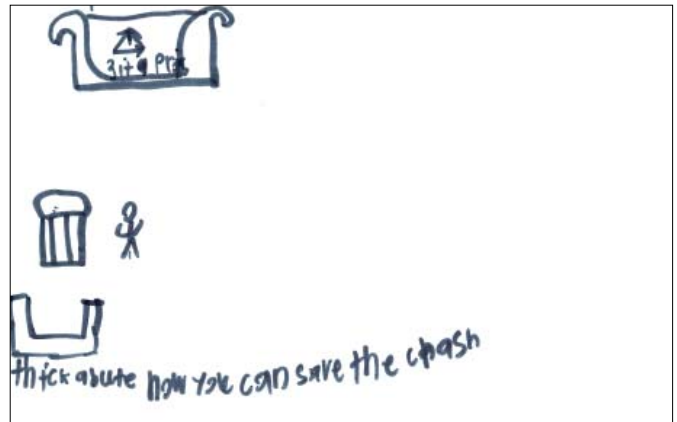
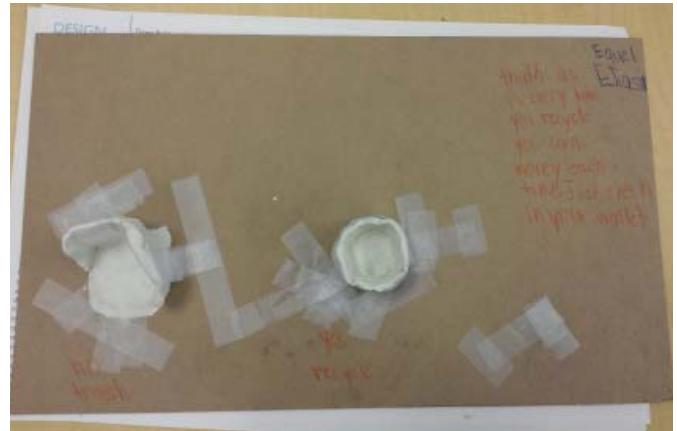


Figure 6.6 Student 6 Concept (Santoro 2016)

# CHARRETTE - MARCH 21ST

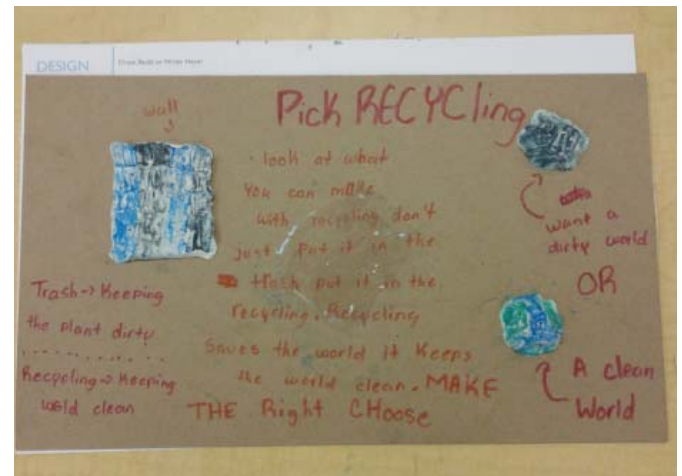
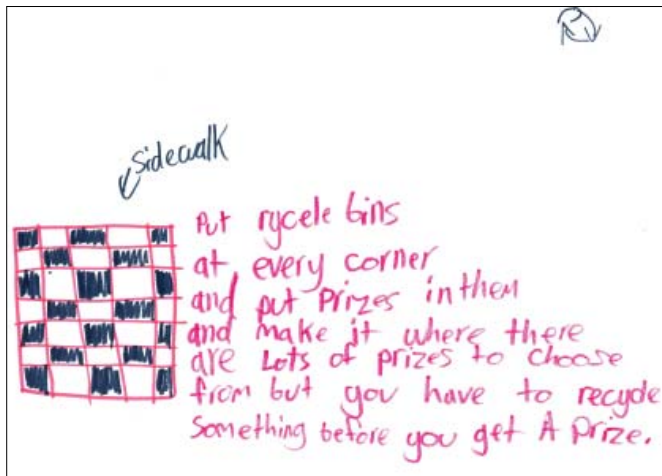
## Additional Recycling Ideas During Charrette

- Free trip or tickets to somewhere like Hollywood
- Battle game - Spiky dangerous trash and recycling is good
- Put recycling bin in front of a trash can
- A magnet that draws in recycling if they didn't want to put in the correct bin.
- Trash truck gets to the place, dump all the trash in one area, and see if there is recyclables.
- Recycling bowling alley that if you make a strike you get entered into winning a ticket to Hollywood
- Meet their favorite superstar



Student 7 - " I made a recycling bin with a trash can under the recycling bin. It says yes recycle and no trash. I wrote a note that says think as if every time you recycle, you can earn money each time just checking your wallet. (Save money by recycling). I drew something that says follow the line that leads you to the recycle bin and I drew a car with someone throwing something out of it."

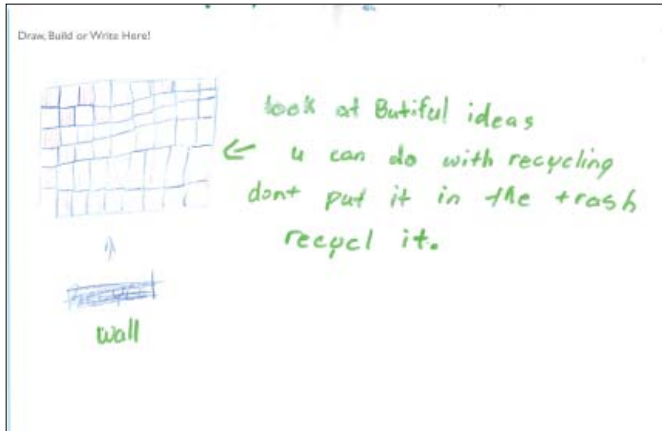
**Figure 6.7 Student 7 Concept** (Santoro 2016)



Student 8 - "What I did was make a wall like of creations of recycling or trash. Then I have a little note next to it saying look what you can make with recycling, don't just put it in the trash, put it in the recycling. Recycling saves the world, it keeps the world clean, make the right choice. Then here's a the world with a sign saying trash keeping the planet dirty, recycling keeping the world clean. Do you want a world that's dirty or do you want a world that's clean?"

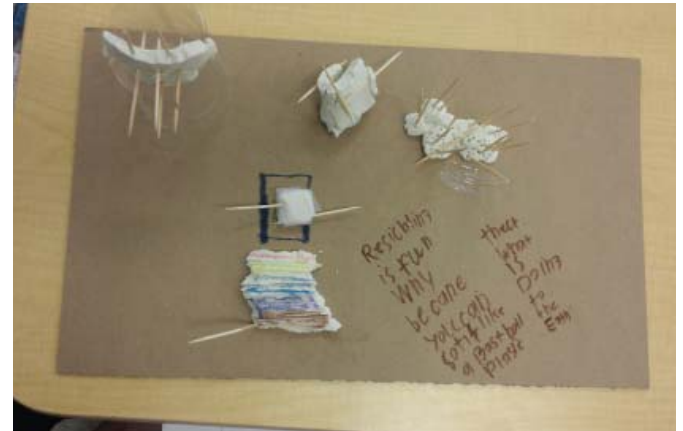
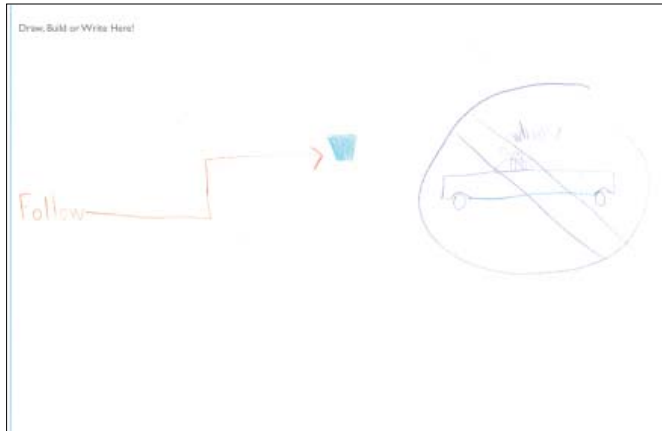
Drawing - "Kinda drew the same wall thing. It's a wall made out of trash people threw away but its supposed to be recycling"

Figure 6.8 Student 8 Concept (Santoro 2016)



Student 9 - "I made two worlds, one that is dirty with trash and one that is recycling. On the recycling world, if you recycle one thing, you get a free trip to Florida or California or wherever you want. I put an X the other world because we don't want that. Over here, I made a game, and you have to play this game if you want 20 dollars. There's three people and there's points and you have a 1,000 pieces of trash and recycling all mixed up together and you have to recycle 100 of them to win \$20."

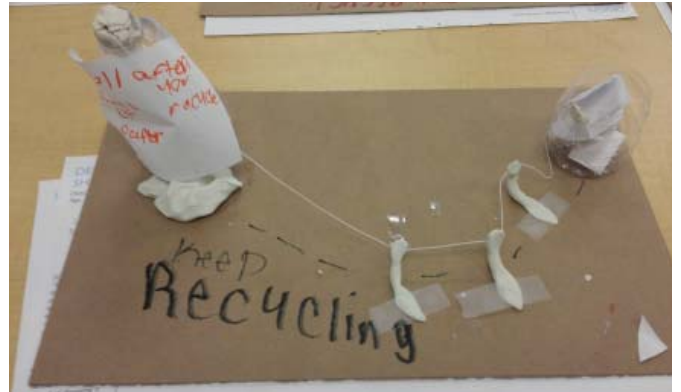
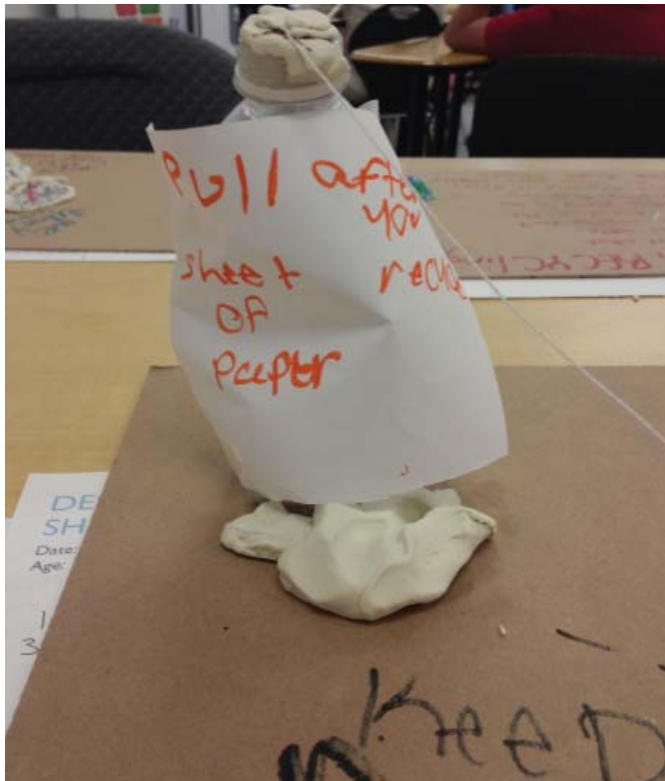
Figure 6.9 Student 9 Concept (Santoro 2016)



Student 10 - "My idea is we can do something fun to make people recycle like a game and then they recycle. Another thing is the trash people can look through the trash and see if there is anything to recycle and recycle themselves. If you don't recycle think what you're doing to the Earth. This one is like recycling is better than throwing away trash. They are basically going to war because recycling is losing right now and trash is winning. We can do a prize for people that recycle and people have their own bins. There's all types of prizes and it's like stuck to your floor and in your house. And you have to recycle 100 things and then you get a prize."

Figure 6.10 Student 10 Concept (Santoro 2016)





Student 11 - "This is supposed to be a recycling bin with candies at the bottom of it, so once you recycle you get a piece of candy. And then you read the back and walk along the fence and it says pull a sheet of paper after you recycle. The paper says you have won a trip to Hollywood. With a sign saying Keep Recycling. What I drew was a house and a sidewalk and a recycling bin that says recycling for candy."

Figure 6.11 Student 11 Concept (Santoro 2016)

# CODING OF STUDENTS

Who recycles at home?

- 1 - yes
- 2 - no

Where do you live?

- 3 - single-family house
- 4 - multi-family apartment

Demographic

- girl or boy
- age

# APPENDIX B

## Precedent Images Shown to Children



Project: The Stromer in Sandnes Sentrum, Norway by Stig Skjelvik and Snohetta Architects

Jorge Chapa. 2008. "The Interactive Dobpler LED Wall Turns Shadows Into Light." Inhabitat. Accessed February 15. <http://inhabitat.com/dobpler-interactive-led-wall/>.



Project: Interactive in Los Angeles, California by Electroland  
Electroland. 2006. "Interactive." Electroland. Accessed February 13. <http://www.electroland.net/>.



Project: Digital Storefront in San Francisco

Lindsey Thomas. 2013. "New Digital Storefronts in San Francisco." Westfield Labs. Accessed February 15. <http://www.westfieldlabs.com/blog/new-digital-storefronts-in-san-francisco>.



Project: Digital Storefront in San Francisco

Lindsey Thomas. 2013. "New Digital Storefronts in San Francisco." Westfield Labs. Accessed February 15. <http://www.westfieldlabs.com/blog/new-digital-storefronts-in-san-francisco>.



Project: Color Jam in Chicago, Illinois by Jessica Stockholder  
 Jessica Stockholder. 2012. "Color Jam." Jessica Stockholder. Accessed February 15. <http://jessicastockholder.info/projects/art/color-jam/>.



Project: 25 Green Points in Temuco, Chile by Triciclos and Gonzalo Munoz  
 "Triciclos." 2014. Full Runners. Accessed February 15. <http://fullrunners.com/tag/embajadores/>.



Project: Tidy Street in Brighton, UK  
 Bird, J, and Rogers, Y. 2011. "The Tidy Street Project | Flowing City, Urban Data Visualizations of the City." Flowing City. Accessed February 13. <http://flowingcity.com/visualization/the-tidy-street-project/>.



Project: Recycled Tetris in Argentina by Designo Patagonia  
 Lindsey Thomas. 2013. "New Digital Storefronts in San Francisco." Westfield Labs. Accessed February 15. <http://www.westfieldlabs.com/blog/new-digital-storefronts-in-san-francisco>.



Project: IMPULSE in Place des Arts, Montreal, QC, by Lateral Office

Lateral Office. 2016. "IMPULSE." Lateral Office. Accessed February 13. <http://lateraloffice.com/filter/work/IMPULSE-2015-16>.



Project: 21 Balancoires (21 Swings) in Montreal, QC by Daily Tous Les Jours

"21 Balancoires | Daily Tous Les Jours." 2016. Accessed February 15. <http://www.dailytouslesjours.com/project/21-balancoires/>.



Project: Play with Trash in Lucerne, Switzerland by the City of Lucerne

Tina Roth Eisenberg. 2011. "Play with Trash." Swissmiss. Accessed February 15. <http://www.swiss-miss.com/2011/06/play-with-trash.html>.



Project: The Pool in Montreal, QC, by Nippaysage

"NIPPaysage | Emilie-Gamelin." 2016. Accessed February 13. <http://nippaysage.ca/en/emilie-gamelin.html>.



Project: City Museum in St. Louis, Missouri  
 St. Louis City Museum. 2015. "City Museum." City Museum. Accessed February 13. <http://www.citymuseum.org/>.



Project: Linnenbauer Plaza in Herford, Germany, by Ramboll Group and Herbert Dreiseitl  
 Ramboll Group. 2008. "Linnenbauer Plaza." Ramboll. <http://www.ramboll.com/projects/germany/linnenbauer-plaza>.



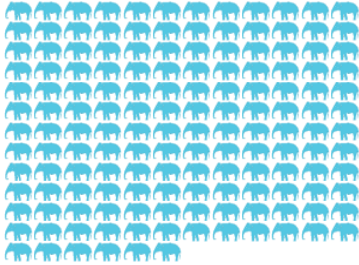
Project: On a Fence in Manhattan, NY, by Chat Travieso  
 Chat Travieso. 2013. "On a Fence." Chat Travieso. Accessed February 15. <http://www.chattravieso.com/index.php?architecture/on-a-fence/>.



# Charrette Handouts

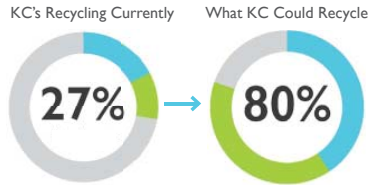
## KANSAS CITY RECYCLING FACTS

108,649 tons of waste produced in KC homes!  
That's like 15,521 elephants



150 x 100

Of that only 27% is recycled even though  
almost 80% of it could be recycled!



Less than 3% of bins in the public space are for recycling in the downtown loop  
(270 trash bins and 8 recycling bins total)



**ISSUE:** Lack of access leads to a lack of participation and there is nothing to encourage people to recycle in Kansas City's public space.

## SCENARIO



“Say you’re walking down the street drinking some soda from a can or water from a plastic bottle. You finish it and start to look around on where to toss it. You see a trash can a few feet ahead. Now what would make you go over here and recycle that instead of throwing it away? How can you distract someone from throwing the can into the trash can? It can be anything from something on the ground to an object/contraption that moves, maybe you get something back from it; anything you can dream up.”



## DESIGN SHEET

Date:

Age:

### SCENARIO:

"Say you're walking down the street drinking some soda from a can or water from a plastic bottle.

You finish it and start to look around on where to toss it. You see a trash can a few feet ahead.

Now what would make you go over here and recycle that instead of throwing it away? How can you distract someone from throwing the can into the trash can? It can be anything from something on the ground to an object/contraption that moves, maybe you get something back from it; anything you can dream up."

Draw, Build or Write Here!

