Implementing Landscape Design Principles to Improve Green Spaces and Promote Ecotherapy on a College Campus

Jessica Hutchinson

University of Maine - Main, sophiefrenchfry@yahoo.com

Follow this and additional works at: https://digitalcommons.library.umaine.edu/honors

Part of the Agriculture Commons, Horticulture Commons, and the Mental and Social Health Commons

Recommended Citation
Hutchinson, Jessica, "Implementing Landscape Design Principles to Improve Green Spaces and Promote Ecotherapy on a College Campus" (2022). Honors College. 742.
https://digitalcommons.library.umaine.edu/honors/742

This Honors Thesis is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Honors College by an authorized administrator of DigitalCommons@UMaine. For more information, please contact um.library.technical.services@maine.edu.
IMPLEMENTING LANDSCAPE DESIGN PRINCIPLES TO IMPROVE GREEN SPACES AND PROMOTE ECOTHERAPY ON A COLLEGE CAMPUS

by

Jessica Hutchinson

A Thesis Submitted in Partial Fulfillment of the Requirements for a Degree with Honors (Environmental Horticulture)

The Honors College

University of Maine

May 2022

Advisory Committee
Dr. Stephanie Burnett, Associate Professor of Horticulture
Charlene Gray, Lecturer in Landscape Design
Dr. Jessica Leahy, Professor of Human Dimensions of Natural Resources
Dr. Jennie Woodard, Assistant Professor of HON and WGS
ABSTRACT

As students in Maine are subject to harsh winters and a disconnectedness due to the pandemic, the creation of an ecotherapy focused garden may benefit the community at the University of Maine. Mental health is a rising concern within the United States, where anxiety has been the most frequent in students at 62.7% from a survey conducted by the Center for Collegiate Mental Health (Son et al., 2020). Ecotherapy is the practice of holistic psychology where healing is derived from interactions with the surrounding ecosystem (Summers and Vivian, 2018). Through literature review and gardening, this creative project provides a green space on campus with the potential to supplement psychological treatments related to mental health. Landscape design principles and horticultural practices were implemented to create a pleasant, interactive space for community. Plants were chosen based on aesthetic value, ecosystem services, and functionality with the space. Community members were invited to participate in gardening, hanging bird seed, and attend a garden tea party to promote awareness and interactions within the area. With assessments of plant health, mortality, therapeutic properties, and functionality, the space will continue to grow to be an inclusive place for all. The improved garden has therapeutic potential using ecosystem services, especially in the context of the pandemic.
ACKNOWLEDGEMENTS

There are many individuals who deserve recognition for their generous contributions to this work. First, thank you to Dr. Stephanie Burnett, who advised this project, taught many of my classes in horticulture, and helped me work in the garden during the summer of 2021. Your incredible patience and support created the foundation for this project. Thank you to the individuals listed above on my thesis committee, as they provided expertise and perspectives that engaged my critical thinking skills, which helped me to become a better investigator, writer, and student. Joshua Young, who communicated with me frequently throughout the summer of 2021, provided many tools, supplies, and aid in the development of the garden. His kindness allowed me to fulfill my dream of enhancing a garden space on campus. Dr. Bryan Peterson, Associate Professor of Environmental Horticulture, and Bradly Libby, superintendent of the Lyle E. Littlefield Ornamentals Trial Garden and Roger Clapp Greenhouses, also provided tools and expertise necessary in executing quality work within the garden. The Honors College program and staff were also quite supportive, as I received funding from the Charlie Slavin Research Fund, as well as support from the Associate Dean, Dr. Melissa Ladenheim, and Honors Associates, Katie Tims and Kelsey Davis. Additional funding was received from the Center for Undergraduate Research and the Barrett Work Merit Fund, which were generous contributions that eased the financial stress that many students face while conducting research. I am extremely appreciative of the individuals and organizations that helped my aspirations come to fruition.
# TABLE OF CONTENTS

Chapter I Discussion ................................................................. 1  
Chapter II Intent of the Project ................................................. 3  
Chapter III Literature Review .................................................. 6  
Chapter IV Methodology ............................................................ 11  
  Site Analysis and Design .......................................................... 11  
  Site analysis and Design Program .............................................. 13  
  Documentation of Permits ......................................................... 19  
  Pre-design Photographs of Site .................................................. 20  
  Design Process ................................................................. 26  
  Design Diagrams ............................................................... 30  
  Plant List .................................................................. 31  
  Promoting Horticultural Therapy ............................................. 34  
Chapter V Critical Analysis ....................................................... 36  
  Execution of Ecotherapy Practices .......................................... 38  
  Photographs of Completed Garden ....................................... 39  
  Recommendation Report for Future Management and Uses ......... 40  
Chapter VI Conclusion ............................................................... 44  
Bibliography ...................................................................... 47  
Authors Biography ................................................................. 49
LIST OF FIGURES

Figure 1. Dig safe permit (left) and excavation permit (right) 19
Figure 2. View of garden from north entrance, May 2021 20
Figure 3. Center of garden containing bench and patio. Crabapple (top), azalea (right), and junipers (undergrowth), May 2021 20
Figure 4. Camperdown elm trunk (center) between white pine (right), blue spruce (center right) and cedar (left), May 2021 20
Figure 5. Bed 1 with tree and shrubs, May 2021 21
Figure 6. Slope behind bed 1 with rocks and weeds. Two unknown shrubs (upper center) will remain, May 2021 21
Figure 7. West facing view of bed 1 from the bench with tree and shrubs to be removed, May 2021 22
Figure 8. Rocky slope behind bed 1 with multiflora rose and weeds, May 2021 22
Figure 9. Crowding between azalea shrub (right) and Chinese juniper (left), May 2021 23
Figure 10. East facing view of garden, May 2021 23
Figure 11. Erosion and foot traffic path between magnolia (left foreground) and cedar (right), May 2021 24
Figure 12. Bare soil and erosion on north side of bed 1 near cedar tree, May 2021 24
Figure 13. Bare soil near common juniper, May 2021 25
Figure 14. Alcove of bed 3 with daffodils (left) and junipers (right), May 2021 25
Figure 15. View of bed 3 from Sebago Rd. with crabapple (center), May 2021 26
Figure 16. Satellite map of garden area

Figure 17. Concept diagram of garden design

Figure 18. Functional diagram of garden design

Figure 19. Bed 1 October 29, 2021

Figure 20. Bed 3 October 29, 2021

Figure 21. North perspective of garden in fall with bed 2 (right), October 29, 2021

LIST OF TABLES

Table 1. Itemized budget table
CHAPTER I

DISCUSSION

In times of societal turmoil, new wounds are not created, instead they are brought to light when current systems fail. This is true of the pandemic in many ways, especially in the ongoing struggle with mental health. Sudden demand for immediate solutions and flexibility disrupted college communities, as institutions switched to online schooling. Students who were sent home had to find internet access, if not available, adapt to a new workspace, and perhaps without means to pay expenses. Adding to concerns, the pandemic brought the rate of suicide ideation within 30 days up 11.4% among university students in a study from 2020 (Wathelet et al., 2020).

As a young child, I always thought about what my role would be in a historical event if I ever lived through one. A pandemic was not something I thought would happen, yet in spring of 2022, over two years later, it has persisted. This has emphasized the environmental, social, and medical injustices within America that require immediate attention for a radical change. Sitting on the Estabrooke lawn under the blue and orange sky, I thought about the skills I had that could contribute to an impactful change in the context of the pandemic. How does my education in horticulture relate to George Floyd and the Black Lives Matter Movement, or the controversies over mask mandates? My tree identification and pruning skills were seemingly useless. After reaching a dead end at every turn, I finally considered mental health and what that means to the community, as
well as myself. With increased rates of anxiety, depression, and suicide ideation during the pandemic, I wanted to find a way to be there for every member of the community.

A positive outcome of quarantine life is that it drew many people outdoors to admire the scenery, sunlight, and views that the Earth provides us. Home gardening and caring for houseplants became a trend as people found activities to do that were considered safe. An article by The Guardian examined sales from seed and home gardening businesses and found that there was a high increase due to the pandemic (Aratani., 2021). Individuals were seeking ways to relieve stress outdoors. Jere Gettle at Baker Creek Heirloom Seeds in Mansfield, MO explained that the company was filling about 4,500 orders daily, while other businesses saw a jump from 350 to 2,000 orders per day in spring 2020 (Higgins, 2020). Inspired by this increased appreciation for nature, I wanted to create a garden space on campus where people could feel safe or find somewhere to go at any time. This touched upon my knowledge and passion for gardening, horticulture, and artistry. I wanted to give back to the community using the skills I have learned within my area of study.

Gardens are beneficial for both people who participate in their creation and those who enjoy them. Working outdoors is a way to relieve stress, enjoy the surrounding nature, and build community (Firth et al., 2011). Being in a garden or natural space is a part of ecotherapy, a therapeutic practice that promotes wellness and psychological healing through interacting with the surrounding ecosystem (Summers and Vivian, 2018). With the ongoing pandemic, I decided that this ecotherapy-focused garden would benefit both myself and the community on campus by providing people with an aesthetically pleasing place to go that is accessible at any time.
CHAPTER II

INTENT OF THE PROJECT

Considering the wave of outdoor activity and desire to socialize with others that was emphasized after a year of being in a pandemic, I wanted to provide an outdoor space available at any time. I also wanted to provide supplemental support for the mental health services on campus, such as the Counseling Center, by creating an ecotherapy focused garden space. This included making suitable design choices, raising awareness of the garden’s location, and providing opportunities for people to participate. Of course, a garden with uneven terrain and snow in winter is not accessible to all, nor is it safe to be outdoors during inclement weather. A recommendation report will be included within Chapter V to discuss the future potential of the garden in the hopes that it will be more accessible, pleasing, and beneficial for the community.

Even before the pandemic, I found myself itching for places to go and things to do when campus got quiet. During the fall and spring when nighttime temperatures are tolerable, a garden can satisfy this itch to explore outdoor spaces. For students living in the dorms, late night walks to the market can be an exciting weekend excursion. The garden would act as a place to sit in the still of the night, hidden by the crabapple tree and juniper bushes. It has ample space for activities such as meditation, yoga, and other gatherings. If the weather is nice enough, some may stop for a meeting or set up a picnic in the shade of the aromatic trees, noticing the precious subtleties of the flora. No matter the case, each situation can be supplemented by the garden.
The ability to redesign a garden on campus can be a source of personal fulfillment. As I near graduation with many experiences and classes completed, I wanted the project to display the knowledge and skills I had gained, while being able to touch upon perspectives that I hadn’t yet explored. Studying landscape design principles and how it relates to ecotherapy could be supplemented by my knowledge of proper horticultural practices. Even though gardens continue to change due to weather, aesthetic tastes, and natural growth habits, I wanted to see the application of my education and past experiences come together.

Ecological health and preservation were other aspects that I wanted to include within the project. Upon first look, erosion was one of the top concerns, followed by the overcrowding of plants, and the presence of invasive species. Soil is meant to be covered, as many soil scientists would say, because doing so reduces erosion and promotes soil health. I wanted to incorporate ground cover plants on my list during the design process to tend to this issue, especially after removing the overcrowded shrubs within the main bed. Due to the presence of invasive *Rosa multiflora*, multiflora rose, in beds 1 and 3 seen in figure 18, I focused on their removal discussed further in the methodology section. Undesirable characteristics of invasive species include vigorous growth that can outcompete native plants for resources, thus reducing their growth.

When developing this project, I knew that I did not have enough education and practice to be able to redesign a space on my own. Considerations such as visual plant characteristics, planting dates, creating a sense of place, and obtaining permits were aspects that I expanded upon using literature and insight from professionals. Although landscape design is closely related to my current discipline in sustainable horticulture, I
lacked a background in psychology to manipulate design principles to create an ecotherapy garden on campus. This required in depth literature review before beginning physical work so that the feasibility and scope of work could be determined. I wanted to create a unique project that served the greater community using my background in horticulture. One that would be accessible and make a positive change to the campus. This ambitious goal to combine mental health psychology and landscape design supplemented my desire for interdisciplinary work and intellectual growth.
CHAPTER III

LITERATURE REVIEW

Pain may act as a social glue that can connect us with others and create relationships through shared experiences. While sharing painful stories can create bonds and make us feel heard, these experiences often have deeper connotations that may negatively affect daily life. Mental health, our social, emotional, and psychological well-being, are common concerns that have been affecting how members of society socialize with others, handle challenges, and make decisions. Critical mental health issues people within the United States must address include depression, suicide, bipolar disorder, eating disorders, post-traumatic stress disorder, obsessive compulsive disorder, and generalized anxiety disorders (Pedrelli et al. 2014).

The focus population is the general populous that make up college campuses, including traditional and non-traditional students. For students, addressing mental health is pertinent so that they may succeed further in life and gain coping mechanisms that were not supplemented earlier in their lives. Student populations can be divided into two subgroups: traditional and non-traditional. Traditional students are typically young adults who make their way to college soon after graduating from high school (Pedrelli et al. 2014). These groups face many adjustments related to responsibilities, academics, and social networks. Due to the sudden shifts in these areas, this creates an opportunity for stress to trigger the first onset of mental health symptoms. Symptoms can include suicide ideation, self-harm, social phobias, feelings of hopelessness, and more (Pedrelli et al.
2014). For traditional students who have already had their first onset of symptoms, the stress of entering college can increase the severity and prevalence of these issues (Pedrelli et al. 2014). With the help of professionals, younger people may learn how to cope and regulate their triggers to reduce the severity later in life.

For non-traditional students, who may be working part or full time with responsibilities related to family and finances, their multiple roles have a significant factor in mental health related triggers. Nontraditional students attend college later in life, and often have more financial obligations. This group, due to their assumed age and span of responsibilities, may be at higher risk of co-occurring psychiatric disorders (Pedrelli et al. 2014). Being able to target these groups to ensure access to proper services and treatment is essential for success later on, such as graduation and creating healthy life habits. Many students do not seek help when it comes to getting treatment. The fear of stigma, perceiving one's issues as unimportant or not severe enough, and a lack of time are contributing factors to low rates of treatment (Pedrelli et al. 2014). Utilizing anonymous services, increasing education and awareness, and providing access to broader groups may help promote treatment seeking. Considering the limitations students face in their lives, Padrelli et al. 2014 suggests that working with mental health providers can improve current knowledge and resources on college campuses. This may include creating online or social distant platforms, such as Silvercloud, zoom, and phone calls at the University of Maine. A study by Martinengo et al. 2021 discussed that self-guided cognitive behavioral therapy apps are useful during the pandemic; however, they are hard to come by due to failure to follow evidence-based clinical guidelines when providing
treatment for suicide ideation and depression. The pandemic has brought new ways of providing services, but there is more work to be done to create effective methods.

The pandemic began in March of 2020 in the United States. Many groups of people were sent home from school or work while quarantining to limit physical interactions. Social distancing, the practice of leaving a certain amount of space between individuals, made it more difficult for people to be close to one another. While following these guidelines was an important part of the United States’ effort to reduce the transmission rate of the virus, it had a negative impact on mental health.

Many experienced loneliness with the lack of connection brought by quarantine life. More concerning was the impact it had on individuals who already struggled with mental health. An article by Hwang et al. 2020 discussed how depressive symptomology, perceived negative changes in one’s life quality, and decreased amounts of sleep increased for the general population within the first 3 months of the pandemic. Anxieties surged, as many did not know what to expect next nor how long the regulations would last (Banerjee et al. 2020). The impacts also lead researchers to explore the contributing factors to suicide ideation, non-fatal behavior, and death from suicide. Reviewing Durkheim’s model of theoretical suicide forces, too little perceived social interactions with little social and moral integration are also contributing risk factors (Fassburg et al. 2012). Another theory suggests that individuals tend to have an inherent need to feel cared for, which shifted to online methods during the pandemic given quarantine and social distancing. Physical means of caring for one another, such as physical touch and other in person activities, was restricted. The Interpersonal Theory of Suicide argues that a lack of belonging and feelings of being burdensome are also contributing factors to
suicide (Fassberg et al. 2012). Understanding the current pandemic and how it puts individuals at risk for increased mental health symptoms can aid in the development of strategies to reduce symptomology rates.

Traditional forms of professional help have transitioned to online platforms for most mental health workers due to the mandates that have been implemented throughout the pandemic. Being outdoors has been recommended as a safer place to be, if interacting with others, as individuals are less at risk of contracting the virus (CDC, 2022). Finding ways to connect outdoor spaces with psychological healing could be a way to improve health despite the challenges of the pandemic. R.S. Ulrich was the first known researcher to test how nature influences stress, psychological well-being, and mood in students in the 1970’s. He formed the basic theory that being exposed to natural scenes or nature can have a positive effect on mood and well-being (Summers and Vivian, 2018). Thus, ecotherapy, defined as “the ability of interaction with nature to enhance healing and growth”, can be incorporated into professional care for mental health (Summers and Vivian, 2018).

Ecotherapy, as a general term, can be implemented in ways that are most suitable for the user. Examples include outdoor talk therapy, outdoor yoga and meditation, mindfulness walks, and horticultural therapy. The aim is to provide a holistic way of healing by creating positive relations with nature, where the health of the individual relates to the health of the surrounding ecosystem (Summers and Vivian, 2018). Caring for the surrounding nature in of itself is a form of self-care. An individual can be physically active, which releases serotonin, and when gardening, for example, the immediate change in a space can create a sense of accomplishment (Colorado State
In previous studies, ecotherapy has been used for veterans who struggle with PTSD, medical patients, and college students. The attention restoration theory suggests that people process information through fascination and is a less stressful way for many to learn new skills, which can improve individuals’ sense of purpose (Summers and Vivian, 2018). With the diverse practices of ecotherapy, it can be widely adapted.

Focusing more closely on horticultural therapy, where gardening and interactions with plants are incorporated into healing processes, this practice may be an option for college communities to promote ecotherapy and community. This can be practiced individually or with a community group through weeding, planting, plant maintenance, and other associated tasks. In the context of the University of Maine campus, groups that have an interest in gardening may benefit from horticultural therapy. This may include individuals who study in plant related disciplines, are involved in environmental clubs, or have general gardening interests. For community gardening to be affective, however, individuals must have a sense of social cohesion through a shared activity (Firth et al. 2011). Thus, gardening as a group to create a sense of shared purpose, pride, and interpersonal links may improve the sense of community (Firth et al. 2011). A study by P. Speer, 2013 theorizes that community participation promotes emotional and cognitive empowerment. Creating these ties through gardening may be beneficial when considering the risk factors associated with mental health in the context of the pandemic, as well as to cultivate community on campus.

When developing an ecotherapy based garden, it is important to consider how individuals within the community will interact with the space and how a sense of place
will be created. Jordan and Hinds, 2016, suggests that using landscape design to create a private space or a place where people can retreat to, are essential aspects of an ecotherapy garden. A gradient in plant height surrounding a central space will create this privacy, as discussed in the textbook *Introduction to Landscape Design*, due to the enclosure that the plants provide. The designer must be conscious of what the role of the garden will be and how the relationships between nature and community members will be recognized.

A study within the Health Forest Octovia in Denmark analyzed the relation between mental health promotion and spatial design (Stigsdotter et al. 2016). It was concluded that refuge and serenity were more associated with restorative psychological health. Refuge refers to a feeling of safety and offers privacy to those within the space; serenity relates to feelings of calm, peace, and tranquility, where the landscape incorporates themes of holiness (Stigsdotter et al. 2016). Maintaining soft stimulation by providing a diverse range of plant species to look at and creating a sense of refuge are also elements of an ecotherapy garden that can be incorporated through landscape design.

When considering the risk factors associated with mental health disorders, it is important to analyze the context of individual’s lives. The pandemic has been a substantial source of social isolation with increased incidents of mental health symptoms. Incorporating ways to aid in this seemingly universal struggle is pertinent in supporting the well-being of college communities. As a highly personal and safe way to practice healing, ecotherapy has positive associations with well-being in psychological studies. Shifting towards ecotherapy based psychological healing through gardening and providing a sense of place, this is a potential resource for individuals who are struggling with mental health.
CHAPTER IV

METHODOLOGY

Site Analysis and Design

Prior to initiating any work, a location had to be chosen and an initiation in communications with the grounds crew manager, Joshua Young, as well as horticulture department staff Brad Libby, Charlene Gray, and Dr. Stephanie Burnett. Brad Libby, the superintendent of the Lyle E. Littlefield Ornamentals Trial Garden and Roger Clapp Greenhouses, and Dr. Burnett, Associate Professor of Horticulture, assisted with finding a suitable space for the project. The final decision to enhance the existing space next to the Maine Bound Center, seen in figure 2, was made after analyzing other areas on campus. The small space was in critical shape, yet it had adequate sunlight, available seating, beautiful existing plants, and the potential to become an open and inviting area.

Moving forward, I collaborated with Charlene Gray, Lecturer in Landscape Design, Dr. Burnett, and Joshua Young to discuss the considerations and implications of the project. Given that the garden was intended to promote ecotherapy to create an inviting space for many to enjoy, I investigated potential challenges and design options with Charlene Gray and Dr. Burnett.

The West bed in figure 2 (bed 1) contained two azaleas and other woody plants that did not seem to have been intentionally planted. These were quite tall and could be removed to expose the view of the sunset and boulders lining the slope in figures 7 and 8. In replacement, groundcovers and sensory plants could be placed there to prevent soil
erosion, as well as provide people with a chance to interact with the space. We also discussed the option to extend the bed underneath the white pine outwards past the Camperdown elm to direct people into the space, while adding more plant diversity. With these design prospects in mind, I coordinated with Joshua Young to get a Dig Safe permit and an Excavation permit. These were necessary steps towards removing the ‘volunteer’ plants in Bed 1, tilling the weeds in beds 1 and 3, and to attempt to remove the deeply rooted multiflora rose throughout the area.

With a location and initial design prospects in mind, I began to draft a Site Analysis and Design Program, which outlines and organizes important information for the development of the garden. This outline includes a list of existing plants, characteristics of the site, and an outline of future expectations during the labor process. It also served as a supplementary document for the visual design. Both were sent to Joshua Young for approval.

**Site Analysis and Design Program**

**Site Analysis:**

1) Vegetation:
   a) Common juniper, *Juniperus communis*
      i) Damage at central leader, needles are very sharp
      ii) Keep for winter interest
   b) Creeping juniper, *Juniperus horizontalis*
      i) Keep for winter interest, wildlife habitat, and dense growth habit
   c) Chinese juniper, *Juniperus chinensis*
i) Keep for winter interest, wildlife habitat, and tall, dense growth habit

d) Blue spruce, *Picea pungens*
   i) Keep for winter interest, texture, and aesthetic value in height gradient

e) White pine, *Pinus strobus*
   i) Keep for winter interest and to provide shade for adding shade plants

f) Cedar, *Thuja sp.*
   i) Keep for winter interest, leaf texture, and height

g) Red oak, *Quercus rubra*

h) Camperdown elm, *Ulmus glabra* ‘Camperdownii’
   i) Disease symptoms present, but it will remain to provide shade and diversity

i) Weeping mulberry, *Morus alba*
   i) Disease symptoms present, but this will remain due to its aesthetic weeping habit, and it adds diversity

j) Vernal witch hazel, *Hamamelis vernalis*
   i) Health declining, signs of root girdling. It will stay, as the university would like to keep it

k) Serviceberry, *Amelanchier sp.*
   i) This will stay in memorial of Baycka Voronietsk

l) Azalea, *Rhododendron sp.*
   i) These will be removed in bed 1 to create space for sensory plants, and kept in bed 3 for their pink blooms

m) Magnolia, *Magnolia sp.*
   i) Both plants will be kept for their spring blooms
   i) Keep for spring blooms, height, and shade. This has a high value

o) Daffodils, *Narcissus sp.*
   i) Some may be removed when bed 3 is rototilled, but survivors will be kept for their spring beauty

p) Shasta daisy, *Leucanthemum x superbum*
   i) Keep for aesthetic blooms in fall

q) Rose, *Rosa sp.*
   i) Very few blooms and poor form, but it will remain to add diversity

r) Multiflora rose, *Rosa multiflora*
   i) Invasive, these will be removed

s) Small flowering shrubs, unknown
   i) Removed from front of bed 1, as they crowd the central space and block the sunset. Shrubs behind bed 1 will remain, per the request of the university

t) Small flowering tree, unknown
   i) Removed from bed 1, as it crowds the central space and block the sunset

2) Hardscape Items:
   a) Stone: all will be kept for visual interest and contrast between natural elements
      i) Boulder at right of entrance
      ii) Stone wall in front of bench
      iii) Various stone on left side of entrance next to small tree
      iv) Patio in front of bench
b) Bench: this will be kept for seating purposes

3) Environmental Conditions:
   a) Excessive drainage and erosion coming down from western slope.
   b) Full sun from the West and Northeastern side
   c) Part shade/shade underneath Crabapple and Camperdown elm
   d) Winter wind
   e) Winter ice and snow

4) Soil:
   a) Compaction at Western slope near cedar and magnolia

5) Topography:
   a) Soil erosion in front of bench and at Western facing slope
   b) Mild waterlogging in spring

6) Aesthetics:
   a) View from Sebago Road shows Crabapple, junipers, and daffodils
   b) Entrance is visible at the beginning of the pathway from Sebago Road, but not visible coming from the West end down the pathway.
   c) Sunset view from bench is blocked by the shrubs in bed 1
   d) Existing daffodils in beds 1 and 3 provide spring beauty
   e) The junipers, white pine, cedar, and blue spruce provide winter interest
f) Crabapple and junipers provide sense of enclosure when sitting at the bench

g) Car and bus noise from Sebago Road

h) Lawnmower damage on the common juniper

i) No edge definition between grass and bed 3

j) Pink, yellow, white, and green are dominating colors

k) Azaleas on the North side are growing into the junipers in bed 3

7) Legal Requirements:

   a) Dig safe permit

   b) Excavation permit

Design Program:

1) Needs for the visitors of the garden

   a) More open space

   b) Less erosion and compaction

   c) Sense of place and comfort
2) Expected Budget

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herbaceous perennials</td>
<td>48</td>
<td>$978</td>
</tr>
<tr>
<td>Spring bulbs</td>
<td>100</td>
<td>$84</td>
</tr>
<tr>
<td>Crushed stone</td>
<td>2 bags</td>
<td>$10</td>
</tr>
<tr>
<td>Plant ID tags</td>
<td>20</td>
<td>$27</td>
</tr>
<tr>
<td>Mulch</td>
<td>4 yd³</td>
<td>$88</td>
</tr>
<tr>
<td>Compost</td>
<td>3 yd³</td>
<td>$105</td>
</tr>
<tr>
<td>Labor</td>
<td>80 hours</td>
<td>$960</td>
</tr>
<tr>
<td><strong>Total Budget</strong></td>
<td></td>
<td><strong>$2252</strong></td>
</tr>
</tbody>
</table>

Table 1. Itemized budget table

3) Maintenance Requirements

a) Anticipated changes

i) Removal of all plant material within the West facing bed in front of the bench

ii) Remove excess soil spillage from patio

iii) Till beds 1 and 3 to remove weeds

iv) Remove soil buildup from around the stones on the Western slope

v) Prune lower branches of Crabapple to raise crown

vi) Make necessary pruning cuts to the junipers, mulberry, elm, and azaleas

vii) Extend bed underneath Camperdown elm and white pine so that it extends into a 5ft. circle around the elm

viii) Create defined edge around bed 3

ix) Rake leaves from creeping junipers
x) Add groundcovers to bed 1 to prevent erosion

xi) Add perennials and bulbs to beds 1 and 3, as well as the extended bed

xii) Additional seating

xiii) Clean up bed 1 edge along retaining wall with crushed stone

xiv) Apply compost to each bed to increase organic matter

b) Maintenance

i) Routine weeding

ii) Routine pruning of the shrubs

iii) Annual deadheading of perennials

iv) Annual mulching of flower beds

Documentation of Permits:

Figure 1. Dig safe permit (left) and excavation permit (right)
Pre-Design Photographs of Site

Figure 2. View of garden from north entrance, May 2021

Figure 3. Center of garden containing bench and patio. Crabapple (top), azalea (right), and junipers (undergrowth), May 2021

Figure 4. Camperdown elm trunk (center) between white pine (right), blue spruce (center right) and cedar (left), May 2021
Figure 5. Bed 1 with tree and shrubs, May 2021

Figure 6. Slope behind bed 1 with rocks and weeds. Two unknown shrubs (upper center) will remain, May 2021
Figure 7. West facing view of bed 1 from the bench with tree and shrubs to be removed, May 2021

Figure 8. Rocky slope behind bed 1 with multiflora rose and weeds, May 2021
Figure 9. Crowding between azalea shrub (right) and Chinese juniper (left), May 2021

Figure 10. East facing view of garden, May 2021
Figure 11. Erosion and foot traffic path between magnolia (left foreground) and cedar (right), May 2021

Figure 12. Bare soil and erosion on North side of bed 1 near cedar tree, May 2021
Figure 13. Bare soil near common juniper, May 2021

Figure 14. Alcove of bed 3 with daffodils (left) and junipers (right), May 2021
Design Process

As I conceptualized the design of the garden in the context of the site analysis, I read through supplementary literature on landscape design principles. The design aspects that I focused on were a sense of place, openness, and comfort. Development of space was a contributing factor in creating these feelings. First, I wanted to direct people into the garden by enhancing the entrance from the North side in figure 2. Extending the bed past the Camperdown elm in figure 4 could create a dominant path into the garden from both the North sidewalk entrance and the Western side between the magnolia and elm.

To create a central space, I wanted to focus on opening the area containing the bench and patio. Removing the tree and shrubs from bed 1 in figure 5 can create more openness and increase movement within the garden. Movement comes from roughly three small entry points to the garden: one at the North end next to the sidewalk, one from the Western point between the elm and magnolia in figure 11, and a side path at the South end near the mulberry and vernal witch hazel shrubs. By making the center space the focal point, I would be able to use the natural form and placement of the crabapple,
junipers, azaleas, magnolia, and mulberry to close off the East side, creating a sense of comfort and enclosure.

Plant choice, another important aspect of design, was the next step in completing the spatial changes. The focus was to use mostly native plants, create seasonal interest, and to use plants that would aid in the environmental issues listed in the site analysis. Plant characteristics, such as physical, visual, and biological, had to be considered as well. Physical characteristics include growth habit, fruiting, and foliage texture and density. Visual characteristics, similar to physical characteristics, touch upon the combined effects of foliage texture, color, and the form of the plant. Biological features include root form and site adaptability. The plant list was developed with these factors listed above in mind.

Color can influence the mood and aesthetic value of a landscape, according to J. Motloch 2000. Too much color variety or intensity may overstimulate viewers who are hoping to feel more at ease within the space. Bright colors that lack uniformity, highly contrasting features, overcrowded and overbearing plants, and loud surrounding noises (e.g., cars) are contributing factors to overstimulation (J. Motloch, 2000). Soft stimulation requires careful planning in height, size, colors, and textures to create unity, repetition, and subtle contrast for pleasing aesthetics.

To complement the existing dominating colors, dark green, chartreuse, yellow, pink, and white, I chose plants that could flow well with these. The existing flower colors are very bright, while the evergreens add depth and continuity throughout the space. Considering there would be three beds, I wanted to include sensory plants in the central area where individuals can interact with plants that are fragrant, soft to the touch, and
edible. Less striking colors, such as dusty greens, mild purples, and white add pockets of contrast that are not visually overstimulating. Incorporating smooth and rough foliage textures could also provide dynamic visual interest throughout all seasons. These aspects of design are an important part of ecotherapy. Individuals who practice mindfulness walks can take notice of the obvious and subtle contrasts in the garden, while engaging their sense of touch, smell, taste, and sight. Those who might meditate, or practice yoga can feel the warm sunlight throughout each season. In contrast, those who seek shade can also do so, as the garden provides both.

At the University of Maine, students experience a long winter with a peak of spring to finish up the school year. The evergreens in the garden add aesthetic value during the winter; however, I wanted to focus on providing fall and spring interest, especially as the weather gets warmer towards April and May when the campus population begins to spend more time outside. For spring, bulbs were a clear choice to plant in each bed. Choosing earlier bulbs, such as *Galanthus nivalis*, snowdrop, and *Crocus vernus*, crocus, creates anticipation for the earlier flowering woody plants currently there – azalea and crabapple. The smooth texture and light green color of their shoots, as well as their purple and white blooms contrasts the muddy dullness of early spring. In fall, the existing Shasta daisies flower in clumps, showing tall, deep green stalks with white capitulum flowers in Bed 3, seen in figure 15. To compliment the growth habit and color, I wanted to add in more native perennials, such as *Rudbeckia sp.* and *Echinacea sp.*, black eyed susan and purple coneflower respectively. These ideas of connecting growth patterns, color, texture, and seasonal interest were applied to Bed 2 under the Camperdown elm, figure 4, when creating the plant list. The summertime
campus community is just as important, therefore I incorporated summer blooming perennials, as well as plants with unique foliage when flowers are not present.

Biological characteristics, such as root growth habit, shade tolerance, and soil adaptability were focal points for improving some of the problematic features. The erosion, seen in figure 7, could be prevented using groundcovers in Bed 1. Planting shade tolerant perennials in Bed 2 would add more diversity. Given that monocultures are more susceptible to pests and disease, I wanted to have enough diversity within the area to prevent mass dieback. Diversity may promote other associated ecological features, such as wildlife habitat and attracting pollinators. Having a variety of species with name labels can also be an educational resource for classes and the public.

After considering color, texture, and ecological benefits, I incorporated these elements of landscape design into the theme of ecotherapy and sense of place. With the woody plants and Maine Bound building creating an enclosure from the East, South, and Northwest sides, I was satisfied with their physical characteristics, such as height composition and growth, because it provided a sense of security given the openness of the center. To encourage a sense of connection with nature, I wanted to include commonly known species that are also sensory, such as *Lavandula sp.*, lavender, and *Stachys byzantina*, lambs’ ear. The gentle stimulation of color, texture, height gradient, and sensory elements could be beneficial in the creation of an ecotherapy based garden (Hinds and Jordan, 2016). More can be read about plant characteristics later in the text.
Design Diagrams

Figure 16. Satellite map of garden area

Figure 17. Bubble diagram of garden design
Plant List

*Aster sp.*

This native plant in the Asteraceae family blooms in late summer, showing light purple and dark pink capitulum flowers. Two of these were planted in bed 3 after they were donated from Sprague’s Nursery in Bangor, Maine, and were about 2’ in height at the time of planting in fall 2021. Asters tolerate full to part sun. The stalks require pruning in fall or spring.

*Astilbe sp. ‘Delft Lace’*

A shade perennial that has pink buds and red stems with fine texture. Astilbe are a part of the Saxifragaceae family and prefer part to full shade, according to Plant Delights Nursery where these were sourced. Due to their shade preference, these were planted in bed 2 underneath the Camperdown elm. These will grow to be 24-26” tall.

*Crocus vernus ‘Cool’ mixture*
Early spring blooms provide clumps of purple, white, and yellow in all three beds. Crocuses are in the Iridaceae family and grow to be only a few inches tall. These were sourced from Brent and Becky’s Bulbs. They are tolerant of full sun to part shade.

*Echinacea purpurea* ‘Kismet Raspberry’

Another perennial in the Asteraceae family, Echinacea are native to North America and grow to be 2-4’ in height. This variety shows dark pink flowers from summer to fall, which will be seen in bed 3. Plant Delights Nursery also notes that Echinacea are beneficial to pollinators, butterflies, and birds.

*Galanthus elwesii* ‘Mount Everest’

Another spring blooming bulb, these are also known as snowdrops for their delicate white flowers and are a part of the Amaryllidaceae family. Brent and Becky’s Bulbs note that height can reach 7” in an optimal shady environment; however, these were planted in each bed.

*Heuchera sp.* ‘Plum Pudding’

Also known as coral bells, this perennial has dark purple foliage with silver highlights. They can grow in full to part sun and have white blooms during early summer that grow on a stalk up to 26” tall. These are in the Saxifragaceae family and were planted in bed 1.

*Lavandula angustifola* ‘Munstead’

Most notable of the lavender in bed 1 are its fragrant flowers and leaves, as it is a part of the Lamiaceae family. These bloom from early to late summer, growing to be 15-18” in height, and are beneficial for pollinators, according to Bluestone Perennials where
they were purchased. The variety ‘Munstead’ have dusty green foliage with light purple flowers and enjoy full sun.

*Phlox subulata* ‘Candy Stripe’

This perennial groundcover can grow to be 2’ wide showing white flowers with pink stripes in the center of each petal and finely textured foliage. Densely arranged flowers emerge in spring and persist through mid-summer. They are a part of the Polemoniaceae family and are beneficial to pollinators, according to Plant Delights Nursery where they were sourced. Phlox were planted in beds 1 and 2.

*Pulmonaria officinalis* ‘Trevi Fountain’

The shade loving plant in the Boraginaceae family shows pubescent foliage with iridescent silver spots and has small, blue-purple flowers that bloom in spring. These were planted in bed 2 and were sourced from Plant Delights Nursery. The height will be about 11” on average, providing contrast to the astilbe in bed 2.

*Rudbeckia hirta*

A native to Maine, these will benefit pollinators and butterflies. Commonly known as ‘Black-eyed Susan’, they are a part of the Asteraceae family and were generously donated by Sprague’s Nursery in Bangor, Maine. Their yellow flowers emerge in mid-summer and persist through fall, complimenting the Echinacea planted in bed 3. The stalks require pruning in fall or spring.

*Stachys byzantina* ‘Helen Von Stein’

Also known as Lamb’s Ear, these have soft, dusty green leaves and are also a part of the Lamiaceae family but are not fragrant. It will continue to grow from spring to late summer and rarely blooms. Lamb’s Ear is a perennial groundcover that enjoys full sun
and should be cut back in fall to prevent it from seeding, according to Bluestone Perennials. To compliment the lavender, these have been planted in bed 1.

*Thymus serpyllum* ‘Elfin’

A fragrant, slow growing herb that enjoys full sun to part shade. The small, light purple flowers bloom in spring and are beneficial for pollinators. These thrive on slopes, as they are a ground cover, therefor they have been planted in bed 1 on the rocky slope. Thyme is in the Lamiaceae family and will grow in a dense mat along the ground, spreading roughly 12”.

*Vinca minor* ‘Illumination’

Common name periwinkle, these were planted on the slope of bed 1 to provide a cascading affect as their foliage grows along long stems on the ground. Periwinkle are in the Apocynaceae family and have purple petals that fade into white in the center of the flower. These are evergreen with glossy, variegated foliage. Maintenance includes biennial pruning so that the foliage will grow back more dense and weed tolerant. One plant will spread roughly 1’-2’. They are adapted to grow in full sun to part shade, with low watering needs. These were sourced from Plant Delights Nursery.

Promoting the Garden and Horticultural Therapy

Once the permits, plant list, and design diagrams were collected and completed, events for the community were planned to promote the practice of horticultural therapy and awareness for the garden. A singular person such as I could not realistically complete all the changes and maintenance requirements in the site analysis during the summer of 2021 in time for fall planting. I, therefore, created a gardening schedule to share with other community members in the Orono area. Gardening with others creates opportunity
to safely connect during the pandemic while engaging in a gratifying activity. Moreover, it creates a dynamic of mutual learning between me and other knowledgeable individuals.

By August of 2021 school was beginning, and I wanted to take the opportunity to involve new and current students in the design of the garden. Involvement in community gardening may enhance the connections individuals have with each other and the surrounding nature by being a part of the process. While this project cannot accurately measure the psychological outcomes of community gardening, as I did not conduct research experiments during such events, I hoped that each contributor would leave feeling empowered and return in the future to enjoy the result of their work. Similarly, I invited members of the Horticulture Club to create and hang bird seed cakes in February 2022 with the intent that individuals could find satisfaction in contributing to the garden.

Given that many people on the University of Maine campus are busy, I hoped to provide an opportunity for others to notice and enjoy the garden for future use. Touching upon traditional English style tea gardens, I hosted a tea party with biscuits, cookies, and a variety of tea. With the garden beds mulched, the edges of the Eastern retaining wall freshly lined with crushed stone, and plants paired with their labels (figure 18, 19, and 20), the tea party merely provided me with a general sense of how the garden was received. While people ate and wandered about, I took notice of how people moved around the space, where they stopped, and whether they seemed to engage with the choices I made in the design. Whether people made positive or negative comments about the garden was also an important part in developing a sense of how the product fared in achieving my goals to attract people to the bench, create positive associations with the garden, and take notice of the sensory plants in bed 1.
CHAPTER V

CRITICAL ANALYSIS

Garden Design Analysis

The beginning of spring is symbolic for many, as the sun shines longer and the warm breeze tempts us outside. With the snow gone, and as a soon to be horticulturist, I looked over the garden during the spring of 2022 to see how my design choices held up throughout winter. During the design process my goals were to provide seasonal interest, supplement the needs of the space, and to initiate the practice of ecotherapy on campus. Considering the potential errors within the methodology, a recommendation report is provided to discuss the future implications of the garden.

Walking through the area frequently throughout each semester during the 2021-2022 academic year, I took note of plant mortality, erosion, signs of human presence, and growth initiation. Looking at plant mortality, I noticed quickly that the lavender and thyme planted in bed 1 did not do well. Lavender is a particularly difficult herb species to maintain in Maine and, even though a cold tolerant variety was chosen, one did not come back in the spring of 2022. This may have been due to poor soil drainage, as the slope of the bed is rather steep, depositing water and runoff into bed 1, seen in figure 18.

Erosion was still prevalent in bed 1, especially on the north end where the slope is steeper. Runoff seems to begin from the South end of the bed, where soil is deposited near the North end of the bed near the cedar. This may be classified as rill erosion, where runoff water, usually from rain events in this instance, flows down a slope in the
landscape, forming small channels in the soil. Aside from the small channels in the North side of bed 1, it was evident that the mulch and compost that had been spread there was spilling into the grass and patio. I had not planted anything at the top of bed 1, which contains two shrubs, seemingly in declining health. This, along with the bare patches of grass where the soil is compact, seen in figure 11, and a lack of drainage for runoff could be a reason for the continuous erosion problem. Throughout winter, footprint trails were common from the West to North side of the garden and from the Southwest to the Northern side, seen in figures 11, 12, and 13. In spring, when the snow melted, these two paths continued to be the most common for people to walk on given the evident bare, muddy patches.

New signs of plant growth occurred between the estimated dates of March 14 and March 21, displaying little shoots of crocus and Galanthus, where blooms of purple, yellow, and white were to emerge soon after. The meristem of the cedar leaves were brown, showing that new growth has begun. All other herbaceous and woody plants within the garden had yet to emerge from dormancy; however, the early spring growth provided a feeling of excitement and anticipation for what was yet to come. It is predicted that in late spring, white and pink blooms from the crabapple and azaleas will emerge, if bloom timing follows trends from years prior. During early spring and summer, luscious green foliage will replace the flowers of herbaceous and woody plants that show in spring. The fine texture of the astilbe, lambs’ ear, and phlox compliment the iridescent spotted leaves of the pulmonaria and heuchera. Spots of purple from the pulmonaria, aster, crocus, periwinkle, thyme, and lavender will pair with the pinks and reds of the astilbe and echinacea, with some persisting through fall when campus shifts towards
winter. The goal to have seasonal interest was achieved given the aesthetic diversity within the garden.

**Execution of Ecotherapy Practices**

Ecotherapy is practiced in many ways. This project focused on horticultural therapy through community gardening and expanding access to green spaces. During the summer of 2021, finding participants for community gardening was difficult. Many students were not within the Orono area and the people who were present had busy schedules, including myself. Each Saturday and Sunday from May 28 to August 15, I created a sheet to outline the time and goals of the day, with slots for people to sign up. Although communications were sent via email or personal invitation, individuals attended less than half of the time.

Numbers improved once school began, and I had more communication outlets. With the assumption that the UMaine Horticulture Club and students taking horticulture related classes would be more interested in gardening, I contacted professors and student leaders to put on a perennial planting party on September 4, 2021. Individuals who were new to campus joined, as well as other students continuing in their studies. The event allowed people to get to know each other while being in a safer space given the ongoing pandemic. In October of 2021, Dr. Burnett’s students aided in planting bulbs, where we had more casual, lighthearted conversations while contributing to the development of the garden. During the winter, the Horticulture Club made bird seed cakes that were later hung by a small group of students. Each event was a chance for individuals to foster positive interactions and participate, which was based upon the broaden and build theory
discussed by Summers and Vivian 2018, the idea that positive emotions encourage exploratory thoughts and actions, which evolve into useful skills and resources.

Expanding access to green spaces is another key component of ecotherapy, as it allows individuals to have a green space to supplement their needs. The garden has the potential to provide students and staff with the space to talk with others while enjoying nature. It would be a beneficial area to practice mindfulness, which is a state of being present with the moment, taking notice of the subtleties in one’s surrounding, given that each plant has a unique quality, such as the iridescent foliage of the pulmonaria and heuchera, the small blooms of the snowdrops and thyme, and the fragrant plants of the Lamiaceae family. This spot can be one of the many areas on campus to practice mindfulness, meditation, or other forms of holistic psychology to supplement psychological healing.

Photographs of Completed Garden

Figure 19. Bed 1 October 29, 2021
Recommendation Report for Future Management and Uses of the Garden

Gardens are inevitably changing as natural lifecycles progress, aesthetic tastes change, and the ecosystem climate shifts. This garden may be used for future projects in
research, landscape design, or for the community to continue to enjoy. Community volunteering events, such as the annual Maine Day, can incorporate this space for service projects. It can also be an option for student organizations, such as the Horticulture Club, to work on as a landscaping project. When supporting this for the future, routine management and considerations must be discussed.

The site analysis provides a well-rounded basis to understand the qualities of the garden and how it has shifted over time. To add to the data, taking a soil sample to determine the texture and nutrient composition would be beneficial if applying soil amendments and planting new species. This was not part of the methodology, yet it is a step that should have been taken. This can be done through the soil testing lab at the University of Maine, which will provide an analysis of nutrient levels and organic matter content, along with a fertilizer recommendation if necessary.

When spring came, the erosion and bare patches on the Western side of the garden had continued. This can be improved by adding more plant material to the higher end of the slope near bed 1 or creating a pathway for proper drainage. Groundcovers may be the most appropriate plant choice, as taller plants may obstruct the view of the lawn and sunset. Considerations include, but are not limited to bearberry, *Arctostaphylos uva-ursi*, clover, *Trifolium sp.*, and lowbush blueberry, *Vaccinium angustifolium*. It would be best to choose a plant that is native and hardy to Maine. For the shaded area in bed 2, erosion could be prevented by using smaller groundcovers, such as bunchberry, *Cornus canadensis*, or adding more of the perennial species currently there. While there were no signs of erosion in bed 3, there is a patch of bare soil next to the junipers along the retaining wall. Any of the groundcovers previously listed could be suitable given the sun
exposure that patch receives. Adding in more plants is also beneficial for soil health, improving diversity, aesthetic beauty, and may provide ecosystem services for wildlife.

Plant health was another management concern for some of the existing woody ornamentals. Signs of disease on the bark of the Camperdown elm and weeping mulberry include ooze and blackened bark. No disease identifications have been made; however, the University of Maine Plant Diagnostics Lab has proper resources to identify disease issues in the future. To prevent the mechanical spread of disease, it is pertinent to clean pruning tools with a 10% bleach solution in between cuts on the same plant and between different plants. If the mulberry or Camperdown elm experience a rapid decline, or other plants become affected, then considerations for their removal should begin. Qualities to consider for potential replacements include hardiness zone, wind tolerance, soil and nutrient requirements, growth habit, flowering time, native range, and flower color.

The two shrubs above bed 1 in figure 10 are also a concern for health decline. There is noticeable root growth circling the base of the shrub, which causes root deformities and can girdle the stem, blocking nutrient transport within the vascular system. As their buds begin to emerge, there are some terminal shoots that do not have new growth. Apart from these growth issues, the surrounding soil suffers from erosion and could benefit from having more plants to supplement the soil quality.

Invasive multiflora rose was present in beds 1 and 3, which can outcompete and lead to a decline in growth of surrounding plants. This vigorous invasive species must be removed, as it is highly competitive for soil nutrients, water, sunlight, and space in the garden. A multiflora rose is located on the South side of bed 1 on the slope near the juniper and may be easier to remove than the others. Behind the bench next to the
junipers, and between the magnolia and mulberry in bed 3 are where the other two continue to grow. I was not able to adequately remove these due to their deep roots and fast growth. This may require the attention of the grounds crew or another appropriate source. I did not have access to proper machinery, tools, or herbicides that are needed for removal, but could be successful with the help of a professional group.

More common, routine management includes pruning and weeding. Weeding is beneficial for aesthetic purposes, as well as to reduce the competition between the herbaceous ornamentals. Hand weeding may be the most effective method of reducing their populations; however, this takes more time than using hand tools or laying down coarse mulch. Pruning frequency is more species specific, as this depends on the growth rate and individual aesthetic tastes. Annual fall deadheading of the rudbeckia and Shasta daisies could be considered as well. The Horticulture Club may use these management requirements as an educational fall or spring activity to get members involved in gardening, as well as to beautify campus. If time and funding allow, the grounds crew may put time into this part of campus as well, using this project as a reference.
CHAPTER VI

CONCLUSION

As an interdisciplinary project, I learned new theories and concepts in mental health psychology, as well as in landscape design. My primary discipline in environmental horticulture offered a different perspective when approaching the challenges of mental health within the community since the pandemic began. I found myself focusing more on proper plant care and choosing species that would offer benefits to the landscape, such as nitrogen fixing plants. While it was challenging to incorporate a different discipline into the project, I maintained enthusiasm for learning how to design an ecotherapy focused garden on campus.

The design had to be created alongside the literature review so that I could incorporate ecotherapy based principles into the landscape plan. I had to respect the perspectives of other disciplines, especially within psychology, where many studies are based on observational findings and phenomenon, then reduced to hypothesis testing experimentation. Hypothesis testing relies on using null hypotheses to understand the effects of unknown variables, a common experimentation method within my discipline. Considering that this project was not an experiment-based project, I focused on finding literature about how landscape design relates to ecotherapy so that I could incorporate those aspects into the project. To expand on this project in the future, it would be interesting to study how the garden affected individuals in terms of their mental health and well-being. This could be a part of other students work if there was an interest.
Using my experience from prior classes in plant science, I learned about the practical applications of horticulture. Classes such as landscape management, herbaceous landscape plants, and turf and grounds management were essential in practicing proper horticultural techniques. I was also able to use my experience working as a Fine Gardening Technician to create a realistic timeline, list of materials, and coordinate with professionals, such as facilities manager, Joshua Young. Creating the plant list required that I consider many variables listed in the site analysis. I enjoyed being able to view this as a puzzle, narrowing down the possibilities to find suitable plants that also provide desired aesthetic qualities. This did not come without setbacks, as there were limited choices for plants in the fragrant Lamiaceae family that were suitable for the slope and sun exposure in bed 1. Despite these issues, I was able to evaluate the garden to provide insights for future use and improvement.

Developing skills in independent learning, time management and communication, were also areas in which I grew throughout the process. Initiated in the spring of 2021, this year long project took careful planning so that the creative portion was completed by fall 2021. Planting dates and community events relied on diligent summer work. The grounds crew, led by manager Joshua Young, played an important role in providing summer assistance, materials, and tools, which could not have been done without proper communication and cooperation. Timely communication efforts in gathering materials, design resources, and fellow gardeners lead me to success throughout the project.

As the conclusion draws near with graduation looming for many, I am grateful to have led an interdisciplinary thesis project. Working with professionals has set the tone for future expectations after graduation, whether that is in professional work or academia.
Analyzing the areas that could have been improved within the project has made me more mindful for future endeavors in my career.
BIBLIOGRAPHY


Colorado State University. (2021, April 28). Plant a Seed, Grow a Self-Care Habit - Warner College of Natural Resources. Warner College of Natural Resources Environmental Learning Center. https://warnercnr.colostate.edu/plant-a-seed-grow-a-self-care-habit/


AUTHORS BIOGRAPHY

Jessica S. Hutchinson is a New Hampshire resident, completing her Environmental Horticulture undergraduate degree from the University of Maine. She will continue to conduct research in horticulture as a graduate student in Plant, Soil, and Environmental Sciences at the University of Maine in the fall of 2022. She is a member of the Horticultural Honors Society, Pi Alpha Xi, and plans to graduate with honors through the Honors College. She has received the Lyle E. Littlefield Prize, Landscape Horticulture Scholarship, and the Barrett Landscape Horticulture Work Merit Grant for her academic work in horticulture. Jessica hopes to continue to garden as a hobby, as well as paint, bake, and jog. She hopes that her work will support others in their interests in gardening and enjoying natural spaces.