The Environmental Impact of John Burroughs School

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May 2020

Objective

The objective of this study was to understand to what extent John Burroughs School (JBS) contributes to the outdoor environment and how it could behave more responsibly in the future.

Background

The notion of working on global issues in local ways is embodied by the Sustainable Development Goals (SDGs), 17 ambitious challenges to achieve universal peace, prosperity, and equality by 2030. These Goals could be easily implemented into Model UN resolutions, but more tangibly impact society as they break down global issues into local problems and targets for communities to meet.

One of the most pertinent and fascinating goals is number 13, which aims to take climate action. As the UN Report from Secretary General António Guterres stated 8 May 2019 in the UN Economic Forum:

"With rising greenhouse gas emissions, climate change is occurring at rates much faster than anticipated and its effects are clearly felt worldwide. While there are positive steps in terms of the climate finance flows and the development of nationally determined contributions, far more ambitious plans and accelerated action are needed on mitigation and adaptation. Access to finance and strengthened capacities need to be scaled up at a much faster rate…"[1]

Given this demonstrated urgency, it is necessary to think about how individuals and small institutions like Burroughs could work in synergy with this goal. Furthermore, considering that Burroughs has not established a sustainability plan of action (nor have many of its peer institutions), it is imperative to initiate action immediately—to understand to what extent Burroughs contributes to the environment and how it could do better in the future. Hopefully, this first-ever consolidated report of Burroughs' environmental sustainability will foster the needed awareness, education, and impact within the JBS community to enact change in the realm of environmental sustainability on campus in the future.

Methodology

Research methods began by means of an exploration into the different nuances of SDG number 13 and its various targets through which a community could pursue this goal. Many official UN sources aided in this stage of the study. From there, time was spent examining how small businesses, corporations and universities could benchmark and improve upon their environmental impacts in reference to this SDG. Specific institutional and UN Offices proved to be most useful due to their website curation for this specific collection of information. Thereby, a

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[1] https://sdgs.un.org/goals/goal13

deliberate system of assumptions regarding climate variability was established and utilized to contemplate Burroughs in the context of these entities.

A notable resource worthy of distinct recognition is the Tracking and Assessment Tool from Missouri Green Schools, a document developed by the US Department of Education's Green Ribbon Schools Program. Their three pillars served as a list of objectives, targets, and tactics to which Missouri public schools could refer when thinking of their own "1) reduced environmental impacts and costs; 2) improved health and wellness of schools, students and staff; and 3) effective environmental and sustainability education." Considerations of this study were particularly beneficial for the study's interviews.[2]

Arranging, preparing for and conducting these interviews accounted for a significant amount of time throughout this independent study. Unanswered questions that arose during initial stages of research were quickly recorded, based on the guidance of faculty sponsor, Dr. Shannon Koropchak (meetings with Dr. Koropchak occurred twice a week for the duration of the school year). Following this stage, the three pillars and other external resources then guided a formulation of official questioning lines, which were later organized within a spreadsheet that linked potential interviewees to relevant topics of discussion.

The first round of contact was made with Headmaster of School, Mr. Andy Abbott, and the study followed his suggestions as he referred to different figures within the community, such as Mr. Ed Philip, Director of Plant Operations and Mr. Chris Front, Director of Academics. Between each interview and during meetings with Dr. Koropchak, all findings were debriefed, thereby refining questions for subsequent rounds, which included climate experts, professionals in the private sector and other members of Burroughs' administration. Each conversation generally lasted one hour and of a greater number of interviews that were performed both within and beyond the school, 13 are cited in the study.

Interviews Conducted

Mr. Jamie Wagner	Member of History Dept.
Ms. Martha Fischer	Member of History Dept.
Ms. Martha Keeley	Member of Science Dept.
Dr. Tracy Walther	Member of Science Dept.

[2] Missouri Green Schools Tracking and Assessment Table: http://www.missourigreenschools.org/mo-grs-documents/Missouri%20Green%20Schools%20Assessment%20and%20Tracking%20Tool_Sept-2019%20(1).pdf

Dr. Wayne Winters	Member of Science Dept.
Mr. Chris Front	Director of Academics
Mr. Andy Abbott	Head of School
Mr. Ed Philip	Director of Plant Ops.
Mr. Kevin Wilson	Director of Sage Dining at JBS
Ms. Maggie Doyle Ervin	Middle School Principal
Ms. Martha McMann	Member of Computer Science Dept.
Ms. Megan Rathert	Director of Service Learning
Dr. Shannon Koropchak	Member of English Dept.
Mr. Andy Newman	Fine Arts Teacher

Findings

Introduction

While a well-rounded understanding of John Burroughs' efforts toward sustainability was created, each aspect of this knowledge was not given the attention that would be necessary to enact the concrete and precise recommendations that this study had originally set out to achieve. Perhaps this outcome occurred because the breadth of the study was limited by its development over a single school year. Even so, these findings have still led to some very important questions to be asked and suggestions to be proposed, which could greatly aid Burroughs in generating a more positive environmental impact.

Emissions

The most significant finding of the study is that Burroughs does not comprehensively track any of its overall sustainability impact, even while energy, water, and electric bills are collected and saved. Mr. Abbott verified this fact as he noted that the school does not follow any emissions standards even while "we strive to be our best [and] have built 75% of campus to be LEED certified." Establishing sustainability goals as well as tracking impact levels would allow the school to fully achieve any future sustainability goals, and meet the SDG's.

Infrastructure

Burroughs should be praised for its efforts in constructing the Science, Technology and Research (STAR) Building's solar panels, the newly-built geothermal plant and Sage Dining's composting system, to name a few examples of sustainable infrastructure on campus. Similarly, as Mr. Philip noted, the administration has considered many alternative ways of implementing environmentally sustainable features, such as the implementation of grey water filtration systems

in bathrooms, generation of a sustainable parking lot that fosters the growth of plants and alteration of landscape to house only native plant species on campus. Unfortunately, many of these measures and others have not come to fruition due to monetary restrictions or aesthetic complications (e.g. the addition of anti-vehicle idling signs near parking lots, which would likely not be feasible due to appearance). It seems that these failings of sustainability practices exist since the school does not have any purchasing requirements regarding environmentalism and focuses more on the reliability of specific services than such sustainability, as Mr. Front corroborated.

Education

Awareness of sustainability is the most important factor in cultivating an appreciation for the world and motivation to maintain its health. Not only does SDG 13 address this need, but so does Mr. Jamie Wagner, member of Burroughs' History Department, who spoke about finding new ways to inspire students through Burroughs' curriculum, thus inspiring this section of the report.

The study found that there are many ways in which students could be further fulfilled by sustainability education at Burroughs. Starting in seventh grade, all students enroll in the Earth and Geography Science course, which aims to forge a mindset of independence and new study skills as these middle schoolers adjust to life at JBS. Without diminishing the relevance of understanding geological change, there is a strong opportunity to foster a more pointed, scientific education about the natural environment in addition to the small unit of sustainability featured in the 7th grade Global Issues and Human Geography course. Dr. Tracy Walther, teacher of both AP Environmental Science and the Earth Science course as well as sponsor of the Environmental Awareness Club, agrees, but she also recognizes the lengthy process of developing new courses into the Burroughs curriculum (i.e. it takes one year to develop one new unit, per course). Thus, while this process could be commenced as soon as summer 2020, Mrs. Martha Keeley, member of the Science Department, suggested the faster approach of only adding a new unit by next year for all seventh graders through their mandatory seminar course.

Maggie Ervin Doyle, Middle School Principal, praised this idea, noting that sustainability is a blind spot in JBS' educational framework and could be fulfilled in this capacity. However, she posed a question about how this education could be maintained for the duration of a few weeks in the seminar course without infringing upon any other course material, like the Human Geography and Earth Science courses. To this concern, she verbally approved an idea that 7th graders could partake in a project that revolves around environmental sustainability in order to not only cultivate a localized impact, but also to empower and inspire these students to enact more change as they go through their years of high school. Some potential projects consist of the following ideas, as composed by Mrs. Keeley:

- GapMinder Dollar-Street (https://www.gapminder.org/dollar-street/matrix)

    - This matrix consists of photographic profiles of families around the world, with monthly income adjusted to US dollars, locations of work occupations, photos of homes and personal belongings. It also includes "most loved items", hand palm, and even teeth. Participants could virtually travel within a country and find the wealthiest South African family versus the poorest, for example.
    - An example of an activity for older students could consist of choosing two families from different parts of the world, one more and one less economically developed. Using data from GapMinder, students could garner information about which family is having a greater environmental impact.
- World's Largest Lesson - http://worldslargestlesson.globalgoals.org/all-lesson-plans/
    - This lesson plan introduces people to the SDGs and elaborates on one person's potential role within them; videos, lesson plans and more are included.
- Carnegie Mellon CREATE Lab - Earth Time (https://earthtime.org/)
    - This lab focuses on how the planet has changed over time using massive data sets; two examples of these systems are coral bleaching and deforestation.
- GEMS Global Design Challenge (https://www.gemsxonline.com/)
    - A challenge based on five of the SDG's in which students could forge a campaign or a prototype in a two day challenge at a school or National Geographic's challenge for students in the fourth through eighth grades. The GEOChallenge focuses on the science and geography of climate change; an example would be "tackling plastic".
- Scistarter (https://scistarter.org/)
    - A website with over 3,000 citizen science projects in need of assistance.
- GLOBE Data Protocols (https://www.globe.gov/about/overview)
    - A free service via NASA, which requires an hour and a half in the field to collect the data.
- Marine Debris Tracker (http://marinedebris.engr.uga.edu/)
    - A tracker of plastic and trash, which also answers questions like: "How does trash travel from place to place?" Could be useful in education about food waste, too.
- Dear Data postcard project (http://www.dear-data.com/about):
    - An initiative that can track:
        - How many times someone goes to throw something away,
        - Individual use of single use, disposable plastic items,
        - How many times each day a person uses a device that uses electricity.
    - An interesting idea could be to compare the results with students with another area of the world.

Education about the importance of nature and sustainability could be fostered through the expansion of the gardening project as well, which has just acquired a new greenhouse with the construction of the STAR Building. Awareness could be further achieved by potentially creating

term paper topics about the issue for students to research, developing Library Guides for these projects (and general use) and even curating featured book sections about sustainability in the library.

Food Operations

Aside from Burroughs' well-known composting system, Kevin Wilson, director of Sage Dining Operations at JBS, made it known that an impressive 92% of all purchases by the school are made within a 250 mile radius of the school. The largest providers of local sourcing are made to the following companies:

- Wenneman Meat, which provides for all types of meats, pork, beef, and all types of fabricated cuts.
- Fazio Bakery, which provides all of our local baked goods for JBS.
- Dimare's Specialty Foods, which provides popular items, such as Raviolis.
- Oberweis Dairy

The composting process at JBS should be commended for its flexibility and versatility. Mr. Wilson noted that paper products (cups, plates, etc.) are compostable and recyclable, then specifying that there are designated recycling bins for each vendor. Furthermore, all foods and leftovers are disposed daily in composting bins and no bottled water products (plastics) are utilized on campus. Instead, they are replaced by recyclable canned water or water coolers. While the merits of the recycling process are definitely worth consideration, Sage's progressive nature in its operations is deserving of much credit.

Still, a large issue in the Dining Hall surrounds food waste in itself. Dr. Koropchak even reported her alarm that so much energy is spent for food transportation and yet those products still end up being wasted in the compost bin. This realization sparked her project with eighth graders in their diversity course this year to install smaller serving utensils in the dining hall, helping to alleviate this issue. But Mr. Wilson still observes a lot of good quality products that come back to the kitchen on the plates of students who attempt to take second portions of food, which demonstrates the need for more to be done to cultivate a new sense of consumption. Awareness itself surrounding this issue has not been nearly present enough.

A couple of measures to lessen these issues, as described by Mr. Wilson, could be an implementation of improved portion controls during lunch, which correlates to food waste. Some potential solutions to achieve this benchmark could include the adoption of food scales to weigh food, while others could consist of a widespread awareness campaign. Mr. Wilson also noted that "while we currently batch cook our foods to the community we have, per daily attendance records, we could increase the number of batches during lunch, which could possibly reduce

overall waste...however, with constantly changing menus, this would likely have mixed results."

Conclusion

Burroughs has much for which to be commended on the topic of environmental sustainability, but also is home to large opportunities of which can be taken great advantage. That reason is why the first and most important recommendation of this report is for future environmental development and a new action plan for sustainability to be established by either an external agency or a new Burroughs Office of Sustainable Efforts. Burroughs could deeply benefit from a full-time expert or team in this field who could focus on gauging the school's cumulative impact on the environment with concrete evidence and then form official plans for the school to enact.

Regardless of who conducts these consultations, this new, proposed office is still deeply necessary. Aside from research, it could also organize different educational events and programming for the school community to contemplate regarding environmentalism and related topics of sustainable development. For example, this office could engage the student body through collaborations with the Environmental Awareness Club, legislative strikes and lobbying for the Green New Deal (if so desired). It could further maximize impact through small projects on campus to improve the school's sustainability. Moreover, the Office of Sustainable Efforts could be represented in different relevant committees at Burroughs, serve as a liaison for student input, and help to coordinate a new umbrella of student clubs for those students vested in environmental impact. Other hypothetical changes that were suggested previously in the study surround education, and this office could further flesh out these ideas, starting as soon as possible, since course development and planning for next fall has already begun. Of course, the interdisciplinary nature of sustainability should be made known—and in that case, this office could become a deeply ingrained fixture of the school beyond sustainability in the environmental realm.[3]

If JBS would like to be a leader in best practices of environmental sustainability while fostering a culture of competency, then it is strongly recommended that they create this type of office on campus. Most colleges and universities have such representatives in place, and some secondary schools are beginning to undertake this process, as well. Moreover, while Mrs. Keeley is the appointed faculty in charge of sustainability-related occurrences, this position is neither full time nor professionally assessed. Burroughs would best benefit from a person working in this realm full time in order to devote the necessary energy to these issues.

In terms of food operations, it is important to realize that while Sage Dining controls the day-to-day food operations on campus, the student body is still heavily impacted since they rely

[3] In this case, the office could function as an administrative arm of the MUN Impact Club, an organization with the mission of promoting Model UN and leading civic engagement initiatives to achieve the Sustainable Development Goals.

on and impact the ways in which these services function. Thus, the JBS community could greatly benefit from an energized awareness campaign that could be established within the student body so that a new understanding of conservation and understanding could be instilled. This, too, could be spearheaded by a coalition of students and the Office of Sustainable Efforts.

Finally, it should be noted that while three main facets have been targeted of how the school could improve its environmental impact—within the administration, curriculum and Sage Dining—so much more action could be and should be championed that has not been addressed. Sustainability seeps into every aspect of the school, and this report should serve as a conversation starter. What should be further explored (e.g. understanding carbon neutrality and establishing guidelines for investing the endowment in companies that have strong records on sustainability while respectively divesting from those involved in unhealthy industries) are subjects that could be devoted to a full-time team of faculty. If Burroughs focuses on sustainability as a priority, then in addition to helping the environment, it could engender a new generation of leadership, empowerment and passion for the great outdoors.

Acknowledgements

I would like to thank various people for aiding me in my research. Most notably, I would like to note my appreciation for Dr. Shannon Koropchak for her time and attention during each period of time that we met in her room. The ways in which she has taught me to approach difficult information, organizational structure and various societal trends of climate variability have been deeply impactful. Secondly, I would like to thank each JBS faculty member who has agreed to spend their free time interviewing with me, as their ideas have significantly shaped my study. Within this group of people, I would like to acknowledge Mrs. Martha Keeley's efforts, who met with me for a handful of hours and truly cares about finding a home for this report. Finally, I would like to thank my parents for supporting me in this endeavor, especially during the uncertain times of COVID-19. With their encouragement, I dedicated myself to this project, even in a distanced realm. Thus, since May Projects were officially cancelled and I no longer receive credit for this elective course, I would like to think of this project as one that benefits the JBS and St. Louis community as my own initiative, functioning in addition to my efforts as a consultant for the United Nations Association-Saint Louis Chapter.