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Gender perceptions of sustainable development goals in universities of applied sciences

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Abstract

This exploratory study examined gender differences in perceptions of sustainable development among staff members at two Finnish universities of applied sciences. Grounded in the context of sustainability and gender in higher education, the study aimed to determine whether gender-based variations exist in staff views on sustainable development. Data were collected from 386 academic and non-academic staff members through a survey based on the United Nations' 17 Sustainable Development Goals, and the analysis was conducted using statistical methods. The results indicated slight gender differences in how staff perceived the importance of sustainable development goals and their application in professional contexts. However, a more notable gender difference emerged in how these goals were reflected in everyday life and free time, aligning with findings from previous studies. These results highlight the challenge of fostering a holistic and systemic understanding of sustainability within the university community, regardless of gender. Nonetheless, recognizing gender-based differences can provide a valuable foundation for integrating diverse perspectives into sustainable development efforts in higher education.

Keywords: Agenda 2030; gender; sustainable development goals; university of applied sciences; university staff

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1. INTRODUCTION

Sustainable development (SD) has been on the agenda of the United Nations (UN) from 1972 onwards, after the first UN Conference on the Environment and Development in Stockholm. Since then, higher education institutions (HEIs) have been actors in implementing and enhancing sustainable development goals (SDGs) (Lei & Tang 2023; Clark et al., 2016; Hoover and Harder, 2015, Franco et al., 2019). In Finland, the sustainability and responsibility work of HEIs (universities and universities of applied sciences, UAS) is also guided by the United Nations' 2030 Agenda for Sustainable Development (UNESCO, 2017), its sustainable development goals (SDGs), and by the sustainable development guidelines of the Finnish Ministry of Education and Culture. This is although only one of the SDGs, that is, goal 4, calls for equal access to tertiary education, including university, as part of the promotion of lifelong learning opportunities for all. Yet, universities have another significant role in the SDGs as a driver for the achievement of the full set of goals through their role in human formation, knowledge production, and innovation (Chankseliani and McCowan, 2021). In other words, education is both a goal in itself and a means to reach all the other SDGs.

Education, research, development, and innovation (RDI) activities at HEIs have played a remarkable role, with their stakeholders, in implementing new SD-related technological and social innovations to tackle the wicked problems of the world (Mensah and Enu-Kwesi, 2018; Whittaker et al., 2017). Moreover, sustainable development in higher education has been the focus of research from several disciplines, such as education, management, social sciences, and physical sciences (Thondhlana & Nkosi, 2024; Filho et al., 2024). From the educational point of view, the tension between the integration and non-integration of SD studies is continuously actual, as well as the structure of SD competence (Sergey et al., 2024). This reflects strongly on teachers´ work and the question of whether SD is something that is included in everyone's work or is the content of expert teachers (Caniglia et al., 2018; Hess and Collins, 2018). In research activities, sustainable development issues are often focused on the challenge of global ecological, social, and welfare problems. Transformation into inter- and transdisciplinary research groups is strong and fast. When adding to these the greening activities on campuses, the overall change toward sustainability in HEIs affects everyone in the community (Mulá et al., 2017). Among the teaching staff, sustainable development is considered an important but complicated topic to teach, and teachers need support for their learning (Anastasiadis et al., 2021; Boafo et al., 2024).

Gender equality and women's rights also receive a stand-alone SDG – Goal 5. It is formulated on a strong gender analysis that understands gender inequality to possess economic, political, and social aspects that are interconnected (Esquivel and Sweetman, 2016). The SDGs appear to assume that poverty reduction and improved social and economic development will bring gender equality. However, the case of South Korea has shown that gender inequality may not be reduced even when economic and social development has been achieved (Kim, 2017).

The article focuses on the effects of sustainable development in the operations of HEIs, as the staff members interpret them. Students are not included in the study. The research questions are:

RQ1. Are there gender differences in how UAS staff perceive SDGs' importance for their UAS?

RQ2. Are there gender differences in how UAS staff perceive SDGs in teaching and research work? RQ3. Are there gender differences in how UAS staff perceive SDGs in their everyday living in their free time?

The research topic is significant because awareness about the possible differences in gender perceptions of SDGs is necessary to understand the implementation and integration of sustainability into higher education activities and daily life. The perceptions and awareness of the topic can determine the successful implementation of sustainability efforts in higher education (Radzi et al., 2022).

1.1. Literature review

Research explicitly focusing on gender and diversity in higher education for sustainable development is somewhat scarce (Franz-Balsen, 2015). When searching the number of research papers that include gender aspects, it was found that in the majority of cases it focused on certain target groups, usually students, sometimes academic staff (Cotton et al., 2007, Olugbade, 2023) or non-academic staff (Davis et al., 2009, Bellou et al., 2017, Bacelar-Nicolau, 2023). Studies were carried out to assess either beliefs and attitudes (Cotton et al., 2007, Olugbade, 2023), knowledge (Tuncer Teksoz et al., 2014; Karvinen, 2024), or both (Tuncer Teksoz et al., 2014), as well as environmental behavior (Davis et al., 2009; Aboramadan, 2022) or participation (Tudor and Dutra, 2014) and innovative competencies (Ferreras-Garcia et al., 2021).

Previous research indicates some gender differences among university staff in higher education. The research on the contributions of women academics to university governance and their perceptions of the potential impact of gender in this process shows that the functions the female academics perform, within the framework of sustainable development, have technical and simultaneously humanized vision, as they focus on people and personal and social values (Wang et al., 2023). Their actions often focus on developing the organization by adopting socially responsible strategies (Merma-Molina et al., 2022; Idoiaga Mondragon et al., 2023).

Gender equality is essential to social justice and sustainable development in the higher education sector. An important aspect there is to promote equal opportunities for academic careers. According to some research findings, there are perceptions of gender-based discrimination concerning, for example, fewer career opportunities or prejudice against women and better working conditions for men (Staring, 2024; Hansmann and Schröter, 2018; Shen, 2022).

Previous research has found that women have a key role in contributing to sustainability since they tend to have a more holistic perspective on sustainability issues and be more engaged with sustainability than men (Verner et al., 2024; Esquivel and Sweetman, 2016). However, there has been limited research on the contribution of women to sustainability research (in scientific publications). A bibliometric analysis of more than 39,000 documents (with 147,090 authorships) was done to fill this gap, focusing on peer-review publications in Europe. The results show that women's contribution to sustainability research has been increasing during the last few years, although the percentage of female researchers is still low (Barreiro-Gen and Bautista-Puig, 2022).

Measurement of higher education for sustainable development learning outcomes (Gordon, 2014; Tuncer Teksoz et al., 2014) presents data before and after pedagogical interventions. Most of the studies do report gender differences, which usually are not spectacular. Other studies do not find significant gender differences (Myers and Beringer, 2010). Most results confirm the kind of “stereotype” reaction of women: attitudes closer to SD, higher risk awareness, pro-sustainable lifestyle, and hesitating in extra-curricular engagement (Aleixo et al., 2021; Tudor and Dutra, 2014). The overall results indicate that the cultural gap and the gender divide between scientific domains (humanities vs. technology) reinforce gender-specific approaches to SD (Franz-Balsen, 2015).

Pouratashi and Zamani (2022) found that male university students had more knowledge of SD than female students, while female students had better attitudes and behavior compared to the males, but the scores were not significantly different. The results are according to earlier studies in which gender and environmental attitudes were not correlated. It has also been found that SDG 5 was explicitly addressed in higher education in only three master courses offered at different universities. These courses address the role of women in society and culture and also women’s rights (Aleixo et al., 2020).

On a general level, it is known that attitudes towards climate change show some gender differences: men have a bit higher level of knowledge of climate issues, while women show more concern about climate change and are more prepared to act to mitigate it (Bush & Clayton 2023; Lehtonen et al., 2020). The research results are indicative that women are more focused on environmentally friendly behavior than men and that pro-

environmental behavior depends on factors of several types, which seem to be moderated by gender (Vicente-Molina et al., 2018; Echavarren, 2023).

It has been proposed that for universities to become leaders and change drivers in sustainable development, they must ensure that the needs of present and future generations are better understood and considered in all actions: education, research, campus greening, and stakeholder relations. This requires university staff to have a deep understanding of SD so that they can effectively educate students of all ages and genders to help make the transition to sustainable societies and societal patterns. This sets challenges, especially for teaching staff and teacher education. For example, UNESCO's (2017) policies for years have called for a transformation toward sustainability through education, but teacher education policy has not yet fully acknowledged sustainability issues (Fischer et al., 2022; Karvinen, 2024).

Organizational support and leadership, quality assurance processes, professional development, and reward structures are necessary strategies for academic staff engagement in sustainable development (Tudor and Dutra, 2014). Participation and stakeholder cooperation are emphasized too, i.e., innovation in management, planning, openness, training of stakeholders in sustainability, negotiation, and building multi-partner networks seem to be the key drivers for adopting sustainability (Pouratashi and Zamani, 2022). The research staff also has challenges with transdisciplinary practices and citizen science. To do so, university management and staff must be empowered to redesign their thinking, implement new paradigms, and confirm that SD is the “Golden Thread” throughout the entire university organization (Viera Trevisan et al., 2024). Sustainability is a cohesive area of research with four main dimensions, which are management, performance, communication, and strategy (Aleixo et al., 2020), which all need to be reconsidered when aiming for a genuinely sustainable university (Gordon, 2014).

1.2. Purpose of study

In short, based on previous studies, it is known that there are some gender differences in how women and men perceive and relate to climate change and SDGs. Quite often, research findings consider gender differences among students, but university teachers, who are in a key role and position in higher education, are ignored. Hence, we lack strong research evidence about possible gender differences among UAS teachers’ perceptions of sustainable development. This study aims to address the existing gap in research by investigating potential gender differences among UAS staff’s perceptions of sustainable development.

2. MATERIALS AND METHODS

This study is descriptive because the data were obtained using a cross-sectional survey from a predetermined population at a single point in time. The analysis of survey results was carried out by using frequencies, cross-tabulation, and an independent sample T-test.

2.1. Participants

This study was carried out in two of the 24 existing UASes. The small number of participating UASes was because this was an exploratory study laying the ground for larger cooperation for surveying and promoting SDGs in all future activities in the UASes. UASes were established in 1995 beside existing research universities. UASes’ specific mission is to provide higher education for expert professional jobs based on the requirements of working life. They must also carry out applied research, development, and innovation activities in cooperation with industry and business (Pinheiro et al., 2015; Friman et al., 2021). UASes are public companies, and they do not charge tuition fees to students from EU countries. Regarding UASes’ personnel (N=9756), 61% are women, and 55% percent of students (45906) are women. In general, gender-based segregation is exceptionally strong in Finland (Koivunen, 2023). In the UASes, gender-based segregation is strongest in the faculties of welfare (80%) and business (64%), where women dominate. The field of technology is, conversely, dominated by men (60%) (Universities of Applied Sciences Act 932/2014). However, gender segregation goes beyond the scope of this article’s topic, although it is part of the article’s central context.

The online survey was conducted in Häme University of Applied Sciences and Turku University of Applied Sciences, which are located in southern Finland and are multi-disciplinary UASes. Both are highly motivated to develop their action towards sustainability, which was the criteria for selecting them for the exploratory survey, and the former has a long tradition of developing sustainability. The survey was open to respondents for two weeks in August-September 2020. The staff members were requested to respond to the survey by intranet and Yammer and in staff events. In total, 386 UAS staff members took the survey, which is approximately 30% of the total staff in both UASes. Of the 386 respondents, approximately 60% (n=245) are female staff members, and 40% (n=136) are male, which is close to the gender distribution of the whole UAS staff. In addition, two respondents identified their gender as "other," and three respondents did not identify their gender at all. The category of "other" has been dismissed from the analyses because of its small size.

2.2. Data collection tool

The survey questions examined the relations of the UAS staff on UN sustainable development goals (SDG) and the relationship of sustainability to education, research, and campus activities, as well as the relation of sustainability on staff members' personal lives. Most of the questions were quantitative, but there were also three open-ended questions on the development of sustainability in higher education and the possible support needed by the university staff to better implement sustainability as part of their work at the UAS.

The field of work was examined to understand whether different fields have different understandings of sustainability within the university community. Most of the replies to the survey came from members of staff working in the field of technology or other staff, which covers HR, administrative tasks, student services, communications, and other back-office employees. Other fields with high response rates were from the fields of business and administration and natural resources. Supposedly, staff members who already work with sustainability questions, on some level, were most eager to reply to the survey. This should be kept in mind when analyzing the results. The respondents' sectors of work are presented in Table 1.

Table 1

Respondents' sector of work

	Frequency	Percent
Technology and traffic	122	32
Other staff	103	27
Entrepreneurship and business	42	11
Natural resources	42	11
Welfare, social, and health	33	9
Teacher Education	27	7
Some other	11	3
Culture	6	2
Total	386	100

The analysis was carried out by using frequencies, cross-tabulation, and an independent sample T-test, which offered a means to find out possible gender differences in respondents' views on SDGs.

3. RESULTS

The results were divided into three main domains according to the research questions, namely the importance of the SDGs in UASes, the SDGs in staff's work, and the SDGs in free time. All three domains were analyzed, and the presenter's gender was the independent variable.

3.1. The importance of the SDGs

The survey respondents were asked, "How well do you know the UN SDGs?" (1=not at all, 5=very well, other values were not defined). Only nine respondents answered that they do not know the goals at all, so apparently, the vast majority of the respondents are more or less familiar with them (M= 2.96, SD = .887). According to the t-test, there was no significant effect for gender, t (328) =2,657, p=.008, although women (M

= 3,04, SD = .899) answered more positively than men (M = 2,77, SD = .079). Thus, both women and men are familiar with the SDGs and are, therefore, considered capable of evaluating them in their work and free time.

Further, the respondents were asked about the UN SDGs and to identify the most important ones from the UASes' point of view. They were asked to choose the four most important options in no particular order. Table 2 presents the number of choices and percentage values of each SDG.

Table 2

The number and percentage value of selected responses of the UN SDGs

	n	%
Quality education	281	73
Industry, innovation, and infrastructure	200	52
Good health and well-being	148	38
Partnerships for the goals	113	35
Climate actions	110	29
Decent work and economic growth	105	27
Sustainable cities and communities	105	27
Reduce inequalities	104	27
Responsible consumption and production	89	23
Gender equality	71	18
Affordable and clean energy	58	15
Clean water and sanitation	41	11
Peace, justice, and strong institutions	34	9
Life on land	21	5
Zero hunger	18	5
Life underwater	14	4
No Poverty	12	3

It is hardly surprising that among both female (74%) and male (70%) respondents, the "Quality education" option was selected as the most important objective for their UAS. Similarly, the second, "Industry, innovation and infrastructure" was the same choice for women (47%) and men (61%), as was the third, "Good health and well-being" (women 42%, men 32%). However, the fourth most popular answer was different. For men, it was "Climate actions" (30%), while for women, it was "Partnership for the goals" (28%).

3.2. SDGs in staff's work

The respondents were asked, "Which of the great challenges or wicked problems should motivate research in your UAS?". They were asked to choose the three most important ones in no particular order. The number of choices and percentage values of each option are presented in Table 3.

Table 3

The number and percentage value of selected responses to wicked problems that should motivate research.

	N	%
Climate change	300	78
Loss of biodiversity	181	47
Loss of natural resources	156	40
Inequality	154	40
Population growth and urbanization	143	37
Loss of freshwater resources	63	16

Poverty	54	14
Land system change	39	10
Loss of fertile land	25	7
Deforestation	21	5
Loss of vertebrate species	11	3
Loss of fisheries	11	3

The results show only slight differences according to gender: while both women (77%) and men. 79% chose most often for "Climate actions"; the second most common option with women is "Loss of biodiversity" (54%), and with men "Loss of natural resources" (43%). The third most common option chosen by women was "Inequality" (44%) and by men "Population growth and urbanization". Thus, women and men agree about the most important SDG from the research point of view.

Quite a similar question about teaching in the survey was "What should be the focus on education of sustainable development?" The respondents were given six options and asked to choose the two most important ones in no particular order. The majority of women (91%) and men (78%) chose the option "SDGs integrated into all education". The second popular option among women (67%) and men (74%) was "Lifelong learning".

Another survey question was "How well can you apply the SDGs in your work?" (1=not at all, 5=very well, other values were not defined). Only three respondents answered that they cannot apply sustainable development goals in their work at all (M = 3.07, SD = .879). Gender has no impact on this, either, t (345) =-1,370, p=.172 although, again, women (M = 3,12, SD = .897) answered more positively than men (M = 2,98, SD = .829). Hence, both women and men can apply SDGs in their work equivalently.

3.3. The SDGs in free time

In addition to their work, the respondents were asked, "Does sustainable development emerge in your everyday living or in your free time?" (1=not at all, 5=very well, other values were not defined). None of the respondents answered that sustainable development does not emerge in their everyday living at all (M = 3.56, SD = .858). Unlike in the other survey questions, gender has an impact on the answers in this, t (374) =-3.991, p=.00, and again, women (M = 3.69, SD = .834) responded more positively than men (M = 3.32, SD = .866). Thus, the results indicate that SDGs emerge in women's everyday life and free time more often than in men's.

4. DISCUSSION

The findings of this study were organized into three key domains: the importance of the SDGs, their application in staff's work, and their presence in free time, with gender as the independent variable. In the importance of the SDGs, the majority of respondents indicated a general familiarity with the UN SDGs, with women showing slightly higher awareness than men. Both genders agreed that "Quality education" was the most important SDG, followed by "Industry, innovation, and infrastructure," and "Good health and well-being." However, there was a gender difference in the fourth most important SDG, with women selecting "Partnership for the goals" and men choosing "Climate actions."

Regarding SDGs in staff's work, both genders identified "Climate change" as the most pressing issue to focus on in research, with small differences observed for the second and third most important challenges. Women prioritized "Loss of biodiversity," while men leaned towards "Loss of natural resources" and "Population growth and urbanization." Regarding education, both genders agreed that SDGs should be integrated into all education and that lifelong learning is essential.

In SDGs in free time, gender differences were more apparent. Women indicated that sustainable development practices were more prevalent in their everyday life and free time compared to men. While both genders were equally able to apply SDGs in their work, women demonstrated a greater integration of sustainability principles into their personal lives.

According to the findings, the differences between genders in awareness of the SDGs, their importance, and their application in work (RO1 and RQ2) were not significant. However, a notable difference was found in the presence of SDGs in free time (RQ3). This suggests a positive result, as Finland is known for its highly educated and qualified teachers. Nonetheless, we recommend further research in Higher Education Institutions (HEIs) that does not rely on self-reporting but instead uses diverse methodologies to discover more effective ways of raising awareness about the SDGs. The key challenge is to foster a more holistic and systemic understanding of sustainability and encourage action across the entire university community, regardless of gender (Cotton et al., 2007). From a managerial perspective, the results indicate a need to involve the entire UAS staff in contributing to a more sustainable institution. Quality management systems, as demonstrated by previous research, are effective tools for achieving this goal (Cebrián et al., 2015). Furthermore, gender differences in perspectives on sustainable development could offer valuable insights into a broader range of approaches to sustainability. Given the significant societal impact of UASes, they have the potential to establish eco-social education programs (Salonen, 2014; Salonen & Siirilä, 2019).

This study is not without limitations. A major limitation of the study is the small number of participating UASes and quite low response rate, which make it impossible to implement more sophisticated methods of analysis. Staff members who already work with sustainability questions may be overrepresented in the data. Consequently, this is an explorative study, which hopefully will be complemented by larger data analysis with a representative sample. Also, students' views should be included in the analysis to draw a larger picture of gender differences. Still, another limitation of this study is that only women's and men's responses are considered, while other genders could not be added to the analysis. However, we need to recognize those people who have other than binary gender identity in HEIs and their contribution to gaining SDGs as well.

5. CONCLUSIONS

The perceptions of the university staff on sustainability were examined through an exploratory online survey, and gender disparities were observed. As a result of the analysis, only small gender differences were found in the approaches to sustainability. Consequently, we argue that it is important to understand the different views people have on sustainability to achieve the SDGs and create a sustainable world. All people, their position in the university, their gender or generation notwithstanding, are needed to participate in slowing down the speed of the ecocatastrophes we will face. The greatest responsibility in this is on the shoulders of highly educated, white, comparatively wealthy, and privileged Western people. The HEIs have a significant role and responsibility in that, and they should be trailblazers rather than followers.

Solving wicked problems, such as climate change and other environmental crises, requires a variety of viewpoints and various kinds of emphases. According to the results of this exploratory study, there are only minor differences in women's and men's perceptions of sustainable development at their work in the UASes. Therefore, joining forces to tackle wicked problems should not require too much coordination between genders. However, to do this, we all need to widen our understanding of the seriousness of the situation and the means to make a difference. The UAS staff and other higher education institutions are in a key position in doing this. There is no longer time to rely on early childhood education and primary education to develop our attitudes and ways of thinking and ensure that future generations are more aware and responsible in their decision-making. The IPCC and UNEP (United Nations Environment Program) reports require that we must act now to save the planet and slow down climate change, and therefore young adults in higher education, the actors, and decision-makers in our society shortly, play a key role in our decision-making on how to make the required changes in our lifestyles.

Since our data was collected in 2020, it would be interesting for future research to investigate whether the situation has changed over the past five years. A similar study would also be justified among students in higher education to observe the potential impact of gender on perceptions, which might influence how sustainability topics should be taught and learned in higher education.

However, the progress toward transformational education for sustainable education in the UAS community should acknowledge the need for dialogue about the importance of a plurality of views and

discourses. Ensuring the ecological sustainability and biodiversity of nature is the priority, but the focus now seems to be on the discussion on emissions and carbon footprint, which often is the topic in teachers' further training as well. In that, should the emphasis be moved to eco-social education, based on systemic thinking, and focusing on causal connections between phenomena? At the moment, climate change issues bypass the biodiversity issues not only in higher education but in public discussion as well, and higher education could play a significant role in spurring the concern of ensuring sustainable living conditions.

The core task of higher education is increasing national and global eco-socialization. Currently, in the period of environmental crisis, eco-socialization is needed to perceive the global interdependence of humanity and nature and to identify the impacts of human activities on a sustainable future. The relationship between humankind and nature is under redefinition and reorganization. Eco-socialization strives to find solutions that respect ecological constraints while delivering economically and socially sustainable results. Formulating eco-social terminology enables a rethinking of the very heart of modern higher education towards a more biocentric and life-fostering direction.

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