UNIVERSITY STUDENTS' PERCEPTIONS OF CAMPUS SUSTAINABILITY IN FINLAND

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Abstract

Globalization contributes to the rapid economic growth, technological transformations, and development of human services. These excellent human innovations raise some questions about the risks to the environment, the individual, and society, bringing concerns about a sustainable future. The UN Sustainable Development Goals was born and its policy on sustainability flows from the international body to the member countries, to the local institutions, and finally to the constituents. With such, local institutions, like higher education institutions, formulate initiatives that are aligned with the 2030 Agenda on Sustainable Development. To gain support, a university, for instance, transfers sustainable development knowledge to its stakeholders. However, there are aspects of sustainability that are not yet fully understood, and sustainability is being defined in varied ways.

This master's thesis aims to provide insights into how university students view campus sustainability in Finland. This is done through conducting a two-week online survey of all attending university students at a Finnish university during the Spring semester of 2023. For the two-week duration, 100 university students voluntarily participated and answered the online questionnaire. The data gathered was analyzed using mixed methods in research. Inductive thematic analysis was performed to analyze the respondents' answers to the open-ended questions. Whilst a chi-square test was used to ascertain whether there are differences in the categorical variables being tested and an independent sample *t*-test to present the significant connections between variables. The findings showed evidence that university students associated their understanding and definition of sustainability through an environmental lens and followed by the social dimension which can be related to other previous studies. From the thematic analysis, the respondents defined sustainability by speaking about their own actions in their daily life, their concerns towards others and the environment, and the consequences of their actions towards the future. Respondents also have similar views in terms of their concern towards the future/ present, their views on who should be held responsible for sustainability, and expressed that sustainability is important for them. However, a larger portion of both international and local students exhibit a commitment gap in terms of their participation in the university sustainability initiatives, and one-half of local students in their personal energy use attitudes. Also, a notable finding in the statistical analysis revealed that sustainability classes have no connection to participation in campus sustainability initiatives and energy use attitudes.

Another important highlight of this thesis is that it uncovered the importance of communication and raising awareness about sustainability and sustainability initiatives on campus. This may help administrators in the improvement of sustainability communication channels and in the promotion of their sustainability actions at the university.

Keywords
Campus sustainability, sustainability culture, sustainability initiatives, globalization, glocalization, higher education

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1 INTRODUCTION

Today's globalized world has significantly reached industrialization, which has caused rapid economic growth and the spread and movement of goods and services. Globalization impacts the development of technologies, human services, production, and development of goods and services beyond countries' boundaries (Qaim, 2017; Sart, 2022). Globalization also includes environmental, political, social, economic, and cultural aspects (OECD, n.d.). However, globalization also gives rise to some risks to the environment, individuals, and society at large (Bayhan, 2011). With such risks, sustainability has become a concern for decades and until the present. The traditional definition of sustainability stated in the 1987 Brundlant report suggested the harmonization and the links between environmental, economic, and social dimensions (Sart, 2022). As a result, the 2030 Agenda for Sustainable Development was created in 2015 (UN, n.d.). The 2030 Agenda calls for cooperation from different member countries for the delivery of goals that spread the flow of sustainable goals from the international level down to the country's level and to the country's citizens. These flows contributed to the smaller local institutions' initiatives through the process of glocalization. The local institutions formulated locally driven initiatives but globally connected in scope.

In higher education institutions, universities are becoming an important local partners for the implementation of the 2030 Agenda (UN, n.d.). The universities were tasked with the transfer of knowledge to students about sustainable development goals (SDGs), how these SDGs work, and with solving societal sustainability issues (UN, n.d.). With these tasks, universities have the opportunity to develop their own approaches and leadership in achieving the SDGs (Rickards & Steele, 2020). Universities, in general, help train and develop future decision-makers and leaders and should reflect on how to effectively align their actions, develop partnerships, and intensify their efforts (Jhurry, 2020). Thus, universities have a very important task in creating a sustainable campus and society for the future (Leal Filho, 2011, Alexander et al., 2022, Leiva-Brondo et al., 2022).

In Finland, the Prime Minister's report (2022) emphasized the important functions of higher education institutions in providing education about a shift to a sustainable society. Its sustainability road map mentioned how cooperation with universities

and other formal and non-formal educational institutions can affect change in sustainable lifestyles. Finland is already in the top rank for the delivery of sustainable goals. In the recently concluded international rankings for sustainable development, Finland ranked first (Finnish Government, 2022). However, the Finnish government emphasized the importance of educating the younger generations on making the country sustainable for the future (Finnish Government, 2022). In this respect, this gives ground for research on how the younger generations, specifically, students' view of sustainability, and in efficiently dealing with the call for creating a sustainable future.

In spite of having initiatives towards sustainability, there are also dimensions of sustainability that are not being understood at the university level (Leal Filho, 2000). Empirical studies revealed that students in higher education, in particular, have different views, understandings, and definitions of sustainability (Fisher & McAdams, 2015; Felgendreher & Löfgren, 2018; Sidiropolous, 2022). Searching some research databases (available to be accessed at the University of Jyvaskyla library), I found that there seem to be no specific studies in the English language that mentioned university students' perceptions of campus sustainability in Finland and with additional elements of sustainability culture and university initiatives. This observation could also not mean there may be no research on the topic, but there is a possibility that some of the publications were not accessible to me during the time of my search.

Despite this, I still believe that it is important for any Finnish university to focus on the university students' perception of campus sustainability. The university students' perceptions of sustainability could impact their expectations of campus sustainability efforts and initiatives (Alexander et al., 2021). For Finland, a country described in the media as having one of the leading educational institutions in the world, this topic of interest can be a valuable niche to be explored and studied. This can provide an understanding of how leading educational institutions respond to the call for sustainable development, educate, and engage their students toward a sustainable society. Thus, this master's thesis aims to provide insights into how different groups of university students view their campus sustainability and relate that to their responsibility toward sustainability. The findings of the study can be helpful for university administrators in communicating sustainability awareness and engaging university students in sustainability practices on campus.

This master's thesis is then divided into five sections. First, I provide the background for globalization and sustainability, campus sustainability, and Finnish universities' efforts. Second, I describe the methodological choice for this study, data collection, analysis, and some ethical concerns that are taken into consideration. Third, I describe the results of the study, which include: a description of the sample set, the students' definition of sustainability, a comparison of data from international and local students about their insights into campus sustainability, the significant connection between sustainability classes and personal responsibility and current energy use, and the thematic analysis on students' comments. Fourth, I discuss the findings in

relation to the questions of particular interest. Fifth, I summarize the results, elaborate on the implications of the study, and discuss the limitations and suggestions for future research.

2 GLOBALIZATION AND SUSTAINABILITY

2.1 Globalization and sustainable development goals (SDGs)

Sustainability is regarded as a global issue that everyone should work on together (UN, n.d.). Sustainability is a term used to describe any human activity providing what is best for society and the environment to flourish now and in the continuing years (Scoones, 2007; Emanuel and Adams, 2011). This is in accordance with the 1987 United Nations Brundtland Commission definition of sustainability which states "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987, p.16). Decades from the creation of the sustainability definition, the word sustainability remains the buzzword of today (Scoones, 2007). This is because it questions whether the globalized world could lead to a sustainable future (Beumer et al., 2018). Globalization promotes industry, business, and trade growth, and increases interactions among people around the globe (Globalization, 2019; Appadurai, 1990). However, globalization and developments can also pose a threat to nature and the way and standard of how people live in the future (UN, n.d.). To be sustainable, different groups of people from different institutions should accept policies and processes related to sustainability (Beumer et al., 2018). Thus, globalization can also alter the experiences of people within the system or unit (Bartelson, 2000).

In connection to globalization and sustainability, the UN Sustainable Development Goals (SDGs) was created in 2015 (UN, n.d.). These SDGs are ideologies that serve as a universal guideline for every country to work on sustainability together regardless of borders (UN, n.d.). The scope of this framework is for both developed and developing nations. The 2030 Agenda for Sustainable Development served as the blueprint for all the UN member states in implementing the 17 SDGs (UN, n.d.). These

17 SDGs are shared action plans for achieving peace, welfare, and well-being of people and care for the environment, today and into the next years (UN, n.d.). The implementation took effect in 2016, guiding all member nations to their every decision and action in relation to sustainability in the next fifteen years. Also, these 17 SDGs are considered an international set of rules that flows from the international level, regional level, and national levels to the country's local level and finally down to the individual (UN, n.d.). The figure below is a simple diagram that I created to show the flow of responsibility from the global level (the higher decision-makers) down to the individual. This model is based on the description stated on the UN sustainable development website (UN, n.d.) and Finland's report (Prime Minister's Office, 2020) on sustainability and the call for action for local initiatives and public engagements.

Figure 1. The flow of responsibility in achieving sustainable development goals

From this illustration, the responsibility for achieving sustainable goals is also apparently an individual responsibility. Every person is held responsible for sustainability (Soneryd &Uggla, 2015). The local level of governance is the agency closer to its community members and they are the ones that can influence every member. The functioning of these structures can also be explained by the so-called 'glocalization'. Glocalization is a process by which initiatives are implemented in consideration of both local and global policies (Goffman, 2020). The local level of governance needs to initiate actions to educate and engage its members in response to the UN SDGs (Folorunso et al., 2022). Thus, this leads to smaller institutions' sustainability initiatives.

This passing on of responsibility from the global level to the local level may sound simple. However, one could question how all nations can work together in the achievement of sustainable goals. Developed and developing countries have a wider gap in terms of technological advancement and economic progress, for instance. These situations gave rise to some internal intergroup conflicts, challenges, and difficulties in negotiating and communicating global issues to society at large (Majer et al., 2021). I created the figure below to show how these intergroup conflicts between decision-makers at different levels could potentially affect the implementation and success of sustainability efforts based on the article by Majer et al. (2021).

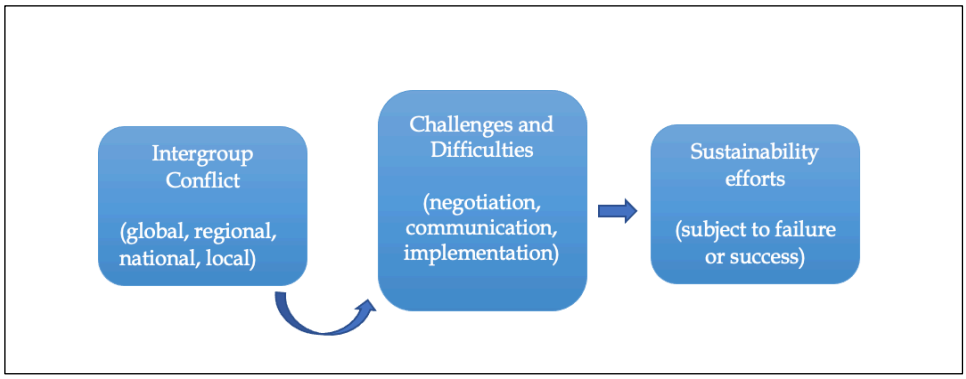

Figure 2. Intergroup conflict and its effect on sustainability efforts

From the very start of the creation of the sustainable development goals (SDGs), internal conflicts among member countries and their representatives had already existed based on the past and history of its creation. In the article by Chasek et al. (2016), it reviewed the two negotiating tracks to develop the post-2015 agenda on sustainable development. From the article, it can be seen how negotiations between different parties and decision makers are failing to meet the consensus to replace the previous Millennium Development Goals (MDGs). It took so much process before the Open Working Group (OWG) on sustainable development was filled with 70 member countries. From this article, for those countries who do not belong to the OWG seats, the ministers felt that they needed to travel to New York for their sentiments to be heard. The article further added the division between the North and the South, how the division among the 70 member countries surfaced as the debate continues about the status of different developing nations and their coping with the attainment of sustainable goals, and on how countries whose language is not English are being marginalized in the process.

Decision-makers are aware of the ongoing internal conflicts between countries' representatives and that there is no absolute easy blueprint towards solving sustainability issues (Veland et al., 2021). Sustainability transition in this regard is believed to contribute to social conflicts (Majer et al., 2022). There is a debate on continuing the focus of MDGs while others suggest a balance between MDGs and SDGs (Yiu & Saner, 2014). These conflicts that revolve around decision makers and other stakeholders at different levels could shed light on the ongoing challenges in terms of negotiations, communications, and realization of sustainability transitions across all levels in society (Majer et al., 2022). This could also explain how, even at the local level, some barriers to the implementation of initiatives exist. For example, in the sustainability and innovations of universities, international comparison revealed that the main barriers in the implementations are resistance to change, negative attitudes towards environmental issues, lack of government support, and lack of clear guidelines and policies to support sustainability efforts (Veiga Ávila et al., 2019). Achieving sustainable development in the context of globalization turns out to be not an easy process, rather, an intricate and complex process that requires cross-country coordination of

policies at different levels for sustainability efforts to become a success (Tang et al., 2020).

2.2 Sustainability and SDGs: Conceptualizations

Despite sustainability being defined decades ago, sustainability at present is defined in varied ways (Alexander et al., 2021). Many of the misconceptions about sustainability are that it only deals with the environmental aspect (Pilho, 2000). Care for the environment is only one pillar of sustainability. Sustainability has three pillars, namely social, environmental, and economic (Purvis et al., 2019) and five dimensions (UN, n.d.). The definition of the three pillars of sustainability may vary depending as to which context it is being applied and may be subject to different conceptualizations and interpretations (Purvis et al., 2019; Allen, 2022). These variations in definitions and misconceptions from previous research provided me with grounds for further research into how sustainability is perceived by different groups of people in society, particularly in the higher education context.

Some have defined social sustainability as a pillar dealing with human justice, education, health, and other social issues like gender equality (Allen, 2022; Delubac, 2022). The environmental sustainability pillar is concerned with any human activities that are affecting the biodiversity and balance in the ecosystems, and deals with issues like climate change, nature preservation, and conserving the environment for future generations (Sustrainy, 2021; Twhink, 2014). In this pillar, laws and governance related to clean air, water, and land are considered (Clune & Zehnder, 2020). While the economic sustainability pillar deals with economic growth, social inclusion, equity, and equality, and care for the environment (ESG The Report, n.d.). The ESG The Report (n.d.) argues that these three pillars of sustainability originated from the Brundtland Commission report in 1987.

In my research online, some research articles discussing the links of the pillars of sustainability (Murphy, 2012; Mensah, 2019; Gomes Silva et al., 2022) suggested that these three pillars have been intertwined with each other and, without considering each of the pillars, may subject sustainability to failure. It can also be understood why Purvis et al.'s (2019) research is in search for clarity about the origin and meanings of these three pillars. In their research, they reviewed relevant sustainability literatures on the origin of the three pillars and found that there is no single clear origin of the three pillars. They argue that these three pillars differ from the goals of the UN and that there is a split between those who view these as perspectives or as a system approach.

Moreover, out of the three pillars of sustainability, the UN 2030 Agenda (as cited in UN, n.d.) elaborates on five critical dimensions of sustainability. These are called the 5Ps sustainability dimensions, which is an abbreviation for people, prosperity, planet, peace, and partnership. The people dimension aims to eradicate hunger and poverty, respect human beings' rights, and promote human potential with dignity and equality. The prosperity dimension ensures that everyone can live a bountiful life where both social and technological advancements do not harm the environment. The planet dimension calls for responsible business and consumer consumption, the protection of nature, and actions combatting climate change to preserve the environment for future generations. The peace dimension fosters a just, inclusive, and peaceful society where people should not live in fear. Lastly, the partnership dimension aims to strengthen partnership and solidarity among nations, a collaboration between private and public stakeholders, and all citizens for the implementation and accomplishment of sustainable development goals. However, these dimensions of sustainability lack some clarity, which may lead to different public interpretations (Purvis et al., 2019). Thus, it is widely accepted that different people or groups of people may have different views of sustainability and what this term exactly means (Alexander et al., 2021).

According to the UN Assembly in 2015 (as cited in UN, n.d.), these seventeen (17) sustainable development goals are in alignment with its 5Ps sustainability dimensions. The image below shows the 17 SDGs.

Figure 3. The 17 Sustainable Development Goals (as cited in UN, n.d.)

Similarly, the idea of sustainable development goals lacks clarity (Leiva-Brondo et al., 2022). Even though it has been categorized into seventeen goals, the understanding of sustainability and sustainable goals are interpreted as the connectedness between the environment, human, and social dimensions or separating both the social and economic dimensions. In line with this, there is interesting research that proposed to separate or add other dimensions such as happiness (Gamage et al., 2022). Therefore, it can be concluded that the concept of sustainability and sustainable goals have different levels of understanding for different individuals or groups of people in the community (Leiva-Brondo et al., 2022). The existence of terminologies such as sustainability, pillars of sustainability, 5Ps sustainability dimensions, and the 17 sustainable development goals (SDGs) seemed to be too much to comprehend as to which aspect an institution or an individual may need to focus on. In addition, the 17 SDGs sounded to be optimistic and exact for every nation to end poverty by 2030, for instance. These 17 SDGs are very positive, yet how realistic they are can also be questioned.

For example, empirical research studies' findings in higher education reveal that students have different perceptions of sustainability (Fisher & McAdams, 2015; Felgendreher & Löfgren, 2018; Sidiropolous, 2022). Most of the students in the study initially associate sustainability with the environment (Popescu et al., 2020; Zeegers & Clark, 2014; Emanuel & Adams, 2011). The research shows that students focus more on the environmental dimension followed by the social aspect (Zeegers & Clark, 2014). Students' understanding of these five named dimensions of sustainability and how their university addresses sustainability in connection to the UN Sustainable Development Goals are unclear (Leiva-Brondo et al.,2022). There are also research studies where students expressed support or give importance to sustainability and sustainable goals (Dabija et al., 2017; Abubakar et al., 2016). However, the lack of awareness and commitment affects people as to what extent they are willing to engage themselves in sustainability efforts and practices on the campus (Hortota et al.,2014; Godfrey & Feng, 2017; Pierera Ribiero et al., 2021; Sidiropoulos, 2022; Popescu et al., 2020; Dabija et al., 2017; Abubakar et al., 2016).

3 CAMPUS SUSTAINABILITY

3.1 Campus sustainability: a higher education initiative

Campus sustainability is defined as the contribution of universities in the pursuit of environmental preservation (Sugiarto et al., 2022) and in educating global citizens towards sustainable development (greenofficemovement.org, 2022). Many universities across the world are taking action to support the mandate of sustainable development goals (Sart, 2022). As part of glocalization, these universities have created their own initiatives to influence the students who are one of the significant stakeholders at the university. Most of the important achievements for these universities are more on the environmental aspect, while the other dimensions of sustainability are still pending (Gamage et al., 2022, Wright, 2010). Higher education is considered as an important arm in helping shape understanding about sustainability and in the delivery of the UN Sustainable Goals (Sart, 2022). Sustainability in higher education, being locally driven and globally connected, plays a greater role in creating an impact on its members and in working together for a common goal (Purcell et al., 2019). Higher education can deliver sustainable goals for its staff, students, and for the wider community through research, educational activities, and integrative sustainability initiatives (Findler et al., 2019).

The UN Sustainable Development Goal (SDG) number 4 states the educational institutions' commitment towards sustainability actions (UN, n.d.). In SDG 4, higher education's role is to provide the best and inclusive education system, and continuous developmental learning. Furthermore, these educational institutions are also incharge of improving the interactions of campus stakeholders (faculty and staff, and students) and external stakeholders (the wider community) in tackling and engaging

them in solving real-world issues like sustainability issues (Nagy & Somosi, 2020). Also, higher education should not only be focused on knowledge but based rather on a holistic approach to the pillars of sustainability (Jung et al., 2019).

In connection with the increasing significance of sustainability, many universities have extended their sustainability efforts in their educational activities throughout the years. Research on the topic of campus sustainability has also been conducted to gain an understanding of how the campus stakeholders perceive sustainability, which may help the campus administrators in transferring knowledge about the SDGs. For example, the study by Emanuel & Adams (2011) investigated the perceptions of college students about campus sustainability in the United States of America. Emanuel & Adams's (2011) research compared two groups of students from Alabama and Hawaii to ascertain whether these groups of students differ in their concerns about the present or future, the student's knowledge of sustainability, and in answering who is held responsible for sustainability on campus. The research utilized mixed methods and the findings revealed that the college students from the two different states had similar views in terms of their concerns about pollution and wasteful consumption, exhibited little to no knowledge gaps about sustainability, but showed commitment gaps in terms of the willingness to participate in sustainable practices on campus. The research by Emanuel & Adams (2011) calls for campus administrators to raise awareness about campus sustainability and provide the chance for the campus community members to participate in sustainability initiatives.

Moreover, the exploratory research by Alexander et al. (2022) presented the personal definitions of sustainability of campus stakeholders. The sample set of the research was from two colleges. The analysis of the data employed descriptive statistics and inductive thematic analysis for the answers to the open-ended question. Alexander et al.'s (2022) findings showed that the personal definition of sustainability is being viewed through an environmental lens. In terms of sustainability culture elements (signs and symbols of sustainability), the highest rating is in relation to the environmental pillar. However, community members who have more integrative definitions of sustainability would want the other pillars of sustainability to be present in those signs and symbols. The research by Alexander et al. (2022) implies that different campus community members define sustainability in different ways and that the campus may provide a unifying definition as to what a sustainable institution entails. Also, Alexander et al.'s (2022) results recommended campus administrators to have a dialogue with their members as to what sustainability means and how they could achieve it.

Furthermore, research does not only show the stakeholders' perceptions as to what campus sustainability means or sustainability means per se, rather, some research studies the perception of students of the green campus (self-representation as green university, committed to sustainability) and non-green campus (non-committed university for sustainability) initiatives. The research by Dagiliute et al. (2018) and

Pereira Ribeiro et al. (2021) concentrates on this aspect of sustainability initiatives. Both researchers found that students who believe that their green campus initiatives are more environmentally friendly positively responded to more environmentally sustainable practices and were more exposed to sustainability information. Students from the non-green campus barely to not receive sustainability information on campus (Dagiliute et al., 2018). Higher educational institutions that are more willing to become green campuses are also doing more information dissemination about sustainability to their students.

Additionally, the research by Conner et al. (2018) emphasized the perceptions of stakeholders in terms of sustainability efforts made by the campus and how important these sustainability initiatives are for the students, for instance. They provided a series of Likert-scale question types and one open-ended question. The research results revealed that students find the initiatives more important to them and rated operations as the most important initiative. However, engagement in sustainability events and presentations, and participation in sustainability-related clubs or committees are rated the lowest. Conner et al.'s (2018) findings implied that sustainability initiatives are perceived as important, but on a deeper level, the results suggested that engaging and encouraging students may be lacking, which contributed to dissatisfaction with initiatives and perceived failures in campus efforts toward sustainability.

Other previous research also investigates the perceptions of students in terms of their knowledge and awareness of sustainable development goals (SDGs), their positioning, and insights into sustainability in general. Results from these studies revealed: students are aware of the 17 SDGs but do not fully understand what these 17 SDGs mean (Leiva-Brondo et al., 2022); students exhibit enviro-centric bias despite raising awareness of sustainability pillars in the pedagogical approaches of sustainability education (Zeegers & Clark, 2014); students have sufficient knowledge about socio-environmental aspects of sustainability but their behavior do not corresponds to their way of thinking and acting (Agirreazkuenaga & Martinez, 2021); students perceptions on sustainable consumption is not connected to their sustainable consumption behavior despite the exposure of sustainability information (Godfrey & Feng, 2017); the continued exposure to sustainability coursework in class does not impact the students' conceptualization of sustainability (Fisher & McAdams, 2015); media (like internet, newspapers, magazines) influences the students perceptions than their family and friends and that students perception of sustainability is based on their own knowledge than what they have learned in class (Savelyeva & Douglas, 2017); education for sustainable development influence the students' moral perception of sustainability but not in homogeneous way (Felgendreher & Löfgren, 2018); and university students expressed a highly favourable opinions when the university incorporates sustainability in their operations and academic programmes (Dabija et al., 2017).

Aside from the things mentioned above, research on campus sustainability has also been conducted to describe how this could improve the institutional image. The

research by Salvioni et al. (2017) investigated the sustainability governance orientation for the top-ranking universities in the world based on the ARWU (Academic Rankings of World Universities) in 2015. The study by Salvioni et al. (2017) analyzed the information found on the website for the top 20 for the first 500 ranked universities, the bottom 20 for the first 100 ranked universities, and the lowest 20 in the first 500. The study findings revealed that the universities with excellent rankings provided a clearer goal and approach to sustainability. However, the integrated approach and communication about sustainability in the university subside as the rankings go down. These results from Salvioni et al.'s (2017) study provide a good ground to examine other universities which are considered the best in the world, like Finland, and how sustainability efforts have been made visible to its stakeholders through different communication platforms.

3.2 Sustainability efforts at Finnish universities

Finland, as framed in the media, is a country having the top-ranked education system in the world for consecutive years (Edunation, 2020; Top Universities, 2021; Finland Toolbox, 2022). However, this description in the media has been questioned as to how well the institutions are actually doing in recent years (Dervin, 2013). The nation was also in the top spot for having the best air quality (Yle News, 2018; Visit Finland, 2022) and clean water (Hotti, 2018; Yle News, 2022). In 2021 and 2022, Finland remained number one in the international ranking for sustainable development (Finnish Government, 2022). These ranking results make Finland an interesting country for sustainable development research. In the statement of the Secretary-General of the Finnish National Commission on Sustainable Development, Finland is still facing some challenges related to sustainability despite being first in the global rankings. He added that with today's aggression of Russia in Ukraine, the situation may hamper the achievement of sustainable development goals (Finnish Government, 2022). He also emphasized that in a challenging situation, it is important to educate the younger generations about the future and what is worth saving for. Among the countries in the world, Finland is at the top level, taking care of its people's well-being, but it needs to be sustainable for the future (Prime Minister's Office, 2022).

The publication of Finland's Prime Minister's Office (2022), the road map for the 2030 Agenda on Sustainable Development, emphasized the importance of education toward a shift to a sustainable society. The report mentioned the role of educational institutions (including higher education institutions) in the transfer of sustainability knowledge, choosing a sustainable lifestyle, and coming up with solutions for solving global sustainability issues. To effect change, it calls for partnership between

educational institutions for the promotion of sustainability and a change in the institutions' paradigm towards sustainability competence, lifestyle, and well-being. Thus, this provides a ground for studying how the Finnish university systems integrate local sustainable development initiatives into their daily operations and encourages public engagement.

Nowadays, many Finnish universities strive for sustainability efforts and initiatives on their very own campus. To elaborate on sustainability efforts, I particularly searched for sustainability information about the three universities which are in proximity to each other. It has been argued that people are more interested in looking for information about the location which is near their current location (Teevan et al., 2011). This makes location one of the factors in choosing the three universities. For example, looking at the Finnish universities' website information, the University of Jyväskylä, University of Helsinki, and Tampere Universities aim at becoming carbon neutral by 2030 (JYU, 2022, UH, 2022, Tuni, 2022). The three universities mentioned how they took responsibility for sustainability through their academic programs and stakeholders' cooperation. Also, these universities have sustainability working groups searching for responses to sustainable development and the promotion of initiatives both locally and globally. These universities aim to be the leader of sustainability actions in the country and internationally.

On the University of Jyväskylä's website, they stated that their sustainability actions and models are based on the UN Sustainable Development Goals or SDGs (JYU, 2022). The University of Jyväskylä has no mention as to which particular SDGs they link its sustainability principles to, but the university clearly states on the website how they connect the activities and academic programs to the pillars of sustainability. For example, in the environmental aspect, the university achieved a Green Office certification in 2013 and has been certified as a smoke-free campus since 2011. The student union and the student canteens are tasked with promoting Fair-Trade practices like weighing biowaste and listing the carbon emissions on the menus, respectively. The ecological and economic pillars are both connected with the university's effort for planetary well-being. For the cultural and social pillars of sustainability, the university is committed to promoting equality and diversity. Responding to these pillars, the open university also offered free courses about planetary well-being, and the same, along with the other faculties in the university, where offered study modules for sustainable development.

Whereas the University of Helsinki mentioned in its *Sustainability Highlights Report 2021* their sustainability actions to be socially, environmentally, and ecologically relevant. It did not emphasize as to which programs and initiatives fall into the category. Rather, it mentioned the particular SDGs the university focused on, like SDG 4 (actions for quality education), SDG 9 (sustainability focus for industry, infrastructure, and innovation), SDG 13 (climate change action), and SDG 17 (partnership for the achievement of the goals) (UH, 2022). The University of Helsinki also published its

short-term *Sustainability and Responsibility Plan for 2022-2024*, a document that describes targets and initiatives of the university for a better future through an emphasis on research, sustainability in education and learning, public participation, and partnerships with different actors in society, and promoting sustainability in the campus's daily operations. The University of Helsinki also aims at collecting perceptions of the future of the campus operations' culture through a survey in order to support the university's efforts toward sustainability (UH, 2021).

Furthermore, the Tampere universities also did not mention the specific SDGs that the university put more emphasis on in the sustainability development section of the university's website. Rather, it describes the integration of sustainable development into their curriculum, searching for solutions for a sustainable society, and promotion of sustainable actions (Tuni, 2022). Like the University of Jyväskylä, Tampere Universities links the pillars of sustainability in campus operations. For instance, in ecological sustainability, the university is committed to searching for and creating ways to tackle and combat climate change issues and for the protection of the natural environment. For social aspects, the university promotes equality among people from different backgrounds and fields and an emphasis on its students' well-being. For the economic aspect, the university strives for financial sustainability where its operations will be in line with sustainable goals and responsible governance to ensure that investments can be sustained for future needs. In addition, the website information describes how the Tampere Universities promotes sustainable practices around the campus (Tuni, 2022), which the University of Jyväskylä and the University of Helsinki do not specifically have on their web pages.

However, looking at the publications about sustainability on campus and its reports, the University of Jyväskylä, University of Helsinki, and Tampere Universities share little information as to how to specifically engage the students' community in achieving carbon neutrality by 2030 in the future, for instance. Also, there seems to be no mention of research on the perceptions of students about sustainability in English. For example, at the University of Jyväskylä, out of three published master's theses on the *Sustainability for JYU* section of the university web page, two had abstracts in English but Finnish content, and one research in English. Judging from the research abstracts, I found that these studies focus on measuring the carbon footprint of the university students and canteens (Latva-Hakuni, 2020), measuring the carbon emissions in the university students and personnel commuting modes (Alvarez Franco, 2021), and in searching for a method that can be utilized in assessing biodiversity impacts at the organizations' operational level (Vainio, 2021). The available *Sustainability for JYU* report is in Finnish (El Geneidy et al., 2021), which, according to the website description, is mostly covered by the work of Latva-Hakuni (2020), Alvarez Franco (2021), and Vainio (2021). I also read through the *Sustainability Report 2021* of the University of Jyväskylä in English and there seems to be no mention of studying the perceptions of university students about campus sustainability and its efforts.

On the University of Helsinki's website, sustainability research is conducted across 11 faculties. Exploring this webpage, the latest news described a study on the identification and application of nature-based solutions to achieve carbon mitigation and biodiversity outcomes (Raymond et al., 2023). The webpage had a *Sustainability Research in Spotlight* video series where it talked about the nature-based solution, sustainable food systems, sustainability in chemistry, the historical perspectives of sustainability, the use of dyes in textiles which is related to material transition research, investments from legal and cultural perspectives, production impacts to sustainability, research on the contribution of indigenous and local communities in the preservation of biological and cultural conservations. Going through the HELSUS publications, there seems to be no research about campus sustainability in Finland, in particular, about the students' perceptions.

Furthermore, at Tampere Universities, the sustainable development in research, development, and innovation section of its webpage mentioned sustainable research and its projects. One project that can be related to the sustainability engagement of young people is called All-Youth (All Youth Want to Rule Their World) 2018-2023. Exploring more about this project, the project studied the capacities of young people ages 16-25 and the factors that hinder their engagement in society. The project focuses more on the rule of law, digital innovation, and bioeconomy. The goal is to involve the youth in the current structures of society as they believe that lack of participation may hinder sustainable well-being and social and economic growth. However, there is no available report about this project during my exploration on the website. With regards to Tampere Universities research and focus, they have different groups conducting specific sustainability research, like the RESPMAN research group, where the research is more on the business side and stakeholder management, the Wastebusters research group focuses on food waste management, and other groups that study the welfare systems, fossils, and raw materials, cooperation of different groups in the communities, health aspect, and the environmental aspect of sustainability.

From my search of these three universities for public information about sustainability and their research and projects, there seems to be no focus on the public perceptions of sustainability, like with the students as one of the campus stakeholders. These observations may also not mean that there is no research on the matter. There is also a possibility that some of the research and publications were not made available during my search or other research was in the Finnish language. However, the university's efforts that have not been clearly communicated to its stakeholders may contribute to a lack of awareness and weak engagement from the campus community stakeholders (Horhota, et al., 2014). Higher education is the agent of change for sustainability efforts, but this cannot be made possible without the involvement of its student community (Purcell et al., 2019). To accomplish sustainability initiatives, the initiatives must be communicated to the campus community to gain support and to be seen as an important concern (Conner et al., 2018). With this, it is evident that this

present research can be made socially relevant in the future. This target to provide perceptions of one of the university stakeholders- the students. This study can provide information as to how visible or how to make sustainability initiatives more visible at Finnish universities.

4 METHODOLOGY

4.1 Research aims and questions

The purpose of this study is to expound and gain a better understanding of how different groups of university students view sustainability and what they think of campus sustainability in Finland. Sustainability is defined in varied ways and is being understood by campus stakeholders differently (Alexander et al., 2021). This different understanding of sustainability may lead to confusion and lesser commitment to achieving sustainability practices on campus (Fisher & McAdams, 2015). The students' community is considered the largest stakeholder of the campus (Nagy & Somosi, 2020; Horhota et al., 2014). The student's own knowledge and understanding of sustainability could impact their perceptions and expectations of campus sustainability efforts and sustainability culture (Alexander et al., 2021). The purpose stated into the research questions would be,

1. How do university students perceive sustainability?
2. Do local university students' perceptions of campus sustainability differ from international students?
3. Is having classes in sustainability significantly connected to personal responsibility and personal energy use attitudes?

To meet this purpose and aims, this study expanded Emanuel & Adams' (2011) research design in describing students' perceptions of campus sustainability. Their research elaborates on how the student community shows concern about the environment now and in the future, the student's knowledge of sustainability, and whom they anticipate being responsible for sustainability. Their study compared two groups of students from one state in the United States of America to another. In this present

study, instead of comparing students' perceptions of different states, a comparison of different groups of students was carried out at the same university student community. Also, the questions in the questionnaire of Emanuel & Adams (2011) were modified with additional elements of sustainability culture, the importance of university initiatives in achieving sustainable development goals (SGDs), and an open-ended question at the end. This is to expand the findings and relate this with the students' view of sustainability.

The decision on adding the elements of culture was based on Alexander et al.'s (2022) study where they asked about the sustainability culture and selected elements like the signs and symbols in exploring the perceptions of the campus stakeholders. Whilst the importance of campus initiatives was based on Conner et al.'s (2018) study of stakeholders' perceptions. They also asked these questions to the students, and they believed that the information on their research could be valuable in expanding research regarding campus sustainability.

There have been studies conducted in Finnish universities regarding sustainability, like cooperation between Finnish universities to improve sustainability performance (Malinen, 2013), a comparative study on campus sustainability in Hong Kong and Finland through examining public documents and webpages (Law, 2015), and examining students' sustainability competences (Wang et al.,2022). However, there are no specific studies that deal with how students perceive campus sustainability with elements of sustainability culture and how important university initiatives are for them. I found this area of campus sustainability understudied. Finnish universities, like the University of Jyväskylä, University of Helsinki, and Tampere universities have sustainability projects on campus, but the publications and news did not describe how the public view these projects and how they further engage the students. Their aim, as stated on the website, was to increase knowledge about sustainability and prepare the graduates to address the problems of sustainability and planetary well-being (JYU, 2022, UH, 2022, Tuni, 2022). This aim would not possibly be achieved without getting the perceptions of the students. This aspect should be studied more to provide the university with some information about their stakeholders' viewpoint on sustainability and campus sustainability, which in this case, the students. The findings of the study can be helpful in designing pedagogical approaches in higher education. Also, the findings of this study will be relevant for university administrators in communicating awareness about sustainability culture and providing opportunities for the student community to engage them in sustainability practices.

4.2 Methodological choice for the research

This research utilized a mixed method. It employed both qualitative and quantitative approaches in research. This choice was made in accordance with previous research on campus sustainability (Emanuel & Adams, 2011; Conner et al., 2018; Alexander et al., 2022). This research was intended to get the perceptions of students of campus sustainability through an online survey with the use of a series of Likert-scale type of questions, then collect the university students' perceived definition of sustainability in their own understanding and wording, and have the university students freely express their opinions and suggestions about campus sustainability at the university. Also, I wanted to gather more responses from the attending university students during the Spring semester of 2023, and the use of both qualitative and quantitative suit the purpose and intention best. Aside from that, mixed methods in research are believed to strengthen the results and in understanding inferences of social phenomena and tackling societal issues from a variety of research disciplines (Jogulu & Pansiri, 2011).

Mixed methods research is a kind of research that combines the use of qualitative and quantitative data (Dawadi et al., 2020). The mixed method was first introduced by Greene, Caracelli, and Graham in 1989 for five purposes-triangulation, complementarity, development, initiation, and expansion (Schoonenboom & Johnson, 2017). In 2006, Byrman (as cited in Schoonenboom & Johnson, 2017) mentioned that mixed methods will improve the credibility of the results, provide a conceptual understanding of the context presented, use qualitative to illustrate or emphasize the quantitative data results, enhance the utilization of the findings of the study, to confirm and discover by generating qualitative assumptions to be tested using quantitative analysis, and to gather diversified views of the research participants.

Qualitative research approaches are used to find a deeper description and understanding of social phenomena and the views of respondents in the study (Yilmaz, 2013,) while quantitative methodology is for measuring the causal relationship between variables that needs some statistical treatment (Yilmaz, 2013). Particularly, in this research, a thematic analysis of qualitative research was used to understand what the data is about and investigate the meaning by searching for some key ideas or terms that arise from a set of data. Thematic analysis is a type of qualitative method used by researchers to familiarize, recognize, examine, investigate, and categorize patterns in themes from the gathered data (Braun & Clarke, 2006).

Thematic analysis is a method on its own that assists the researchers not only in their analysis but can also be widely used in various types of research questions (Nowell et al., 2017). One of the advantages of using thematic analysis is that it can be done both in an inductive and deductive manner. The inductive thematic analysis is analyzing the data without framing the data or trying to fit the data within the

research question or researchers' interest, which many researchers consider a little like a grounded theory approach (Braun & Clarke, 2006). Whereas the deductive way of doing the analysis is fitting the data within the pre-conception of the researcher or theoretical interest. In this study, inductive thematic analysis was used in investigating emerging themes of the set of data. This provided me with the opportunity to describe the message of the respondents' answers and to try not to influence my own epistemological interest.

A qualitative method has also been utilized in support of the quantitative data gathered, like in some research into interpreting data from an open-ended question posed in the survey questionnaire. The aim is not to provide an in-depth interpretation of the data, but rather the general view of the data being analyzed. For example, such style was used in the exploratory research by Alexander et al. (2022) regarding the campus stakeholders' personal view of sustainability in relation to the sustainability culture; and Conner et al.'s (2018) research on students' perceptions of campus sustainability.

On the other hand, quantitative methods are particularly utilized to quantify research participants' opinions, beliefs, attitudes, and opinions of many other defined variables (Mohajan, 2020). In this study, a qualitative method is used in extracting themes from the answers to open-ended questions, while a quantitative method is used in describing the demographic data and the research participants' perceptions using a numerical scale of 0-5 on the Likert scale. The quantitative methodology has also been used in studying students' perceptions in relation to sustainability topics. For example, students' perceptions of green campus initiatives in Brazil (Peirera Ribeiro et al., 2021), communicating sustainability and the impacts of a behavior change campaign (Godfrey & Feng, 2017), self-perceptions of students towards sustainable development (Savelyeva & Douglas, 2017), the impact of coursework on students' perception of sustainability (Fisher & McAdams, 2015), and students' attitude and beliefs towards sustainability information (Hay et al., 2019).

There could be an alternative to using purely the qualitative method or quantitative method. However, to relate to the research questions, I needed to gather the university students' perceived definition of sustainability, and what this sustainability means to them in their own words, and not provide them with a set of theoretical factors of sustainability and measure the university students' perceptions with the use of a numerical scale of 0-5 on the Likert scale. This can be done by using mixed methods in research. Also, with the data collection method of using the online survey and gathering as many responses, the mixed method seems to be more fitting as it would not take so much time for the research participants to answer the questions. I also acknowledge the fact that presenting mixed methods could have challenges that may create a gap in understanding the findings (Catallo et al., 2013).

4.3 Respondents

The research participants of this study were the attending and exchange students at a Finnish university in Finland during the Spring semester of 2023. The study was conducted in a two-week period. The reason for this is that I intended to gather as many participants as possible to have a varying number of students from different year levels and disciplines. This provided an opportunity to collect a higher response rate for the study in question. It is important to have a higher number of responses to ensure that the findings of the research represent the target population (Wrench et al., 2019), or in this case, a representative of a group of students from different study year levels.

4.4 Data Collection

In gathering the data, I used a modified version of the survey questions from Emanuel & Adams' (2011) study regarding the students' environmental concern for the present and future, their knowledge of sustainability, their attitude towards the campus responsibility for sustainability, attitude towards personal responsibility for sustainability practices, and attitude towards their personal energy use practices. Emanuel & Adam's (2011) survey questions were developed using focus group interviews with the students, faculty, and administrators. It was a valid and tested survey instrument for the issue of campus sustainability. However, I modified it for the purpose of expanding their results and incorporating the students' view of sustainability with their perceptions of campus sustainability.

I also gathered demographic information. The inclusion of socio-demographics (like age and gender, etc.) in the research is important because this provided an idea of the sample representation and categorization of different sub-groups (Formplus Blog, n.d). Emanuel and Adams' (2011) research gathered demographic information from their research respondents as well. From the demographic data, I opted not to include on/off-campus residents. The Finnish university does not have its own on-campus residence or dormitory. I would rather let the participants answer whether they live near the campus or not and whether they live in student housing or private housing. The intention of this is to describe the commuting modes of students going to university and back home.

The survey was conducted online using a Webropol survey. The use of this tool was recommended by the Finnish university where I conducted the research. The survey questions are in English. The English language is the 'lingua franca' in communication between people who do not share a common native language and is the medium for intercultural communication (Seidlhofer, 2005). The participants of the study were the local and international students at the Finnish university and the use

of the English language in the questionnaire would suit best. Access to the link to the survey was done using different methods. The invitation letter and link were sent to the faculty department coordinators, student union, student associations, and organizations, the university communications, and the university library supervisor for the possibility of distributing QR codes at the library. However, the student union and the university communications could not share the survey questionnaires on their communication channel due to their policy that they cannot share thesis-related questionnaires from individual students. Also, the university library supervisor could not allow me to post the QR codes on its premises as it is in their policy to take care of the premises structures and to make them neat and clean for student work. Due to these difficulties, I asked for help from the university's international office and individuals who are responsible for sustainability courses and environmental affairs of the university to reach more potential respondents. The faculty department coordinators, the international office, and the individuals (whom I approached) replied that they forwarded the survey invitation to the students.

4.5 Ethical Concerns

In this section, I would like to discuss the ethical concerns that were taken into consideration throughout the conduct of the study. The participants of the study were attending and exchange university students at a Finnish university. It was good to ponder how possible processing of personal data could take place in this study. Firstly, I consulted the General Data Protection Regulation (GPDR) officer at the university about whether answering the questionnaire could possibly identify the students. The questionnaire does not gather any sensitive information, which signals that the questionnaire could be distributed to the students.

Secondly, to ensure that the students could not be identified by any means, the Webropol questionnaire was designed in an anonymous way. In this manner, I could not gather the student's e-mail address, name, and as to which department the student is from. The link to the questionnaire was also distributed through the mailing lists of the different faculties and students' associations and organizations. It is to be certain that I could not send the survey questionnaire link through private email links.

Thirdly, for the students to be aware of what the master's thesis is about, the aims and purpose of the study were stated in the introduction statement of the questionnaire. The question types were elaborated on, and the possible time frame and language to be used to answer the questionnaire were also included. The asterisk (*) sign also informed that questions were mandatory and that students would need to provide their perceptions. The modified version of the research survey questionnaire is attached in Appendix 2.

Lastly, as there would still be a possibility to process some student's information and it may not be avoided at some point, I asked for permission to participate in the study. Prior to answering the survey questions, the students were able to read the consent to participate statement, and by clicking 'next' they consented to participate and agree with the terms. They were also informed that the data gathered should solely be used in this research and that the data would be destroyed after the research was completed. Also, the collected data was stored using the university's recommended storage drive. The purpose of this is to guarantee that the student's data is safe and handled with the utmost care.

4.6 Data Analysis

The data collected from this study was through an online survey using Webropol. This Webropol is a survey tool that helps researchers collect the data hassle-free, and with a feature to give reports and visual images (Webropol, n.d.). The research participants' answers to the open-ended questions in this study were then exported to a pdf file while the answers to the Likert scale questions and multiple-choice questions were exported to the IBM SPSS statistical platform for analysis. The figure below describes how I processed the data to be ready for further analysis.

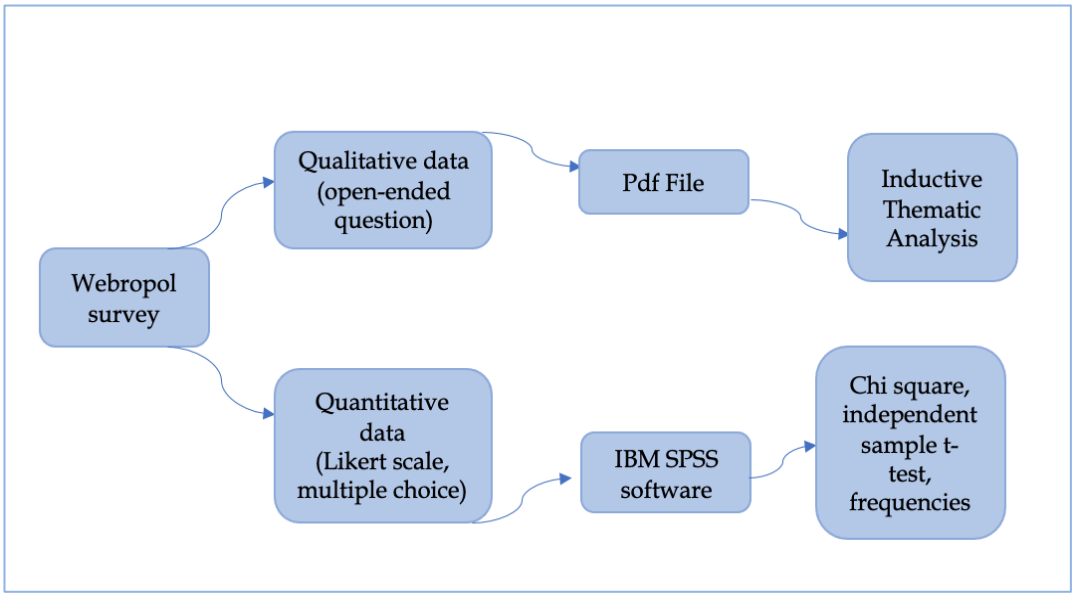

Figure 4. Data processes for analysis

Inductive Thematic Analysis. As shown in Figure 4, inductive thematic analysis was used to investigate and extract the common and emergent themes from the answers to open-ended questions. Thematic analysis is a qualitative method used in

determining data patterns, analyzing, and interpreting them (Braun & Clarke, 2006). Using this method will provide a step-by-step-procedure for classifying themes from the given data (Nowell et al., 2017). Thematic analysis is useful in interpreting human perceptions and experiences and for the researcher to arrive at a good result (Ozuem et al., 2022). Nowell et al.'s (2017) study argued that one of the advantages of using this method is that it does not require technological knowledge from any other qualitative approaches. In particular, an inductive approach to thematic analysis can provide an emergent theme that arises from the set of data without having the researcher make a pre-categorization of data (Braun & Clarke, 2006). The figure below developed by Ozuem et al. (2022) was what I followed in carrying out the inductive thematic analysis for this study. The reason for this choice is that Ozuem et al.'s (2022) guidelines put more emphasis on the scoping and excavation of qualitative data. Ozuem et al.'s (2022) model encourages researchers to not just take notes but rather search for the deeper meaning of the data which they believe other thematic analysis processes lack some guidance on this aspect.

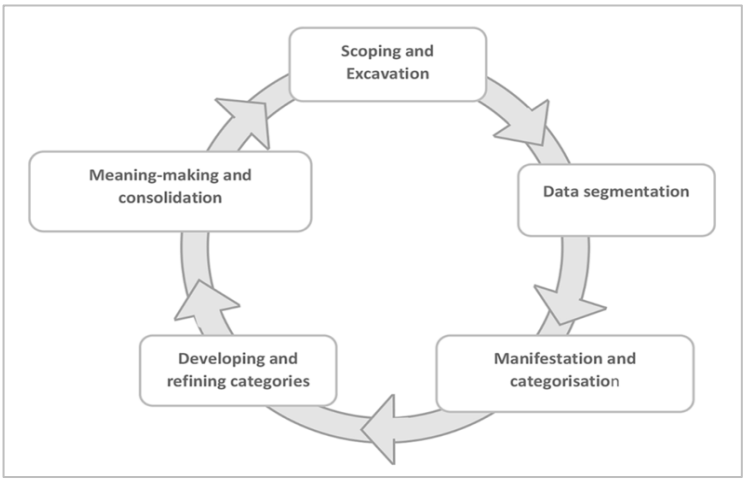

Figure 5. Ozuem et al.'s (2022) guideline for dynamic thematic analysis

From above Figure 5, I first familiarized the university students' answers, and scope, and investigated what these students would want to argue. Then, I identify similarities between their answers, like the use of pronouns and verbs in the sentence and get some words to group together. After identification of keywords, I put them into themes. I put the focus on the experiences of the respondents and similar messages. These messages are then placed into different categories, which allowed me to explore more appearing patterns in the text. After that, I reviewed all the themes to refine the categories and see if there are themes that can be merged into a single category. Finally, I connected the categories to the purpose of the research for meaning making.

Statistical Analysis. The answers to the series of Likert scale type of questions and multiple-choice questions were exported to IBM SPSS statistical software for descriptive statistical analysis (as shown in Figure 4). In particular, the data gathered from the questions about campus sustainability attitudes were analyzed using Pearson's chi-square statistics test. Pearson's chi-square test of statistics can provide details as to which categories account for any difference found in the subject of study (McHugh, 2013). A significant *p*-value of 0.05 or less will suggest a statistically significant connection between the variables and more than a *p*-value of 0.05 emphasizes no observed differences. Pearson's chi-square statistics test has also been used in studies relating to perceptions of campus sustainability (Emanuel & Adam, 2011; Dagiliute et al., 2018; Conner et al., 2018). However, to ascertain whether there is a significant connection between having a class that mentioned sustainability *vs* students' personal responsibility toward sustainability and personal energy use, an independent t-test was carried out. This statistical analysis is used when examining the significant differences between an interval variable and a nominal variable (Wrench et al., 2019).

In addition to that, descriptive statistics using frequencies were used in presenting the demographic profiles of the respondents, the observed and expected signs and symbols of sustainability culture, and in rating the importance of campus initiatives for the students. The presentation of demographic data using descriptive statistics has been used in other quantitative research studies. Like, for example in the research of Pereira Ribeiro et al.'s (2021) student perception of campus green initiatives, Dabija et al.'s (2017) study on the different stakeholders for campus sustainability, and Alexander et al.'s (2022) research into exploring the campus community's definition of sustainability.

The figure below describes which part of the questionnaire receives a specific type of statistical treatment. The questionnaire for this study is attached in Appendix 2.

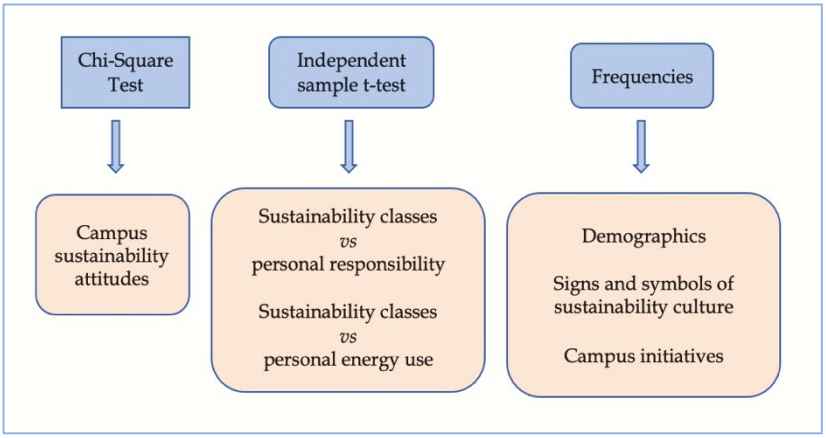

Figure 6. Statistical analysis treatment for specific parts of the questionnaire

5 FINDINGS

The primary purpose of this thesis was to expound an understanding of how students view sustainability and to provide insights into their perceptions of campus sustainability in Finland. This was done by conducting a survey of attending students at a Finnish university during the Spring semester of 2023. The study also sought an understanding of how classes in sustainability are significantly connected to the students' attitudes toward personal responsibility and energy use.

The findings are divided into four parts. They are demographics, a definition of sustainability, survey results, and a thematic analysis of students' comments, recommendations, and suggestions about sustainability on campus. In demographics, I described the characteristics of the samples to provide a description of the profile of the respondents. For the definition of sustainability, I presented the result from the thematic analysis. Whilst, in the survey results, I presented the students' attitudes towards sustainability. Also, in this section, I described the students' concerns about the present or future, their view on who should be responsible for campus sustainability, their personal responsibility towards sustainability, if they have observed elements or symbols of sustainability culture on campus, what they thought about the campus initiatives on campus, and the significant connection between sustainability classes and personal responsibility and energy use attitudes.

5.1 Demographics

The online survey was conducted in a two-week duration from 27 January until 10 February of the Spring semester of 2023. For the time duration, 100 university students consented to participate in the survey. Out of 100, the majority of the students were female (63%) and followed by males (29%). There were only a few of them who classified themselves as other (2%) and preferred not to say their gender (6%). The respondents' age range from 19 to 46 years old and with an average age of 26 years old. When it comes to student classification, most of the respondents were local Finnish students (80%). There were one-fifth of international students (19%) and one-tenth of exchange students (1%). Most of them live near campus (61%) and more than half live in private housing (58%). Also, most of the students (67%) had classes that mentioned sustainability.

5.2 Sustainability definition

In the online survey, university students were asked this open-ended question: "What is sustainability for you?". This was made so that they could freely express their perception of the word 'sustainability'. Familiarizing and classifying their answers based on the pillars of sustainability, most of the university students associated their perceived definition with the environmental pillar (67%), followed by the social pillar (27%), and then the economic pillar (19%). Also, there is little to no mention of the interconnectedness of these three sustainability pillars. Aside from that, students did not mention in their answers the 'peace' and 'partnership' in the 5Ps dimensions of sustainability. From this result, I could argue that the perceived definition of sustainability seems to be not integrative in nature for most university students. Even though most of the respondents had classes that mentioned sustainability, the other dimensions (in the 5Ps) of sustainability may require more emphasis during the classes.

On the other hand, from the inductive thematic analysis, three major themes emerged. First, university students view sustainability as a reflection of their own personal actions. Second, they perceived sustainability as a practical action. Third, they defined sustainability as a future-oriented term. Details of these themes are discussed below.

5.2.1. Personal action

Out of the 100 responses made, 31 addressed that they viewed sustainability through their own personal actions, their personal choices, and their personal behavior. Sustainability is perceived in what they do in their everyday life. This can also be seen with the use of the pronouns 'I', 'my', and 'myself' and the way they speak about themselves. For instance, in the words of one respondent, "Actions I take to minimize my carbon footprint/negative impact on the environment." With the use of 'my', a respondent put it, "Sustainability for me is understanding the consequences of my actions when talking about consuming. One big thing for me about sustainability is trying to do better, whether it be recycling, buying already used, or eating more plant-based food". Here, it can be argued that these groups of university students view their personal responsibility as individuals having an agency where they can have control over their own actions toward sustainability.

Aside from having a sense of agency, these respondents also brought about how their understanding of sustainability affects their actions in their daily lives. The respondents view their own personal responsibility and actions in an introspective and extrospective manner, and with a sense of accountability for the environment. For example, one respondent made a comment "I guess, for example, buying used stuff instead of new, I, for one, buy a majority of my clothes from flea markets (Kirpputori).

In addition, I sometimes buy food from Fiksurouka.fi because it is cheaper but helps reduce your carbon footprint. What I am trying to say is that sustainability, to me, is about making conscious choices that benefit the environment in my everyday life".

5.2.2. Practical action

Of 100, there were 36 respondents stressed that sustainability relates to their actions and processes for practical purposes. The respondents emphasized how their actions could have an effect on others and the environment. The respondents believed that their way of doing things should protect or minimize the harm to others and the environment. One respondent said, "Sustainability for me is the way of doing things. It is about ecological and social aspects being taken into consideration in everything. Especially ecological because our planet's resources and life, are the basis on which humans cannot survive. It should not just be empty talk; it has to be concrete action." The findings may suggest that these respondents answering their definition of sustainability relate their view to their actions as a moral duty, that they have a role in society, and that there is an expectation (a tangible one) about one's action toward care for others and the planet.

Additionally, respondents expressed concern about how one could actually be doing sustainable practices and suggested in their definition some actions like reducing their footprint, using resources wisely, responsible consumption, preserving culture, eating plant-based diets, saving energy, ethical practices for fair labor, a call for transparency, and being conscious of how they would minimize waste production. As one respondent put these actions, "Saving natural resources, using clean energy, protecting the environment, and threatened species, contributing positively to society. Ethical practices, fair labor, and transparency (knowing where things come from and how they were made). Circular economy and minimizing waste." This shows that respondents exhibit a reasonable knowledge of the implications of sustainability issues and sustainable practices, and on how to be diligent in paying attention to one's actions.

5.2.3. Future-oriented

Of 100 respondents, 27 commented that sustainability relates to their worries about the future, doing things for the long term, and preserving the world for future generations. Respondents emphasized that it is about trying to make things last and in good condition to ensure that the next generation can have a better planet and society to live on. One respondent put it, "It takes into consideration the rights of nature and its welfare, and that we preserve the world in a good condition for future generations." Also, another respondent mentioned, "It is about making things durable and long-lasting, and having a vision of the future where people take care of each other

and nature." This reveals that this group of university students are more likely aware that taking care of our planet is for the welfare and well-being of others, and for the years to come. They seem to exhibit a sense of accountability for taking care of others and nature, and that their actions could have consequences for the future.

Of 36 respondents who mentioned that sustainability is about the practicality of their actions, 12 of them mentioned that these actions aim to preserve society and the planet and make things last longer in the future. One respondent said, "Taking care of the environment in a way that keeps the world a good place for future generations." Another respondent put it, "It is making ecological choices that aim to preserve the planet.". Also, one respondent emphasized, "It is a feature of actions. It requires that the action does not cause long-lasting harm to the environment, other people or other people's possibility of having a similar environment, culture, and economy." This implies that respondents are concerned about the future for the next generations to have a better place to live in.

5.3 Survey results

A survey of university students at a Finnish university was conducted. It sought to assess and provide insights into their perceptions and commitment towards campus sustainability. The survey was also designed to describe the significant connection of having classes that mentioned sustainability. Of particular interest were the answers to the following questions:

(1.) Do local university students' perceptions of campus sustainability differ from international students?
(2.) Do students observe and expect symbols of elements of sustainability culture on campus?
(3.) What campus sustainability initiatives do students find more relevant?
(4.) Is having classes that mentioned sustainability significantly connected to personal responsibility and energy use attitudes?

Concern about the future/present. The result (Table 1) indicates how concerned the respondents are about the future/ present. The findings show that both local (93.7% and 95.1%) and international students (90% and 80%) agreed or strongly agreed that they are worried about the future/present. However, several international students (10%) disagreed or strongly disagreed that they are worried about climate change, the energy supply crisis, and the generation of waste. This could suggest that concern for the future is not homogeneous among study participants.

	Strongly agree or agree		*Strongly disagree or disagree*				
	International (%)	Local (%)	International (%)	Local (%)	*n*	X^2	*p*
At present, I am concerned about climate change, energy supply crisis, and the wasteful consumption of natural resources and the destruction/pollution of the environment	90	93.7	5	5	100	6.64	0.16
I believe that our global economy is based on practices that will have negative consequences on the world's future generations of people.	80	95.1	10	0	100	8.17	0.08

Table 1. Concern for the future/present, *df*=4, level of significance *p value* <*0.05*

Responsible for campus sustainability. Table 2 reveals that both the international (85%) and local students (85%) are like-minded about their perception of the university to make sustainability on campus a priority. There were three-fourths of international students (75%) agreed or strongly agreed with having everyone be held responsible for supporting sustainability initiatives on campus (Table 2). On the other hand, about seven-eighths of local students (87.5%) agreed or strongly agreed that everyone should be responsible for campus sustainability (Table 2). Also, one-fourth of the international students (25%) believed that not all community members should have to support sustainability efforts (Table 2).

In terms of their attitude toward personal responsibility for sustainability, a larger number of international students (90%) agreed or strongly agreed that they feel responsible for a sustainable campus (Table 3). Both international students (90%, 90% respectively) and local students (95%, 87.5%respectively) said that they support the university's sustainability initiatives and that sustainability is important for them (Table 3). However, in terms of engagement, there were more than one-half of both the international students (55%) and local students (57.5%) willing to participate in the university's initiatives for sustainability (Table 3). Same with the attitude towards personal energy use, one-fourth of the international students (25%) and a little over one-

fourth of local students (28.8%) disagreed or strongly disagreed with the need to change their attitude about their energy usage and nearly half of the local students (46.3 %) agreed or strongly agreed that they feel the necessity to alter their personal energy use (as shown in Table 4).

From these findings, it can be observed that these international students seem to have a consistent view of having the need to change their energy use and participation in university initiatives. On the other hand, it can also be noted that local university students' respondents exhibit an understanding of who should be responsible for sustainability on campus and showed support for the initiatives. However, some of these local students are not willing to participate in sustainability efforts on campus and in having the need to change their energy consumption. These results could suggest that certain groups of local and international students' actions may not correspond with how they think. These groups of students exhibit knowledge of sustainability, but their thinking does not equate with their actions (Agirreazkuenaga & Martinez, 2021).

Furthermore, when asked in terms of personal sustainability practices, the majority of the respondents have practiced recycling (94%), a little over three-fourths did use environmentally friendly products (77%), and seven-eighths said that they have an energy-efficient mode of transport (88%).

	Strongly agree or agree		*Strongly disagree or disagree*				
	International (%)	Local (%)	International (%)	Local (%)	*n*	X^2	*p*
I believe that the university should make sustainability a priority in campus planning, development, and in daily operations.***	85	85	5	1.3	100	2.51	0.47
I believe that everyone in the university's community should support the campus sustainability initiatives.	75	83.8	15	5.2	100	10.1	0.03

I believe that it is necessary for the university to include sustainability education across curriculum.	75	87.5	10	7.6	100	3.03	0.55
I do not believe that everyone in the university's community should have to support sustainability actions	25	12.6	65	63.7	100	19.8	<.001

Table 2. Attitudes toward school/community responsibility *(***) df*=3, *df*=4, level significance *p value* <*0.05*

	Strongly agree or agree		*Strongly disagree or disagree*				
	International (%)	Local (%)	International (%)	Local (%)	*n*	X^2	*p*
I feel responsible in creating a sustainable campus, community, and the world	90	78.8	5	11.3	100	4.15	0.39
I support the university's initiative to achieve a sustainable campus.	90	95	5	1.3	100	4.39	0.36
I participate in the university's initiative to achieve a sustainable campus.	55	57.5	15	12.5	100	3.08	0.55
Sustainability is important to me.	90	87.5	5	5.1	100	2.04	0.73

Table 3. Attitudes toward personal responsibility, *df*=4, level of significance *p-value* <0.05

	Strongly agree or agree		*Strongly disagree or disagree*				
	International (%)	Local (%)	International (%)	Local (%)	*n*	X^2	*p*
I feel the need to change any of my current energy use practices.	65	46.3	25	28.8	100	10.8	0.03

Table 4. Attitudes toward personal energy use, df=4, level of significance *p-value* <0.05

Signs and symbols of sustainability culture. University students in this study were able to both observe and expect the signage for selling left-over foods in the university cafeteria (39%), waste reduction signs (42%), waste segregation, recycling, and composting bins (70%), bicycle parking signs (51%), 'no smoking' signs (38%), and international/multicultural office (33%). In contrast, some university students indicated that they had not seen energy-saving signs (38%), LGBTQ+ signs (27%), diversity websites (36%), sustainability websites (44%), and solar panels (47%) on campus. Both groups of university students also indicated that they expected the university to have these non-observed signs on campus.

Moreover, another notable observation from the result is that these university students had almost the same percentages regarding the observed carbon emission information or symbol (25%) and weighing scale for the biowaste at the university cafeteria (26%) compared to students saying that they did not observe these signs (25%, 25% respectively).

Despite the results that some sustainability culture elements were not observed on campus, the findings can still be argued that the Finnish university in this study has already been doing some actions and disseminating information about sustainability through some signs and symbols. The non-observed signs on campus may be considered as a possible area for improving the visibility of sustainability culture elements.

Campus initiatives. The students were asked to rate how important the campus sustainability initiatives are for them in terms of academic, engagements, operations, and policy (Table 5). The results showed that students found operations an extremely important initiative. Whereas the other three initiatives were perceived as very important.

Initiatives	Weighted Average	Interpretation
Academics: courses on planetary well-being, carbon footprint research, research on offsetting biodiversity and climate impacts	3.6	Very important
Engagements: publications about sustainability efforts, communications on how to attain carbon neutrality by 2030, student involvement in sustainability practices, public-private partnerships, student union and subject association sustainability actions	3.6	Very important
Operations: smoke-free zone, sustainable dining options, waste reduction, energy saving, transportation options	4.2	Extremely important
Policy: university community well-being, diversity and inclusion, road map to planetary well-being, coordination with the wider community, sustain investment for the future	4.1	Very important

Table 5. Perceived importance of campus sustainability initiatives

Significant connection between sustainability classes, attitudes towards personal responsibility, and personal energy use. An independent sample t-test was carried out to determine whether students having sustainability classes (item one (*M*=4.24, *SD*=0.82); item two (*M*=4.55, *SD*= 0.72); item three (*M*= 3.70, *SD*=0.94); item four (*M*=4.49, *SD*= 0.82); item five (*M*=3.31, *SD*= 1.03)) *vs* no sustainability classes (item one (*M*=3.55, *SD*=1.23); item two (*M*=4.24, *SD*=0.66); item three (*M*=3.33, *SD*=1.05); item four (*M*=3.94, *SD*=0.90); item five (*M*=3.12, *SD*=1.11)) can be connected to their perceptions toward personal responsibility and energy use. Below, Table 6 shows the full *t*-test result from SPSS.

Reading from top to bottom, for item one in Table 6 below, the *F* value for Levene's test is 9.67 with a Sig. (*p*) value of 0.002. Because of the Sig. value is $p<0.05$, I reject the 'no difference' for the assumption of homogeneity of variance and conclude that there is a significant difference between the two groups of variances and use the 'equal variances not assumed' information t (46.47) = 2.94, p=0.005. Thus, on item one, the *t* test is significant, and differences occurred. The group with a higher mean (with sustainability classes) has statistically higher levels on the dependent variable, item one. Thus, it can be concluded that sustainability classes are connected to students' personal responsibility for creating a sustainable campus.

Group Statistics

	sustainability class	N	Mean	Std. Deviation	Std. Error Mean
Attitudes toward personal responsibility for sustainability:I feel responsible in creating a sustainable campus, community, and the world.	Yes	67	4.24	.818	.100
	No	33	3.55	1.227	.214
Attitudes toward personal responsibility for sustainability:I support the university's initiative to achieve a sustainable campus.	Yes	67	4.55	.724	.088
	No	33	4.24	.663	.115
Attitudes toward personal responsibility for sustainability:I participate in the university's initiative to achieve a sustainable campus.	Yes	67	3.70	.938	.115
	No	33	3.33	1.051	.183
Attitudes toward personal responsibility for sustainability: Sustainability is important to me.	Yes	67	4.49	.823	.101
	No	33	3.94	.899	.157
Attitude toward personal energy use:I feel the need to change any of my current energy use practices.	Yes	67	3.31	1.033	.126
	No	33	3.12	1.111	.193

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Attitudes toward personal responsibility for sustainability:I feel responsible in creating a sustainable campus, community, and the world.	Equal variances assumed	9.667	.002	3.358	98	<.001	.001	.693	.206	.284	1.103
	Equal variances not assumed			2.940	46.468	.003	.005	.693	.236	.219	1.168
Attitudes toward personal responsibility for sustainability:I support the university's initiative to achieve a sustainable campus.	Equal variances assumed	.582	.447	2.068	98	.021	.041	.310	.150	.013	.607
	Equal variances not assumed			2.131	69.062	.018	.037	.310	.145	.020	.600
Attitudes toward personal responsibility for sustainability:I participate in the university's initiative to achieve a sustainable campus.	Equal variances assumed	.525	.471	1.774	98	.040	.079	.368	.208	-.044	.780
	Equal variances not assumed			1.706	57.719	.047	.093	.368	.216	-.064	.800
Attitudes toward personal responsibility for sustainability: Sustainability is important to me.	Equal variances assumed	.209	.649	3.064	98	.001	.003	.553	.181	.195	.911
	Equal variances not assumed			2.973	59.005	.002	.004	.553	.186	.181	.925
Attitude toward personal energy use:I feel the need to change any of my current energy use practices.	Equal variances assumed	.043	.836	.853	98	.198	.396	.192	.225	-.255	.639
	Equal variances not assumed			.832	59.782	.204	.409	.192	.231	-.270	.654

Table 6. SPSS results of personal responsibility and energy use *t*-test

For the next items, item two (*F*= 0.58, Sig. (*p*) value 0.45), item three (*F*= 0.53, Sig. (*p*) value 0.47), item four (*F*= 0.21, Sig. (*p*) value 0.65), and item five (*F*= 0.43, Sig. (*p*) value 0.85); showed that there are no significant differences between the two groups of variances. So, I used the 'equal variances assumed' values (item two=*t* (98)=2.07,

p=0.04; item three= t(98)=1.77, p=0.08; item four=t(98)=3.06, p=0.003; item five=t(98)=0.85, p=0.40). The t-test is significant for items two and item four. It can be concluded that classes in sustainability are connected to the university students' perceptions of expressing support for the university's initiative on sustainable campus and that sustainability is important for them. However, having classes in sustainability has no connection to the student's perception of their participation in the sustainability efforts on campus (item three) and their views on the need to change their personal energy use (item five). These findings suggest that sustainability classes do not guarantee an influence on sustainability initiative engagement and sustainable consumption behaviors.

However, getting a significant p-value alone could not be enough. It is recommended to compute the effect size or the size of the difference (Wrench et al., 2019). Statistically, the p-value results can be meaningful. However, knowing what the score difference between the two groups means (M) could matter (McLeod, 2019). The difference in how small or big the effect size can improve the practical significance of quantitative research (Lakens, 2013). To solve for the independent sample effect size, I followed the instructions found in Wrench et al.'s (2019) book and used below Cohen's d formula.

$$d = t\sqrt{\frac{N1 + N2}{N1\ N2}}$$

In this study, the t is the t-reported value in Table 6 (item one=2.94; item two=2.07; item three=1.77; item four=3.06; item five=0.85). N1= 67, which represents the number of students having sustainability classes, and N2= 33, which corresponds to the number of students having no classes that mentioned sustainability. The interpretation of these computations is based on Green & Salkind's (2004) guidelines as cited in Wrench et al.'s (2019) book. The scale below is used.

0.2--- small effect size
0.5--- medium effect size
0.8--- large effect size

Table 7 reveals that among the items, the notable result is the effect found (Cohen's d=<0.2) on the personal energy use score difference between respondents having a class (M=3.31) and no class in sustainability (M=3.12), which is considered as closer to small effect size. This result suggests that the score differences cannot be totally ignored.

Attitude toward personal responsibility	Cohen's *d*	Interpretation
I feel responsible in creating a sustainable campus, community, and the world	0.63	Medium
I support the university's initiative to achieve a sustainable campus.	0.44	Small
I participate in the university's initiative to achieve a sustainable campus.	0.38	Small
Sustainability is important to me.	0.65	Medium
Attitude toward personal energy use		
I feel the need to change any of my current energy use practices.	0.18	Small (<0.2)

Table 7. Interpretation of effect size using Cohen's *d*

5.4 Thematic analysis: an open-ended question

In the last part of the online survey questionnaire, the university students were asked to answer an open-ended question. The question was, "What are your comments, suggestions, recommendations, or questions about sustainability at the university?" Out of 100 respondents, 75 of them voluntarily provided an answer to the question. The responses were then coded and categorized using inductive thematic analysis. From the thematic analysis performed, 5 themes emerged from the university students' comments, three of which were present across ten or more respondents: concern about energy use, waste generation, and footprint; a call for institutional (university) actions; and sustainability integration in classes or as a mandatory course. Key themes with supporting quotations are shown (Table 8) below.

Theme	Number of comments	Representative comment
1. Concern about energy use, waste generation, and footprint	22	"At university, lights are always on 24/7 and I don't really see the purpose of that. We should be exemplary and save energy during this energy crisis!".
2. A call for institutional (university) actions	14	"The university should highlight sustainability in their orientation programs. When they speak up about it from the start, they make it easier for the students to remember it through their studies."

3. Sustainability integration in classes or as a mandatory course	12	"I think there should be more sustainability courses included in the basic studies in every faculty. At least 5 ECTS compulsory course for every student. Right now, it is possible to complete the studies with no knowledge of sustainability of any sort. I think this is concerning since this topic is the present of the world."
4. Sustainability is not visible at campus	8	"For me the university's sustainability goals have remained rather obscure, because I have never heard of those goals. For example, I don't know if the university has a website dedicated to these goals."
5. Resistance for sustainability practices	6	"As a student at the university, I've seen the sustainability roadmap and other sustainability related strategies that the university has done. However, I have a feeling, that it is not taken seriously as it should in the university administration and in the everyday actions. I feel like there are other interest groups, that are trying to hinder sustainability initiatives of the university from the outside through inside staff, meaning that there are university staff and administrators that that do not believe in the cause as much as they should."

Table 8. Qualitative analysis from students' comments to an open-ended question

From Table 8, it can be argued that university students in *Theme 1* are overwhelmingly concerned about the current energy crisis (which is happening during the conduct of the study). From their comments, these university students tend to notice the unnoticed, like having all the lights always on at the university and "having no signs of energy savings". This implies that they would want the university to be a role model for being mindful of its usage and wasteful consumption of energy. In addition, the use of 'we' in the representative comment suggests a sense of responsibility and accountability for everyone in terms of energy use and the generation of waste at the university.

In *Theme 2*, these university students expected the university to do more sustainability-related actions. The students' comments on having sustainability information at the beginning of their studies and speaking about sustainability in the university programs suggest that these university students are interested in gaining access to

sustainability information on campus. It can also be argued that the Finnish university in this study did not involve the students in sustainability matters when they entered the university.

In connection with that, respondents expressed interest in having more access to sustainability information. This can be supported in *Theme 3,* where this group of university students would want to have more sustainability classes or make sustainability classes mandatory. This implies that at university, students are not strongly compelled to take any sustainability classes. Rather, they have the freedom to enroll for them or not. The university students who participated in this study seem to show concern for other students to have no interest or knowledge about the issue of sustainability. Also, it can be argued that the university students' willingness to be educated on more sustainability-related topics is present.

Having no orientation to the sustainability information and goals, and access to information about sustainability could possibly affect the visibility of sustainability initiatives on campus. This can be seen from the representative comment in *Theme 4* on sustainability goals as "obscure". This could suggest that information about sustainability on the university website is discreetly available to each of the students. These groups of university students did not know that this information existed (confirmed upon checking the Finnish university website). It can be argued that these university students wanted to tell the university administrators to increase its promotion of sustainability information to its different communication channels for sustainability topics and its initiatives to be more visible on campus.

Moreover, in *Theme 5*, the respondents also noticed resistance to sustainability initiatives and efforts by the university at achieving its sustainable goals. This resistance cannot only be seen among students at the university but also among its university staff. In the representative comment, it can be argued that there are university staff and administrators who are not supportive of the issue of sustainability. This suggests that the university in charge of sustainability and administrators face challenges in gaining support and in convincing their sustainability efforts to all its own staff. Here, it could also be argued that achieving the 2030 Agenda for Sustainable Development is not an easy task for the university itself.

Furthermore, out of the 75 responses, 13 of them expressed some suggestions and recommendations about sustainability at the university. These include: the university should only give the calendars (in the backpack for the first day at university) "if somebody wants it"; encourage students to use sustainable transport like "using bicycle"; information "to show how much food goes to waste every day in many student restaurants"; the use of weighing scale for bio-waste must be done "every day and not every year"; signs across university about "signs that call for energy saving and sustainable behavior"; more "sustainability study related content " and "podcast about the energy crisis"; sustainability education "among international community in Finland since they are made up of people from different backgrounds and have

different training and views on the use of resources and the importance of sustainability to the planet"; "soda cans recycling bin" around the campus; reduce "paper and prioritized digital service"; sustainability awareness in the form of "chart comparing the past years and now"; and some had mentioned about having a more varied diet choices "most especially for vegan choices" and in making the "left-over food cheaper" at the student cafeterias so it would not go to waste.

The respondents' suggestions and recommendations can be argued that these are the possible areas that the university can take some action and improve in terms of having a sustainable campus and in the realization of Agenda 2030 for Sustainable Development. The university students who participated in this study expressed concerns about the generation of waste, their lack of exposure to sustainability efforts, and in promoting or having more elements of sustainability culture through signs and symbols on campus. These university students seem to expect the Finnish university to make sustainability efforts more visible in their every life through different forms of communication platforms, in a series of sustainability courses for both local and international students (including exchange students), in transforming from paperless to more digital, in the promotion of sustainable behavior around the campus (e.g., signs and symbols), in taking action about wasteful consumption, and in consistently doing it in the everyday campus life and not in a once in year program. Aside from that, it can also be argued that some university students felt that they did not have more choices in terms of dietary choices provided by the student cafeterias and restaurants and that the prices were not reasonable for the left-over foods. This suggests that this group of university students believe that there would be no more waste when this diet option (e.g., vegan choices) and lower prices would be made available to them, and that the university may also ponder how they could work together with the student restaurant operations.

6 DISCUSSION

This study explored university students' perceptions of campus sustainability in Finland. First, in answering research question 1, "How do university students perceive sustainability?", this study provided evidence that most of the respondents in this study associate their definition of sustainability to the environmental pillar of sustainability, which is related to other studies, such as Alexander et al., 2022 and Popescu et al., 2020. The social pillar of sustainability ranked second (after the environmental pillar), which is also related to the findings of Zeegers & Clark, 2014. This could imply that the exposure and focus are more on the environmental aspects than on social and economic aspects; and that the perceived definition of sustainability is not that integrative in nature. As such, the different groups of students' definitions of sustainability may also impact how they answer the online survey, in presenting their views, and in their reactions to the status of sustainability at the university.

Aside from initially associating their definition to the environmental pillar of sustainability, this study also provided evidence that university students have different perceptions of sustainability, which is also related to the previous studies of Fisher & McAdams, 2015; Felgendreher & Löfgren, 2018; and Sidiropolous, 2022. This can be supported by their answers to the open-ended question: What is sustainability for you? The students define sustainability by speaking about their own personal actions in their daily life, thinking about others and the environment, and relating how these actions could impact the future. Even though many of them (67%) have sustainability classes, the way they perceive sustainability varies. Recognizing the differences between the personal definitions of students and the university's definition of sustainability may help the university administrators and those in charge of creating a sustainable campus in providing a guiding definition- a unified language of sustainability. Establishing a unified definition was also suggested by Alexander et al.'s (2022) research where this definition should be presented and incorporated into the university's programs and communications.

In the research by Alexander et al. (2022), the students were asked to define sustainability by selecting items (theoretical factors of sustainability) that they would include in their personal definitions. The result showed that the personal definition varies. In this present study, the difference is, I let the university students define their own definition of sustainability. Yet, the outcome is the same where there is a variation of the answers in their definition. Alexander et al.'s (2022) findings then suggested a unifying message about sustainability where the university should give its definition prior to the survey to avoid confusion. This is also the case in the present study where the university did not intervene nor give their own definition to the university students prior to the conduct of the survey. However, I find this an important implication of the study where university students were not given a definition of sustainability by

the university prior to the survey. This is because this could imply that university students should be educated in a unified definition of sustainability. This is the result of the study where there seems to be a need for the university to influence what sustainability means in a university education context and not merely because of the reason of confusion. According to Conner et al.'s (2018) research, the absence of a unified definition and understanding of sustainability may result in the stakeholders looking at the initiatives as greenwashing or a marketing purpose rather than making it an effort for societal change.

Moreover, in answering research question 2, "Do local university students' perception of campus sustainability differ from international students?", the quantitative analysis results found high perceived concern for the future/present. Both international students and local students are worried about environmental climate change, waste generation, and energy crises. On the surface, both groups of students believe that the university should take more sustainability actions, they expressed support for the university's initiatives and perceived sustainability as important to them. However, on a deeper level, in terms of engagement and participation, these aspects rated low in the result. A larger portion of both groups expressed unwillingness to "participate in the university initiatives" despite most of them have mentioned that they support the initiatives. Therefore, the university students support the initiatives but quite hesitate in their participation. This commitment gap can also be related to the findings of Emanuel & Adams (2011). In their previous research, respondents agreed with the importance of sustainability and its realization through initiatives. However, sustainability for many of them may view it as a theory and not a personal reality (Emanuel & Adams, 2011). Additionally, about one-half of the local students are feeling the need to change their current usage of energy, which is contradictory to their concern about the energy crisis. This contradiction can be supported by the survey responses on the attitude to personal energy use. This contradiction suggests that knowledge of sustainable consumption is not connected to sustainable behavior (Godfrey & Feng, 2017).

In answering research question 3, "Is having classes in sustainability significantly connected to personal responsibility and personal energy use attitudes?", the results of the independent sample *t*-test reveal that these classes are significantly connected to the university students' perception of their personal responsibility in creating a sustainable campus, their support of the university initiatives, and in their view of sustainability as important. However, these classes in sustainability are not connected to students' view of their participation in the university initiatives and personal energy use attitudes, which further support the survey responses on their willingness to engage themselves in the university initiatives and in having to feel the need to change their energy use. This finding can be related to Jung et al.'s (2019) research where they studied the relationship between having sustainability courses and social responsibility. Jung et al.'s (2019) research results revealed that concern for the

environment and sustainable consumer behaviors scored lower in those who have sustainability classes than those who do not have the course, which is the opposite result of what was expected. This result implies that sustainability courses do not guarantee motivation among students to feel the need to change their attitudes. These results may also suggest connections to the respondents' personal definition of sustainability, in having a sense of agency and in doing what is morally right. Perhaps, the university may focus on integrating the ethical domain of sustainable practices and their implications for sustainability issues in general.

In terms of the university students' perception of the importance of campus sustainability initiatives, they regard operations as the most important initiative, which is the same finding as previous studies by Conner et al. (2018). However, it differed from the next initiative, which the respondents found very important. In Conner et al.'s (2018) study, the respondents chose academics, while in this study the respondents chose policy. Under policy initiatives, these include "university community well-being, diversity, and inclusion, a road map to planetary well-being, coordination with the wider community, sustained investment for the future". These findings may suggest that the respondents pay attention to the sustainability roadmap of the university.

On the other hand, the qualitative findings from the inductive thematic analysis support the quantitative findings: that most of the students are concerned about energy use, carbon footprint, and waste generation; and that Finnish universities should consider sustainability as a prime concern in their operations and in policy initiatives. Students expected "the university to do more", have a "clear strategy", and "lead by example". This focus on university-level actions has also been reflected in the student's comments in the research by Alexander et al. (2022). Incorporating sustainability principles in the organizational culture among those who lead may create an influence on the community and various communication methods must be needed (Žalėnienė & Pereira, 2021).

Furthermore, the qualitative findings also uncovered the importance of information dissemination and in raising awareness about campus sustainability. This intention of having a better communication channel about sustainability at the university can be supported by one of the key themes in the analysis, which was "sustainability is not visible", the representative comment from the students, and in the students' suggestions and recommendations. This finding can also explain the possibility of why students find sustainability important for them and support university initiatives but score low in their engagement. This lack of awareness about sustainability may affect how students participate in university initiatives (Pierera Ribiero et al., 2021; Sidiropoulos, 2022).

7 CONCLUSION

This study found that, overall, both the international and local students at a Finnish university are concerned about the future/present, believed that the university should make more effort and prioritize sustainability in their operations and policy initiatives, supportive of the university initiatives, and believed that sustainability is important. However, a larger portion of both groups are unwilling to participate in the university initiatives, and about one-half of the local students feel the need to change their personal behavior regarding energy use. The most likely explanation for this is that respondents have a commitment gap for sustainability practices and that classes in sustainability do not automatically influence motivation, respectively. Another possible explanation for this is the personal definition of sustainability for these university students and having a strong sense of agency where they can have control of themselves in deciding whether they will participate in the university sustainability initiatives or change their current energy usage or in acting on what is right. Also, these university students expressed a call for university-level actions toward sustainability, which suggested that they wanted their leaders to be role models and to be more actors for them to follow and engage in the initiatives. However, it is important to bear in mind that there are internal challenges and difficulties in the implementation of sustainability initiatives, which, perhaps such information may be included in the sustainability modules.

In addition, a unique strength of this research is that it brings forth perspectives and insights on campus sustainability at a Finnish university and uncovered the importance of communicating sustainability initiatives to the student community. This suggests that communication and raising awareness of the different stakeholders is important in gaining not only support but also participation from the university student community, for instance. Also, this study can also serve as a basis for the improvement in the promotion of sustainable campuses, the development of effective communication channels, and the development of sustainability activities and pedagogy.

7.1. Practical implications of the research

From the results of this research, I would like to pose some suggestions to the Finnish university being studied and the higher educational institutions in general for the realistic conceptualization of sustainability on campus.

First, the Finnish university should improve its promotion of sustainability efforts at the university by raising awareness about sustainable campus information

on its own communication channel. The university may consider the suggestion of having "a chart that compares the past years and now", providing information about "how much waste goes to many student restaurants", and a "podcast" discussing sustainability issues. In addition, the university may consider raising awareness during the "orientation program" as suggested by the students and inform the students about the content of the website or a particular section of the university's website that discussed sustainability efforts in achieving sustainable goals.

Second, the Finnish university should enhance its collaboration with the student union and student-subject associations. When these sustainability initiatives are practically integrated into the student associations' social interaction activities, there is a greater chance that students will be well-informed about the importance of having a sustainable campus. Like, for example, "student groups doing education and advocacy work" (Conner et al., 2018, p.15) which talks about sustainable development goals or creating a better partnership with the sustainability committee of the university and its local networks.

Third, a sustainability class fosters not only the academic or theoretical concepts of sustainability. Rather, more practical applications of the term through actual demonstration or activities that visualize the interlink between the pillars of sustainability. This approach has also been suggested in other studies, like Conner et al.'s (2018) and Fisher & McAdam's (2015) research. Additionally, Fisher & McAdam's (2015) findings emphasized that university professors should be mindful that what they teach shapes the perceptions of the student's understanding of sustainability in general.

7.2. Limitations and recommendations for future research

Though I view this thesis as beneficial in drawing up perceptions of students about campus sustainability in Finland, and that the data recorded in this research can be helpful for the improvement of sustainability initiatives and in raising awareness at the university, I am aware of the limitations and areas for improvement in this study. Perceived weaknesses could include respondents' own bias on the specific topic (like answering favorably to sustainability as important than as it is true in their own participation in sustainability initiatives) or subjective experiential response (where responses are solely based on a particular experience at a particular location on the campus). These weaknesses show social threats to validity, which can affect the measures of the validity of this study.

Another measure being considered for this study is reliability. This is to measure how accurate and trustworthy the research scales are for the attitudes toward campus sustainability in the questionnaires. I used SPSS and Cronbach's alpha in computing for reliability to avoid human error in the computations. The alpha reliability found

for the concern about the present/future was 0.67 (*M*=9.03, *SD*=1.34), attitude toward school or community responsibility was -0.95 (*M*=14.94, *SD*=1.96), and attitude toward personal responsibility and personal energy use was 0.82 (*M*=19.60, *SD*=3.60). Interpreting these results based on Wrench et al.'s (2019) book on page 259, the reliability for concern for the future is minimally acceptable, attitude towards the school/community is unacceptable (due to violation in one negative variance, a negative sentence on the scale which needs recoding), and good reliability for attitude toward personal responsibility and personal energy use. However, excluding the sentence with negation, "I do not believe that everyone in the university's community should have to support sustainability actions.", for the attitude toward school or community responsibility, the alpha reliability was 0.78 (*M*=12.68, *SD*=2.43), which can be interpreted as respectable reliability result. Despite this respectable reliability result, the readers should still take some caution with the responses to this specific question; even the cross-tabulation chi-square test result also showed the seemingly right expected number of results for this question.

Moreover, the findings of this thesis are also limited in their applicability for generalizations to the whole student community at the university. Most of the respondents are local Finnish students and one-fifth are international students participating in the study, which heavily lacks the representation of the different student groups. These suggest that there are a smaller number of international students on campus, which may also affect how these students view their participation and engagement in sustainability efforts on campus. Second, most of the respondents had sustainability classes which could impact the desirability in answering the research questionnaire compared to those who had no class that mentioned sustainability. Third, the responses to the definition of sustainability and the open-ended question for general comments may likely reflect those with strong opinions about the topic and those who wanted the university to do more environmentally related actions (strategic motivations) respectively. Fourth, the questions on my research questionnaire mentioned more than one action in the university initiatives section, which may not realistically reflect as to which initiatives students are specifically focusing their attention on or answers to. Fifth, the study was open for a two-week duration and was dependent on when the information was sent via mailing list, which may affect the gathering of potential respondents. Sixth, this thesis is confined to a specific time frame stipulated in my study plan which limited the depth of my research and interpretation of the findings. Seventh, I utilized mixed methods in research for this study, which may create some gaps in expounding the results.

Nonetheless, I believe that my thesis provides valuable insight into students' perception of a sustainable campus and information on the importance of communication in raising sustainability awareness for the different stakeholders in the university community, which could potentially improve their promotion of sustainable goals and sustainability actions. Future research could also shed light on

the knowledge gap *vs* commitment gap in terms of sustainability engagement. Future research could also solely use the qualitative approach with the use of semi-interviews and discourse analysis to get the desired representation of the different groups of students, deeply investigate the personal definition of sustainability and relate it to their engagement in sustainability initiatives. Another future research could be a comparative analysis between local and international students to continue exploring whether these groups of students differ in their perceptions and experiences of sustainability initiatives on-off campus. Lastly, future research could focus on the specific ways to encourage engagement in sustainability initiatives and on how to actively change the university-level culture towards sustainability.

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APPENDICES

APPENDIX 1: QUESTIONS FROM EMANUEL & ADAMS (2011)

Campus Sustainability
(Adopted from Emanuel and Adams' (2011) research)

On a scale of 1-5 (having **1 as strongly disagree** and **5 as to strongly agree**), please mark (x) your perceptions on the following statements.

Concern for the future/present	1	2	3	4	5
I am quite concerned at present about the wasteful consumption of natural resources and the destruction/pollution of the environment.					
I believe that our present economy is based on practices that will have negative consequences on the world's future generations of people.					
Attitudes toward school/community responsibility for sustainability					
I believe that my school should make sustainability a priority in campus planning, development, and day-to-day operations.					
I believe that everyone in my school's community should support sustainable solutions to environmental problems.					
I do NOT believe it is necessary for my school to include environmental education across curriculum					
I do NOT believe that everyone in my school's community should have to support sustainable solutions to environmental problems.					
Attitudes toward personal responsibility for sustainability					
I want to help create a sustainable campus, community, and world					
I will support and participate in my school's initiative to protect the environment					
I will NOT support my school's actions to protect the environment.					

Attitude toward personal energy use					
I do NOT feel I need to change any of my current energy use practices					

Please identify the TERM in the following group that you do NOT associate with sustainability.

___Recycling ___ Conservation ___Green Building

____Nuclear Energy _____ Wind turbines

Please identify the TERM in the following group that you DO associate with sustainability.

____ Pollution _____Solar energy _____ Chemicals

____ Pesticides _____ Plastics

I presently,

____ Recycle _____ Use environmentally friendly products

____have energy efficient transportation _____Do none of these

APPENDIX 2: MODIFIED QUESTIONNAIRE FOR THIS STUDY

Instruction: Please fill in below,

Gender_____ **Age**___
Local student ____ **International Student** ____ **Exchange Student** ____

I live,
near campus _____ **away from campus**____
in student housing _____ **in private housing** _____

I had a class that mentioned sustainability. **Yes**. ____ **No**.____

What is sustainability for you?
_____

Campus Sustainability
On a scale of 1-5 (having **1 as strongly disagree** and **5 as to strongly agree**), please mark (x) your perceptions on the following statements.

Concern for the future/present	1	2	3	4	5
At present, I am concerned about climate change, energy supply crisis, and the wasteful consumption of natural resources and the destruction/pollution of the environment.					
I believe that our global economy is based on practices that will have negative consequences on the world's future generations of people.					
Attitudes toward school/community responsibility for sustainability					
I believe that the university should make sustainability a priority in campus planning, development, and in daily operations.					
I believe that everyone in the university's community should support the campus sustainability initiatives.					
I believe that it is necessary for the university to include sustainability education across curriculum.					
I do not believe that everyone in the university's community should have to support sustainability actions.					

Attitudes toward personal responsibility for sustainability					
I feel responsible in creating a sustainable campus, community, and the world.					
I support the university's initiative to achieve a sustainable campus.					
I participate in the university's initiative to achieve a sustainable campus.					
Sustainability is important to me.					
Attitude toward personal energy use					
I feel the need to change any of my current energy use practices					

Personal Sustainability Practice

I presently,

____ recycle_____ use environmentally friendly products

____have energy efficient transportation _____Do none of these

Campus sustainability culture- signs and symbols

Please indicate the expected and observed actions of elements of sustainability culture on campus.

Signs and Symbols	**Expected Actions**	**Observed Actions**	**Both expected and observed actions**	**Not observed**
carbon emission information/ symbol at the university cafeterias' food menu				
weighing scale for bio waste at the university cafeterias				
signage for selling left over foods at the university cafeterias				
waste reduction signs				
sustainable dietary choices				
waste segregation, recycling, and composting bins				
energy saving signs				
LGBTQ+ safe zone signs				
no smoking signs				

diversity website				
sustainability website				
international/ multicultural office				
bicycle parking signs				
solar panels				

Campus sustainability initiatives

On a scale of 1-5 (having **1 as irrelevant and 5 as extremely important**), please rate your perception on how important the initiatives are for you.

Initiatives	**1**	**2**	**3**	**4**	**5**
Academics: courses on planetary well-being, carbon footprint research, research on offsetting biodiversity and climate impacts					
Engagements: publications about sustainability efforts, communications on how to attain carbon neutrality by 2030, student involvement in sustainability practices, public-private partnerships, student union and subject association sustainability actions					
Operations: smoke-free zone, sustainable dining options, waste reduction, energy saving, transportation options					
Policy: university community well-being, diversity and inclusion, road map to planetary well-being, coordination with the wider community, sustain investment for the future					

Question:

What are your comments, suggestions, recommendations, or questions about sustainability at the university? Please feel free to tell us.

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