



The Psychological Effects of Plants in an Academic Environment



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Project Motivation & Goals

- ❖ **A National Mental Health Crisis:** Low productivity, anxiety, stress levels, and depression among teens are at an all-time high (Fig. 1) potentially due to influences from social media, coronavirus pandemic, the effects of uninspiring classroom environments, and a lack of proper stress management (Divecha, 2019).
- ❖ **Personal Motivation:** In Feb 2023, my father almost lost his life from an aortic descending dissection, resulting from high stress levels and lack of proper stress management.
- ❖ **Potential Approach:** A 2011 study assessed the potential health and environmental benefits of 'Indoor Forest Bathing' Approach (Fig. 2; Bishop, 2021).
- ❖ **Overarching Goal:** To reduce the amount of stress in students by creating a green study room and encouraging them to connect with nature while studying or during the school day by:
 1. Revitalizing a school greenhouse.
 2. Creating a green study room to promote relaxation, increase memory, productivity, and focus in students.
 3. Assess need/benefits of a green room by surveying and collecting data from students.

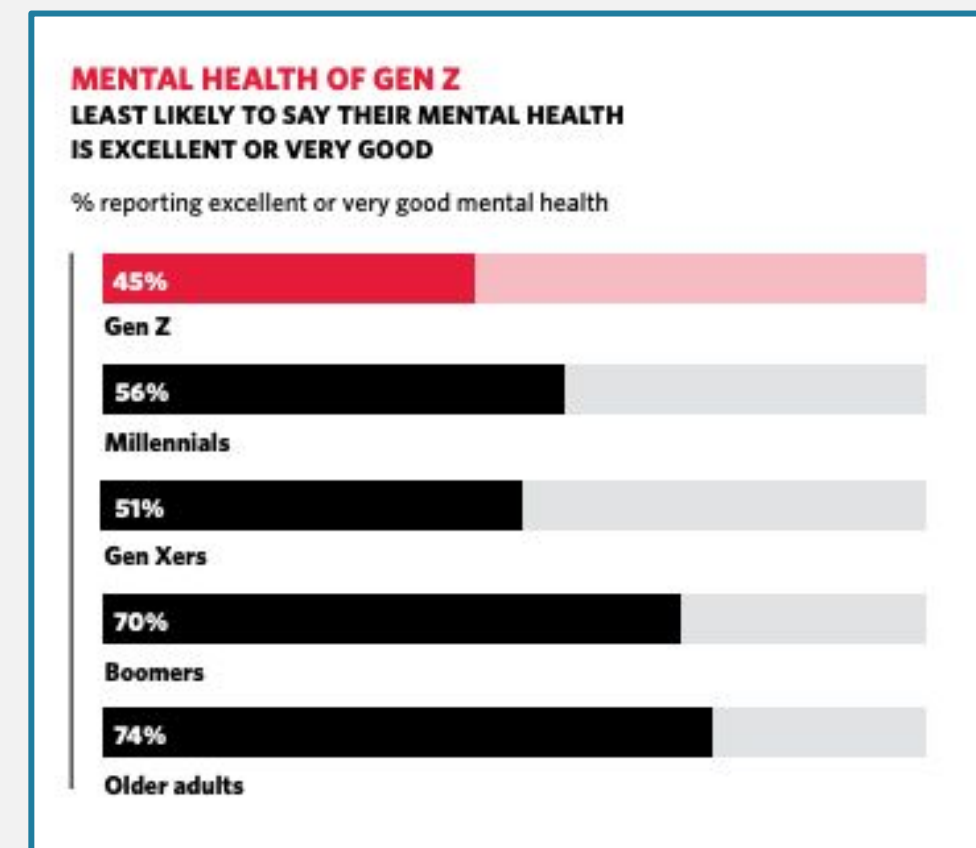


Figure 1. Graph showing self-reports of worse mental health and higher levels of anxiety and depression by teens than all other age groups (American Psychological Association, 2018).

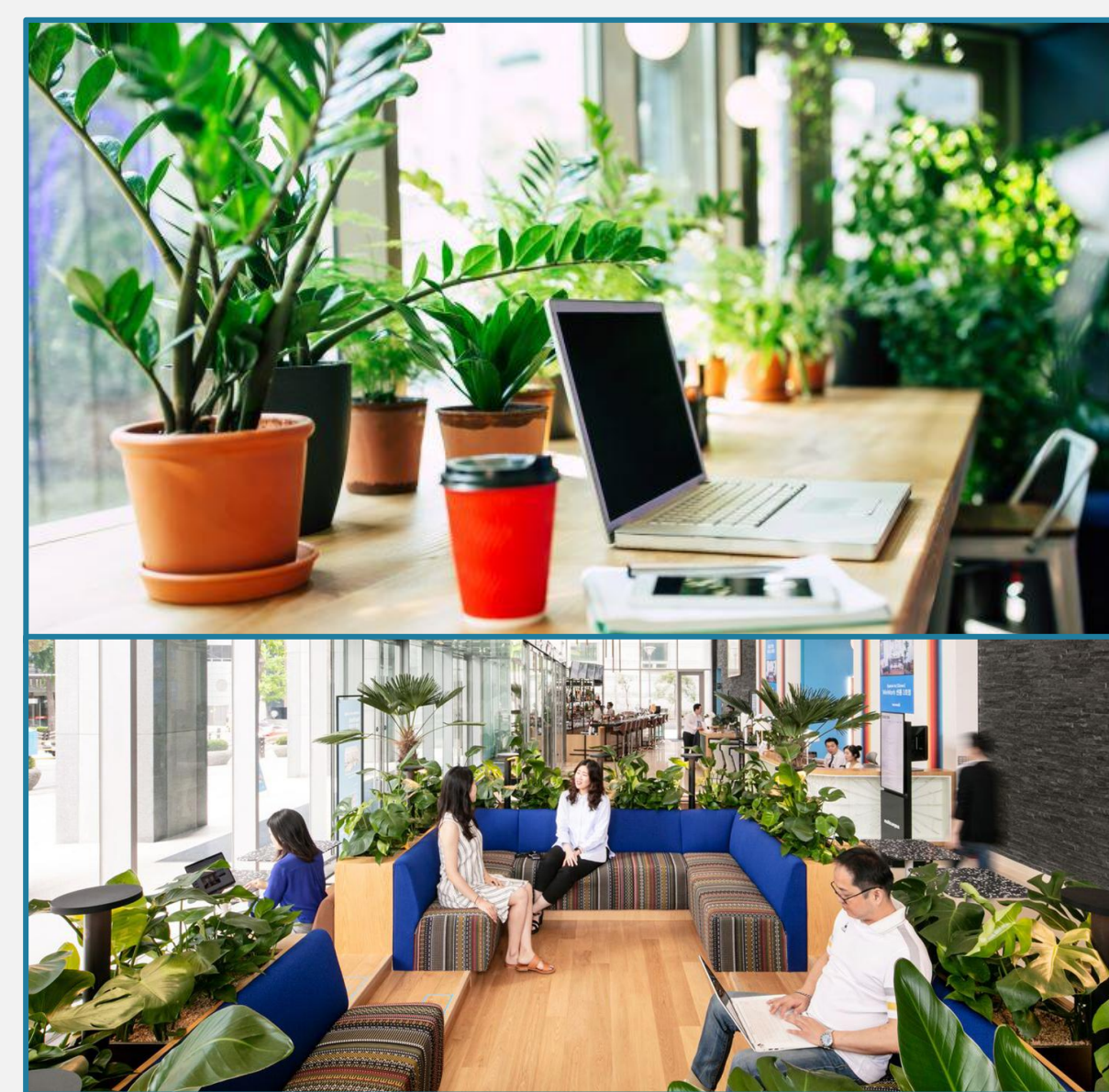


Figure 2. Example of green study space.

Research on the Psychological Benefits of School Green Rooms

Goals:

- ❖ **Pre-Survey Goals:** To assess how students how currently felt (in their current academic setting), their stress level to a variety of tasks, how they manage stress, and their opinions on a green space in an academic environment.
- ❖ **Post-Survey Goals:** To assess how students felt currently in their environment (in green study room), their stress levels, and their opinions on the green space there were currently in.

Methods (Fig. 3):

- ❖ Began **holding lectures** in environmental biology classes at Bunnell High School on the **effects of stress** (importance of proper stress management, dangers of high stress levels) **and the benefits of plants**.
- ❖ Immediately followed lecture with **pre-survey to gain baseline data on current stress levels** as well as determine community opinion on/need for green study spaces:
 - I surveyed 33 students during midterms week in classrooms.
- ❖ Two months later, I **presented to students in the green room and conducted my post-survey:**
 - I surveyed 18 students in the green study room.

Results (Fig. 4):

- ❖ **Pre-Survey (Before Green Room) (Fig. 4a):**
 - 63.3% of 33 students believe academic environment contributes to stress.
 - According to the sample of students, school is the most stressful activity.
 - 18.2% of 33 students were not comfortable in their current environment.
- ❖ **Post-Survey (While in Green Room) (Fig. 4b):**
 - 94.4% of 18 students stated that they would be productive in the green study room.
 - Students described themselves as calm, happy, relaxed, and safe.
 - 100% of 18 students stated that they felt comfortable in the green study room.

Figure 3. Lecture in environmental biology classes → a pre-survey → study period in new green room → post-survey.



Figure 4a. Pre-survey results on the effects traditional classrooms on mental health in an academic setting.

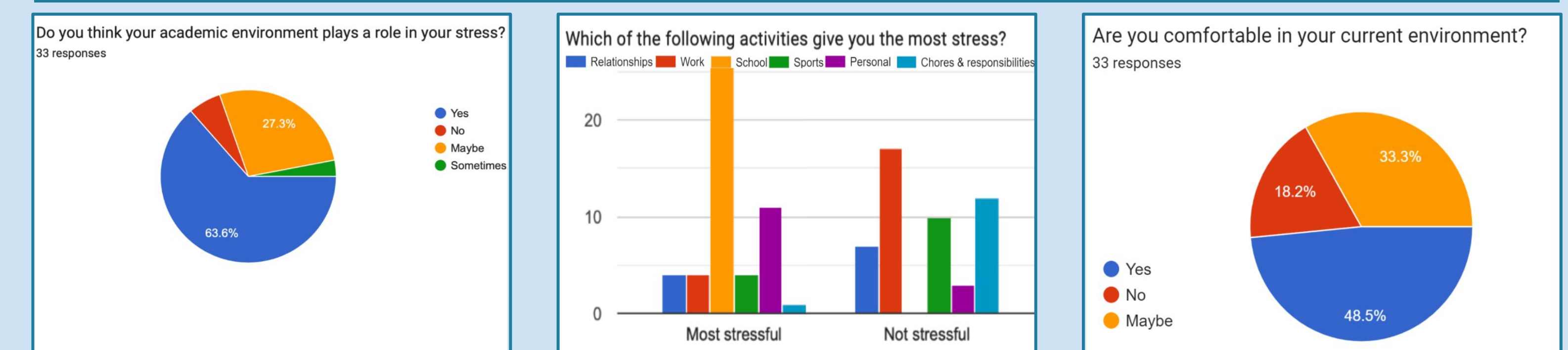
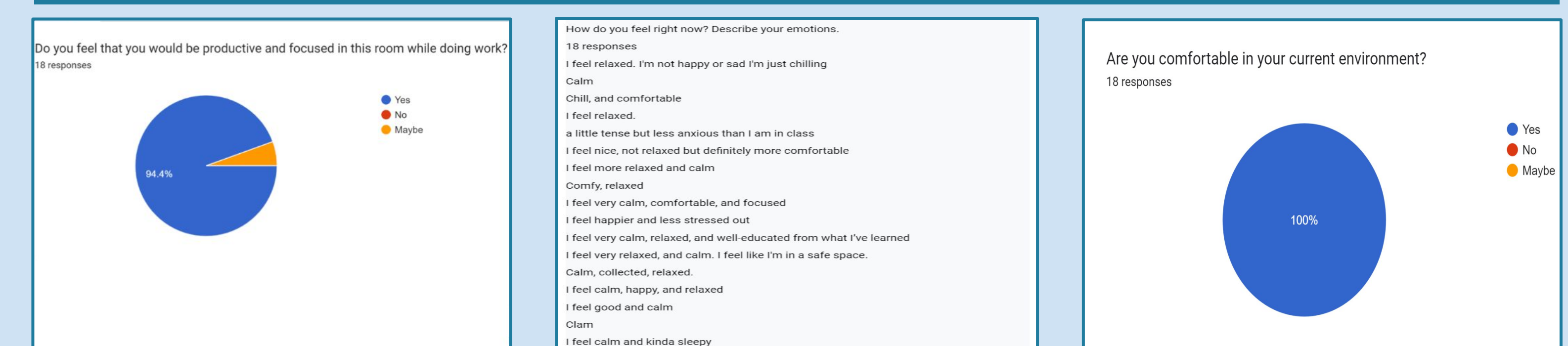


Figure 4B. Post-survey results on the effects greenery has on mental health in an academic setting.



Creating Two School Green Rooms with Community Involvement

Goal:

- ❖ Revitalize and **convert two academic spaces into green spaces** to provide students with green study areas or opportunities to engage with plants during the school day.

Methods:

- ❖ Established location for project at one of my schools: **Frank Scott Bunnell High School**.
- ❖ Gained school support by working with **my principal, Dr. Katie Graf**, and my community partner, **the Science Department Head, Dr. Tehmina Khan (Fig. 7)**.
- ❖ Identified **two school spaces (Fig. 5):**
 - Revitalized the greenhouse by cleaning and implementing plants.
 - Created the green study room behind Dr.Khan's office (Fig. 7).
- ❖ Created a **budget** request for supplies from UConn NRCA and campaigned for **donations** from UConn EEB and Plant Science Greenhouses, Bridgeport Regional Aquaculture School community, and Bunnell High School community. See all supplies in Fig. 6.



Figure 5. Before and after photos of each space that was converted into a green room.

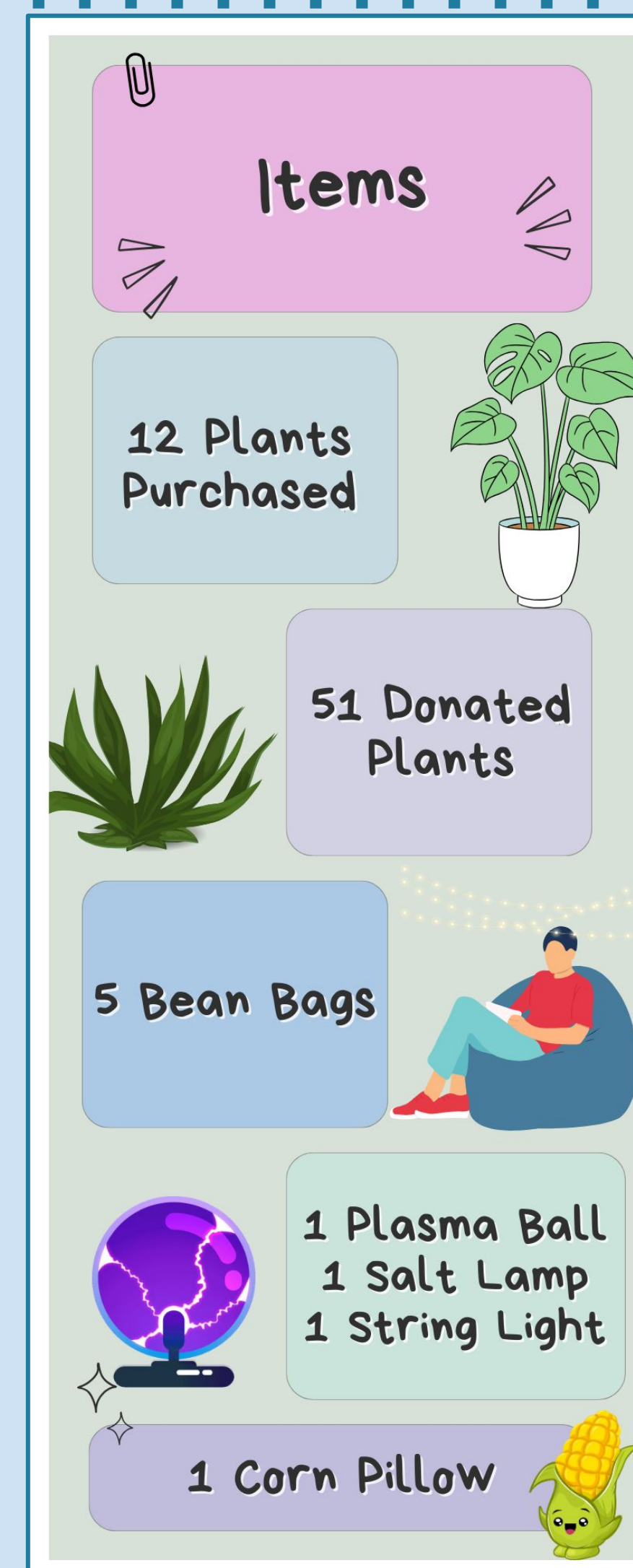


Figure 6. Infographic showing the quantity and type of supplies for the green rooms that were donated or purchased.



Figure 7. People involved (Dr. Khan, Richard Loch, Baeram Alfreh, Hezron Maynard, Nathan De Lima, Luca Buffone, and Christopher Graham), and a donated fish tank.

Methods (continued):

- ❖ **Green Study Room Overview:**
 - Cleaned, reorganized, and decorated green room (Figs.5 & 7)
 - Finally, plants were transported into the green room.
- ❖ **Greenhouse Overview:**
 - Placed plants in greenhouse (Fig.5)
 - Students cleaned, reorganized, and potted plants in greenhouse (Fig.7)
 - Plants were watered daily and given Miracle Grow weekly.

Community Impacts:

- ❖ Encouraged students to connect with nature by revitalizing the greenhouse and implementing plants into a green study room (Fig.7)
- ❖ Created a safe and stress-free environment where students who felt stressed and overwhelmed can go to study, be productive, and most importantly relieve stress.

Conclusion and Next Steps

- ❖ **Encouraging use of the two green rooms can have potential benefits to students' mood and health.** Plants encourage exposure to sunlight, which exposes humans to mood boosting vitamins such as vitamin D and B12 (Mead, 2008). Plants also produce oxygen through the process of photosynthesis, which can clean up the air in classrooms, as well as promote wellness, productivity, and proper breathing.
- ❖ My findings showcase the psychological benefits and significance of plants in an academic environment. The observations of benefits of plants on mental health may encourage other schools in my district to create more green spaces for students and require plants to be implemented into classrooms.
- ❖ Future steps are to continue **care for the fish and plants** as well as appointing a new student each year **who will be in charge of the plants and green room** after I graduate.

Acknowledgements and References

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- ❖ **References:**
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