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The Healing Properties of Interactive Art: Creating a Proposal for Art within a Hospital Environment

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The Healing Properties of Interactive Art:
Creating a Proposal for Art within a Hospital Environment

University Honors Program Thesis Project

University of Nebraska at Omaha

Submitted by

Alexandra Chase

Spring 2020

Mentors: Prof. David Helm, Dr. Adrian Duran

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UNIVERSITY OF NEBRASKA AT OMAHAHONORS THESIS/CAPSTONE ABSTRACT

PROGRAM: UNIVERSITY HONORS

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UNIVERSITY OF NEBRASKA AT OMAHA

OMAHA, NE 68182

TELEPHONE: (402) 554-2696

UNIVERSITY: YES

STATE: YES

PROGRAM SIZE: 450+

THESIS: REQUIRED

THESIS ISSUED: PROGRAM

ABSTRACT OF THESIS:

The consumption of art and interaction with it can be beneficial to individuals in many different ways. Play and exploration engage the mind and can have positive effects, no matter how small. Within a medical setting, this type of interactive art can promote healing within patients by engaging their bodies and minds. With these ideas in mind, the Children's Hospital and Medical Center (CHMC) put out a call for an interactive sculpture piece to be created for their upcoming building expansion. My piece, *Garden Lanterns*, was then conceptualized in

order to fulfill their requirements and embrace the idea of providing positive interactive art for the patients and visitors of CHMC.

Garden Lanterns is an interactive sculpture piece designed to fill the space with a geometric and gently curving spread of stems, vines, and flowers. Within each of the flowers is a motion sensor that is activated by close movement. Each flower sensor triggers a different color of light to be projected briefly upon the wall directly above the sculpture. This type of interaction will spark creativity and interest within participants while also not requiring any direct contact with the sculpture. By introducing an engaging piece that is easy for almost anyone to interact with, patients can take a step toward healing.

Introduction

Art, in all forms, enriches the lives and experiences of almost everyone in some way. For myself, I gain fulfillment both from creating art and experiencing it. It is a hobby, a pastime, a great source of enjoyment, and may someday be a full time career for me. However, exposure to art has the potential to be so much more impactful for society as a whole when utilized within specific environments and for certain audiences. Art has the potential to heal people both mentally and physically, and this goal has caused the field of healing arts to emerge. Healing arts can be defined as creative practices and experiences that promote healing, wellness, and positive personal change (“What Are the Healing Arts?”). The benefits of exposing patients to the arts have become more apparent over the last couple of decades, and as of 2014, nearly 50% of all U.S. healthcare institutions reported the inclusion of the arts within their healthcare programming. This includes the incorporation of visual art into hospital settings, art therapy, music therapy, and more (Masterson & Leigh, 2014). The Omaha Children’s Hospital and Medical Center (CHMC) is one such institution. Projected to be completed in 2021, CHMC is currently working on an addition to their campus, the Hubbard Center for Children, and they sent out a call to artists to submit designs for artistic work to be placed within this new space. One of these desired pieces is to be an interactive sculpture, and I saw this as an excellent opportunity to not only learn more about the professional submission process but to help provide future patients and visitors an fun, interactive, and healing experience within this space. My piece entitled *Garden Lanterns* is the design yielded from this endeavor.

History and Research

The integration of art within hospital environments can be traced back all the way to the first established hospitals in history. These hospitals from centuries ago mainly focused on displaying religious imagery in order to engage the minds and spirits of the patients, and while the type of art that is typically displayed within modern day hospitals is much different, the ideals of wanting to comfort and promote healing within patients is the same (Nielsen et. al, 2017). Clearly, it has for a long time been intuitive to make a connection between exposure to art and benefit to patients, but the newly developed field of the healing arts has shifted to a more modern focus of trying to learn exactly how art may affect the pain, stress, anxiety, and healing process of patients. As new studies and research emerge that demonstrate the positive impact that art plays within healthcare environments, a demand for artistic programs and art installations within hospitals has been growing quickly.

The inclusion of the arts within medicine was established as a field during the 1990s, and since then, many studies have emerged that display the correlation between the inclusion of humanities in medicine and the medical wellbeing of patients. Studies since this time have shown that exposure to the arts improves the health and conditions of patients with dementia, asthma, hematological malignancies, and multiple other ailments. Patients have also reported increases in both physical and mental well-being after having participated in hospital art programs (Soler-Adillon, 2015). Art therapy has been proven to increase the body's levels of cortisol and serotonin, two hormones that are directly related to one's well-being. These are the same hormones that are released by exercise; however, for many patients, this level of exercise isn't feasible, so having access to other experiences that can provide this benefit is helpful

(Kelly, 2018). Visual art has been found to have a strong and positive physiological effect on the brain, and this then translates to benefits to the healing body as well.

No one is claiming that exposure to art will suddenly cause the ill to be healthy or cause any drastic changes, but these experiences act as a way to gradually benefit patients and enhance their hospital stays and times of healing. The program director for the Mayo Clinic Center for Humanities in Medicine, Johanna Rian, expresses this well in the following quote: “Can art replace medicine? No. Can it enhance it? Absolutely.” (Soler-Adillon, 2015). For some patients, the presence of art and artistic spaces can simply act as an incentive for them to take a walk down the hall or as a means of distracting themselves from their current situation or surroundings. Offering some form of relief, a break from the typical sterile conditions of a hospital setting, can be hugely beneficial in lifting the spirits of patients. The presence of art goes beyond being purely decorative and instead becomes part of the hospital's model of care (“The Healing Power of Art,” 2014).

A study conducted in 2017 showed that the presence of art within hospitals contributed to the creation of an environment where patients felt that their connections to the outside world and their own identities was maintained. By improving patient happiness and satisfaction in this way, their overall health outcomes were also improved (Nielsen et. al, 2017). A separate study found that the prolonged exposure of hospital patients to art during their stays influenced their experiences of safety, comfort, time, and identity; this was true even when the art only occupied the background during their hospital stays (Nielsen et. al, 2017). While the outcomes of studies such as these are extremely promising, it is difficult to truly empirically measure the impact that exposure to art has on patients due to the indirect nature of experiencing art; however, the

generalized positive discoveries found as a result of the presence of art within hospital settings has led to a higher value being placed upon the healing arts in institutions around the world (Masterson & Leigh, 2014).

The Growth of Healing Arts Programs

Over the last few decades, the conscious inclusion of visual art for the sake of healing and healing arts programs within healthcare institutions has greatly increased. The growing body of studies and anecdotal evidence that support the notion of healing through art has driven this push forward. Additionally, art installations and spaces are relatively low cost to implement (compared to most other types of costs found within hospital settings), thus, if they are found to be beneficial in the way that the hospital intends, these artistic resources may lead to cost savings (Masterson & Leigh, 2014). However, despite this comparatively low cost investment, many institutions are still hesitant to invest in the healing arts. Even with supportive research, many people still perceive art as non-essential and are sceptical about allocating funding to be put toward these types of projects (“The Healing Power of Art,” 2014). This enduring hesitance to support artistic endeavors within healthcare environments further emphasizes the need for compelling research and for influential institutions to take the first steps toward progress in the healing arts. The Mayo Clinic, a famous healthcare organization, currently offers a large array of programs for patients that involve visual arts, music, and creative writing (Soler-Adillon, 2015).

Another example of this step forward is found at the San Diego Children’s Hospital where their Healing Environment Committee has developed an arts program that includes several interactive art installations that are placed in public spaces such as waiting areas. This program was in place over two decades ago and still received excellent feedback from patients and

visitors during that time (Ridenour, 1998). This type of feedback is crucial in the development of arts programming within hospitals. Since the results of exposure to art are so difficult to scientifically quantify, the positive feedback from patients, visitors, and staff that have experienced the benefits of this artistic enrichment have helped move hospital healing arts programs forward.

During recent years, some hospitals have worked to gain the ability to prescribe museum visits and artistic classes and workshops as treatment options for patients. When deemed appropriate, these are prescribed in tandem with other necessary treatments, depending on the ailments of the patient. Starting at the end of 2018, specific physicians in Montreal were given the ability to send patients to the Montreal Museum of Fine Arts as a prescribed treatment. This prescription would allow the patient (as well as caregivers/direct family) a free trip to the museum in order to experience the art (Kelly, 2018). The museum has been working with the Montreal medical community for twenty years before reaching this point, and opportunities to try new treatment options like prescriptive trips to the museum require the participation of both the medical and artistic communities in order to operate smoothly. While this is only occurring within the specific community of Montreal, the results should help inform and influence other communities considering these types of treatments in the future (Kelly, 2018). Should these artistic/social prescriptions prove to be effective, innovations in this area could lead to the saving of time and money when it comes to treating specific ailments.

Benefits of Interactivity in Art

The benefits found in patients who have been exposed to art and artistic activities during their hospital stays stem from the experience that they receive from these resources. By

incorporating interactivity within these hospital art installations, these experiences can be made even more impactful and personal. This is especially true for patients and visitors that are children, the primary audience for the artwork to be placed within the new Omaha Children's Hospital and Medical Center expansion.

When making interactive art, the interactivity and audience participation are just as, if not more, important than the materials and aesthetics of the piece. The intangible, behavioral aspect of interactive artwork is what differentiates it from other art. The experience of interaction rather than just observation is the defining characteristic of such work (Soler-Adillon, 2015). For children, play is the most natural method of combating the tensions and stresses of their daily lives, and children that are patients within a hospital are in even more need of this relief (Crenshaw). Within such stressful settings, this type of engagement can be encouraged by the presence of interactive art that allows patients to reconnect with the delight and discovery that are an important part of natural childhood experiences. By allowing them to recover a sense of normalcy through play and interaction, they may be able to distract themselves from their identity as a "sick child" and, instead, feel like every other kid (Ridenour, 1998).

The intention of interactive art is to present an experience that will relate to participants and/or visitors in a meaningful way. An effective piece will intuitively teach the interactors (those engaging with the piece) how to relate to the piece and receive the intended experience; it will also accommodate for many different types of viewer, but in the case of my piece intended for display within CHMC, the most important audience consists of the child patients, so it is crucial that they are able to effectively interact with the art and experience the desired effect (Soler-Adillon, 2015). Interactive art is also meant to provoke exploration and creative behavior,

both of which encourage play and movement. This is in addition to the positive benefits of viewing art and experiencing it from a distance. By incorporating an interactive element that is able to interest participants and engage them within the artistic experience, the healing benefits are amplified (Soler-Adillon, 2015).

Application and Proposal Creation

The call for art released by the Omaha Children's Hospital and Medical Center Art Curation Initiative had many requirements for their interactive sculpture proposals that align closely to the previously described findings. The desired piece was medium or large in scale and is an interactive sculpture meant to occupy a large, public space. The piece was also meant to encourage play and learning with interactive elements such as moving parts, sound, light, etc. Additionally, since the piece was meant to be placed within a child-friendly, hospital environment, it needed to be durable and safe for all audiences. All of these guidelines were put in place with the acknowledgment of the fact that patients are likely to be more satisfied and experience better health outcomes when exposed to hospital spaces that are welcoming, aesthetically pleasing, and enriched through the use of art. My proposed piece, *Garden Lanterns*, was constructed with all of these guidelines in place and with the hope that my work could make a positive difference in the lives of patients.

The application for consideration included the following requirements: An artist resume, three professional references, a statement of interest, images of completed artwork by the artist, optional imagery intended to render and explain the concept of the proposed work, a proposed budget, a timeline of creation, a description of the piece's durability and required maintenance, and any partners/installers/fabricators that would also be working on the piece. My proposal and

all of these requirements can be found within the section entitled “Proposal - *Garden Lanterns*.” Some information has been omitted due to containing personal or irrelevant information for the purposes of this paper.

Garden Lanterns consists of curved, metal stem-like forms that extend across the wall. Throughout this vine structure are moulded, resin flowers in a variety of colors that contain proximity motion sensors. Each sensor corresponds to a colored light positioned near the wall that, upon activation, lights up for a short period of time. Since each flower activates a different location and color of light through motion, this creates the potential for many different color and light possibilities. The aesthetic form of the piece is simple so as to fit the clean and modern space appropriately, but the bright flowers and smooth sprawling of stems draws attention and will make children curious about interacting with the motion sensors. I believe that the choice to use motion sensors rather than other forms of interaction is an added benefit within a hospital setting, as a lack of touch requirements makes the piece more sanitary and safe for patients. Additionally, all of the structures are able to be easily cleaned and are durable so as to be able to survive all of the chaos that comes with the interactions and activity of children.

My hope when creating *Garden Lanterns* was to create a piece that could be experienced and enjoyed by all patients and visitors at CHMC. The placement of motion sensors across the wall and at various heights allows for interaction from children who want to run in order to activate all the sensors as well as immobile patients that may be able to only interact with one component at a time. Additionally, the large spread of the piece and the sensors allows for many people to interact with the piece at once. Children can be impatient or jealous when others are able to play while they cannot, so having the ability for many patients to participate is important.

Lastly, the beauty and wonder that can be produced through the activation of many colored lights that appear to light up out of nowhere is able to engage the imagination of the patients, making *Garden Lanterns* an interactive piece that both functions in the way that interactive art is meant to when engaging audiences and is appropriate for a children's hospital setting.

Conclusion

As more research and studies emerge that display the benefits that exposure to art has for patients within healthcare environments, the next step is to further increase access to interactive art pieces and spaces. Access to visual art and forms of art therapy has been proven to provide more positive health outcomes and hospital experiences for patients. Interactive art has been proven to further engage viewers and encourage play, exploration, and the use of imagination. By providing access to interactive art experiences, whether that be interactive artwork, art therapy, or art creation workshops, the benefits that can be offered to patients have the potential to increase. In recent years, hospitals have been more widely recognizing these types of benefits and have been introducing art programming within their environments. The Omaha Children's Hospital and Medical Center is one such institution and is taking steps forward for the sake of their patients by making an effort to include art within their new Hubbard Center for Children. By calling for art of many forms, including interactive sculpture and others such as paintings, photography, mobile sculptures, etc., they are acting as an example to other institutions and appropriately placing value on the good that such emphasis on art can bring.

I am honored to have been able to create and submit my proposal for *Garden Lanterns* as a piece that could potentially help patients have a better experience during their stays at CHMC. Interactive art is especially important for this environment due to the fact that the patients are

children. Regardless of health, children need the opportunity to maintain an aspect of play and wonder during their childhoods. Art that allows them to experience these feelings is an excellent investment for a healthcare environment, and I hope that whichever pieces are chosen, regardless of whether or not *Garden Lanterns* is one of them, are able to provide these healthcare benefits and childhood experiences that CHMC's patients deserve.

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What Are the Healing Arts? (n.d.). Retrieved April 7, 2020, from <https://www.montefiore.org/healingarts-what-are-the-healing-arts>

Proposal - *Garden Lanterns*

» Resume

[Omitted due to containing personal information]

» Professional References

[Omitted due to containing personal information]

» Statement of Interest

Garden Lanterns is an interactive sculpture piece designed to fill the space with a geometric and gently curving spread of stems, vines, and flowers situated close to the wall. Within each of the flowers, placed at various heights that will be accommodating to children, will be a motion sensor that is activated by close movement. Each flower sensor will trigger a different color of light to be projected briefly upon the wall directly above the sculpture. This type of interaction will spark wonder in participants while also not requiring any direct contact with the structure. Patients and visitors alike will be able to interact with my piece alone or in a group and will be able to yield a range of color patterns and combinations. The simplified structure and accessible user interaction will provide an engaging experience as well as an aesthetically beautiful piece to fill the space.

Studies show that play and interaction, no matter how little, positively impact the healing process. By introducing an engaging piece that is easy for almost anyone to interact with, patients can take a step toward healing. *Garden Lanterns* will create a location of fun and that makes children want to play and explore. By creating a space for this type of play, children and patients of many levels of ability will be invited to interact. Additionally, the gentle fading in and out of various lights will be aesthetically soothing and create a display that everyone in the space can enjoy.

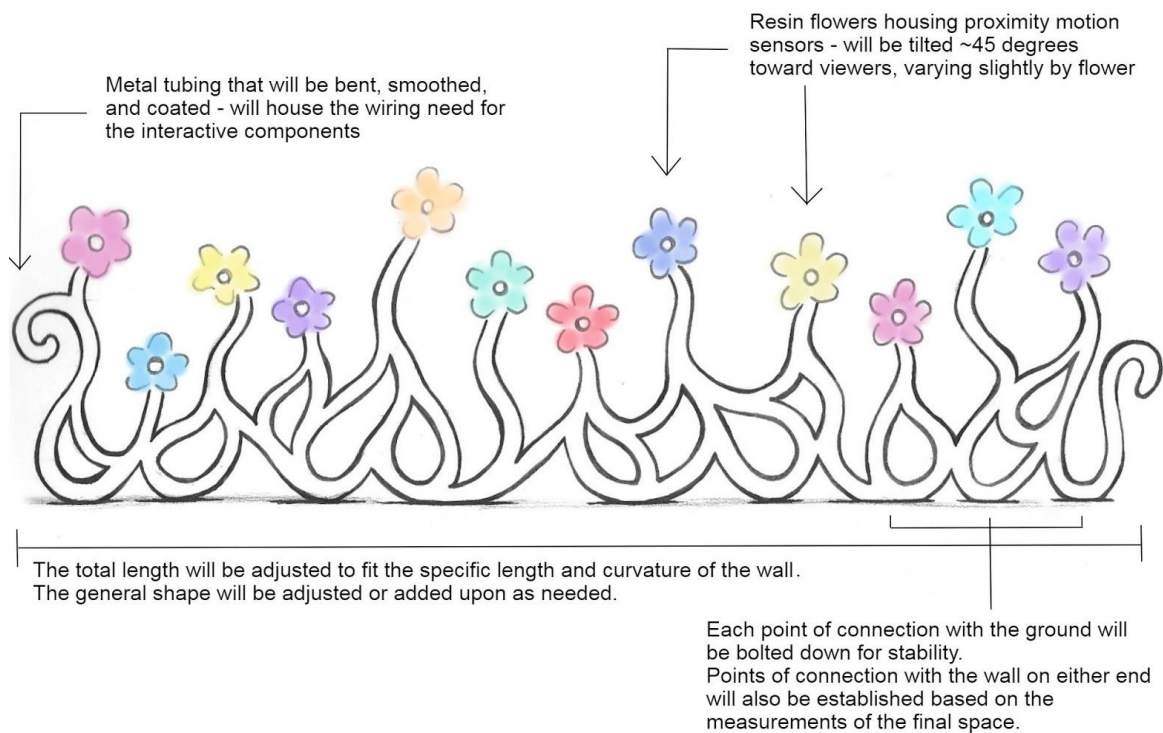
It is crucial that the sculpture fits the environment well. The space is open, bright, and modern, and my piece compliments and enhances these qualities. Gentle, curved figures will comprise the simplified flower, leaf, and stem structures. The simple hardware required to make the sculpture functional (motion sensors, lights, single board computer, and wiring) will all be incorporated within the structure where they will be both hidden and protected from damage. I have experience programming these types of simple interactions and should have no issue applying these skills, along with my artistic experiences, toward getting *Garden Lanterns* up and running. I love being able to create art and objects that bring enjoyment to others, and I look forward to being able to contribute my skills toward this promising project.

» Images

[Omitted due to irrelevancy]

» Optional Imagery/Design

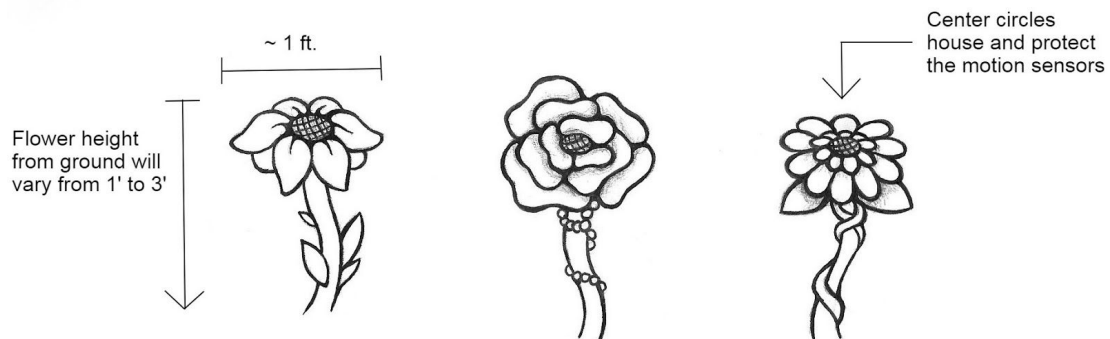
General design *Garden Lanterns* - front view:

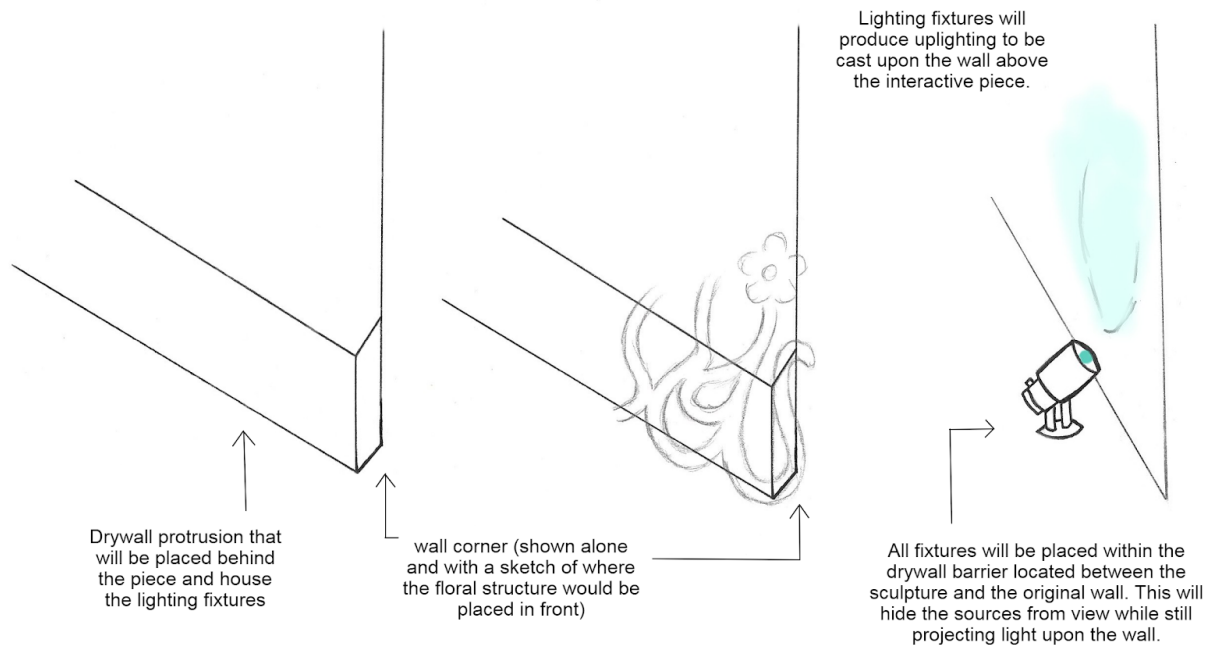


Flower detail:

Three different forms of flowers that will be repeated in various colors, heights, and arrangements

Material: Resin for flowers, petals, and decorative elements
Coated metal for vine and stem structures



Hardware location detail:**Resin pouring information:**

The following are reference images showing what resin sculpture looks like and how it is created. The flowers to be made from resin will be custom sculpted and moulded in order to create resin duplicates in a variety of colors.

Once cast into the desired shape, resin hardens into a durable, plastic material. It can be easily cleaned, as it has a smooth surface without sharp edges that does not easily erode.

Examples of objects being sold in stores that are cast from resin:

[Omitted to avoid copyright complications]

Diagram of the mold technique used to produce resin casts:

[Omitted to avoid copyright complications]

Example of resin before being solidified within a mold:

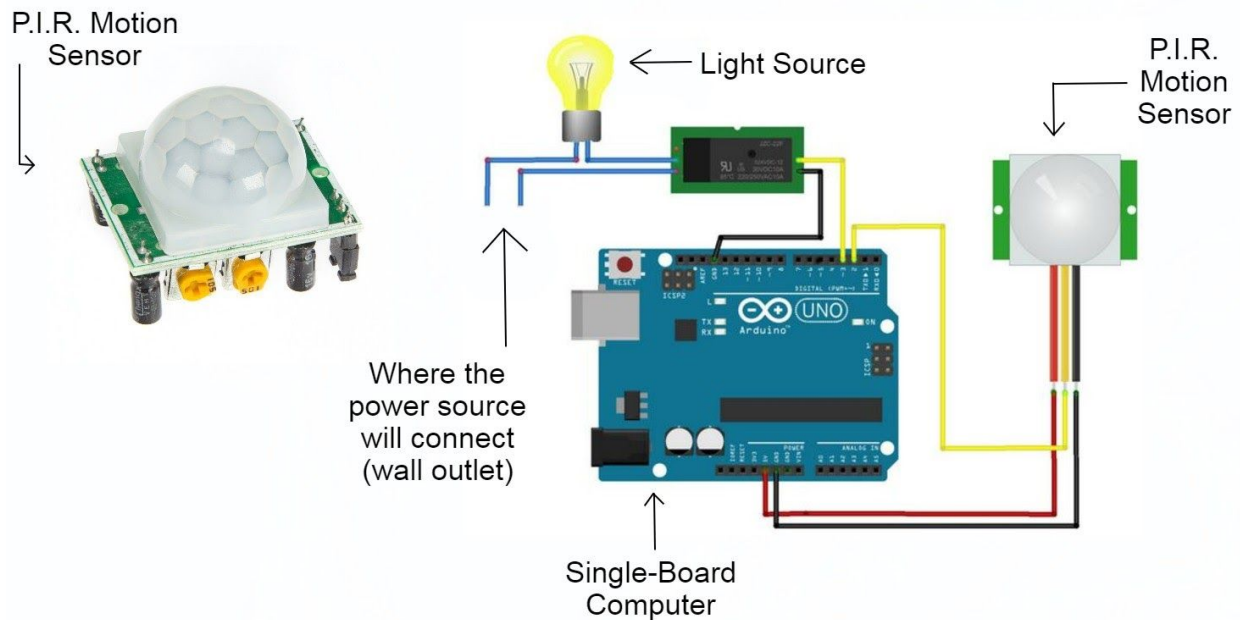
[Omitted to avoid copyright complications]

Hardware additional information:

The sensors located within the flowers will be proximity motion sensors known as passive infrared (P.I.R) sensors. They are able to detect motion within a range of proximity determined by the programmer. This makes it so the lights will not be constantly triggered by motion that may be far away or on the other side of the room.

These sensors will be connected to the microprocessor (single-board computer) and lights through wiring that will be housed within the metal stem structures. The activation of a sensor will be programmed to trigger a light to turn on for a short duration of time. Each sensor/flower will be connected to a different light, thus making each flower uniquely associated with a single colored light.

Diagram of parts and how they work together:



Example image of the components working together:

[Omitted to avoid copyright complications]

» **Proposed Budget**

- **Materials Expenses** : \$8,000
 - Metal rods and tubing
 - Resin, molding materials
 - Single-board computers (such as Raspberry Pi or Arduino)
 - Proximity motion sensors
 - Lights - uplighting fixtures - 110 Volt
 - Wiring
- **Fabrication Expenses** - \$20,000
 - Resin flower molding and creation - Heartland Scenic Studios
 - Metal vine framework and tubing - Puritan Manufacturing
- **Software Development Expenses** - \$5,000
 - Reliable programming and functionality for the motion sensor interaction
- **Installation Expenses** (transportation, bolting it to floor/wall) - \$1,500

- Transportation
- Bolting to floor and wall
- Setup and testing of the electrical hardware
- **Artist Fee** : \$5,500

Total: \$40,000

» Timeline

1. Design finalization : 1 month
 - Create final outlines and schematics for piece design
 - Consult with partner fabricators to confirm details
 2. Resin and metal structures development : 4 months
 - Work with design fabricators throughout the creation process of resin flower forms and metal vine/base structure
 3. Software and hardware development : 1 month
 - (Note that phases (2) and (3) can occur simultaneously)
 4. Testing period : 1 month
 - Test durability and functionality
 - Make adjustments if necessary
 5. Final installation : 1 week
 - Work with CHMC to facilitate delivery and installation
-
-
-

» Durability, Protection, and Upkeep

Resin and metal, the only two materials that will be exposed/accessible, can be cleaned with normal cleaning products and can be cleaned the same way as any other facilities within the building without deterioration. (The metal will be coated with paint that will seal it and prevent rust/deterioration.) The piece will be sturdy and bolted to the ground. Additionally, all the surfaces will be durable and without any sharp edges, thus allowing it to withstand the bumping and climbing that comes with being placed in a high-traffic space. Even though *Garden Lanterns* is not intended to be touched in order to interact with it, it will be able to withstand the antics of children and other viewers.

Regarding the hardware being used within the piece, LED light bulbs, on average, only need to be replaced every 50,000 hours. Due to the fact that the lights will not be on constantly, they should last for an exceptionally long time. The upkeep would be consistent with the normal hospital upkeep of changing a lightbulb if one happens to go out. All other components will be completely encased and protected from outside damage; they are also being fabricated by professional developers and are, thus, expected to be extremely enduring.

» Partners

- [Manufacturer of child-safe interactive materials: name omitted for privacy]
- [Metal manufacturer: name omitted for privacy]
- I plan to select reliable hardware and software engineers in order to ensure that the technological aspect of *Garden Lanterns* is functional, reliable, and lasting.
- I will be working with multiple professors from the University of Nebraska at Omaha College of Fine Arts and Media that have offered to act as consultants during the design, fabrication, and installation processes.