

**SUSTAINABLE DEVELOPMENT OF HIGHER EDUCATION
INSTITUTIONS IN PERCEPTION OF STUDENTS OF MANAGEMENT
AND PRODUCTION ENGINEERING AS FIELD OF STUDY IN
UNIVERSITY OF TECHNOLOGY AND ARTS IN APPLIED SCIENCES
IN WARSAW AND THE TECHNICAL UNIVERSITY OF WARSAW**

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Purpose: The aim of this study was to assess the awareness of sustainability among higher education students, as well as their perceptions of sustainable development in higher education institutions and their expectations in this regard.

Design/methodology/approach: The study was quantitative and survey-based, utilizing a questionnaire method, and consisted of two stages. In the first stage, a literature review was conducted to provide a foundation for selecting the issues to be included in the questionnaire. Proper definition of the research topics was essential to ensure the reliability of the study.

The next stage involved administering a survey to the aforementioned research group using a computer-assisted web interview (CAWI) format. This method was chosen primarily due to facilitating anonymity, which may contribute to the reliability of responses and improve response rates. The advantages of this method also include its reach, the time required to conduct the study, and cost minimization.

Findings: The study clearly revealed a high level of awareness among students on this topic, with 100% of ATA students and more than 93% of TUW students demonstrating awareness. The surveyed students identified features they believe should characterize a sustainable university. Of the 26 proposed features, students from both Polish universities highlighted all of them with varied number of votes. The least score obtained a feature “Offers a study program in Sustainable Development”. These findings suggest a noticeable lack of program solely dedicated to sustainable development neither as major or minor in none of the surveyed universities.

Moreover, the students of the same major of two different universities, perceive their higher education institution completely different in terms of sustainable development. Students of TUW, firstly see the university as any other institution (apart from educational mission) that cares about ecology and their internal and external stakeholders. While the students of ATA primarily perceive their university as sustainable developed institution through the prism of the program of studies.

The most surprising finding was no participation in extracurricular activities and initiatives among both Polish universities' students.

The study thus suggests that, the Polish surveyed universities still incorporate considerably fewer sustainable development topics in their curricula and organize limited extracurricular activities to support these competencies. Nevertheless, overall students' awareness of the concept of sustainable development is considerably high and highly satisfactory.

Research limitations/implications: Due to the sample selection and non-representative sample size, the study's results cannot be generalized to all students at higher education institutions in Poland. Nevertheless, the study provides new insights and can serve as an initial attempt at empirically verifying the awareness of students from all higher education institutions regarding sustainable development, their perceptions of the phenomenon of a sustainable higher education institution, and their expectations in this area. This is especially relevant given that the research questionnaire, due to its comprehensiveness, universality, and reliability, offers the potential for replication.

Practical implications: This article presents original research on the sustainable development of higher education institutions in perception of their students' expectations, which has several implications for both researchers and university authorities and may serve as a starting point for developing analytical frameworks to assess the level of sustainable development implementation and measurement models for sustainable development in both Polish and foreign universities.

Social implications: Universities can contribute to the solutions of major challenges of the 21st century such as increasing environmental and socio-economic crises, inequalities of income and wealth and political instabilities by integrating the concept of sustainable development (SD) in research, organization, and by educating future decision makers. For instance, by integrating sustainability into the organization, universities can lead by example. Furthermore, through the curriculum, future decision makers can learn the competences needed to solve ecological, social, and economic problems in societies.

Originality/value: This paper has implications for both researchers and university authorities and may serve as a starting point for developing analytical frameworks to assess the level of sustainable development implementation and measurement models for sustainable development in both Polish and foreign universities.

Keywords: sustainable development, higher education.

Category of the paper: Research paper.

1. Introduction

The concept of sustainable development was first described in the 18th century (Meadows, 1972) and has evolved over the centuries to gain a central place in development discourse in the latter half of the 20th century (Du Pisani, 2007). Increased discussion about sustainable development has emerged in recent years due to growing ecological and social awareness, following years of focus primarily on economic growth. The approaching ecological crisis, along with global wealth inequality, has led to a renewed focus on sustainable development in global terms and across three dimensions (ecological, social, and economic). This has resulted in the adoption of the Paris Agreement in 2015, which includes measures to limit global warming, adapt to and mitigate the effects of climate change, implement low-emission development in a way that does not restrict food production, and ensure that financial sector

activities align with climate goals (Adoption of the Paris Agreement, December 2015). However, this concept will be difficult to implement without the involvement of traditional sources of social legitimacy in science and education, which are related to knowledge creation (Sulejewicz, 2008).

This article presents original research on the sustainable development of higher education institutions in perception of their students' expectations, which has several implications for both researchers and university authorities and may serve as a starting point for developing analytical frameworks to assess the level of sustainable development implementation and measurement models for sustainable development in both Polish and foreign universities.

2. Theoretical approach

Although there have been proven and successful developments in the field of Higher Education for Sustainable Development over the past 15 years or so, there are still numerous challenges to be overcome. Among these challenges is the need for Higher Education Institutions to improve the integration of sustainability in the curriculum and in research, and most importantly, to integrate it holistically in their systems (Walter Leal Filho, Yen-Chun Jim Wu, Luciana Londero Brandli, Lucas Veiga Avila, Ulisses Miranda Azeiteiro, Sandra Caeiro, Lucia Rejane da Rosa Gama Madruga, 2017).

Universities can contribute to the solutions of major challenges of the 21st century such as increasing environmental and socio-economic crises, inequalities of income and wealth and political instabilities by integrating the concept of sustainable development (SD) in research, organization, and by educating future decision makers. For instance, by integrating sustainability into the organization, universities can lead by example. Furthermore, through the curriculum, future decision makers can learn the competences needed to solve ecological, social, and economic problems in societies. However, despite their possible importance, some universities fall behind internationally in implementing sustainable strategies (von Hauff, Nguyen, 2014).

- Universities can be major actors for supporting sustainable development (SD) in developing SD strategies through research, educating future generations and in implementing sustainability in their organization. At the international level, the United Nations (UN) has proclaimed the years 2005-2014 as the UN “Decade of Education for Sustainable Development”. It proposes that education for sustainable development (ESD) be integrated at all levels of education. At the national level, the *Hochschulrektorenkonferenz* (Committee of chancellors and principals of German universities, colleges, and schools) and the German Commission for UNESCO issued a joint statement in 2010 entitled “Universities for sustainable development” which

expressly requests universities to act on the principle of SD and to develop “Education for Sustainable Development as a constituting element in all areas of activity” (Hochschulrektorenkonferenz (HRK) und Deutsche UNESCO Kommission e.V. (DUK) Hochschulen für nachhaltige Entwicklung).

- The universities with their three core functions, research, teaching, and services, are called upon- to accept their responsibility and contribute to SD (Moore, 2005). The challenge and importance of SD for universities is underscored by numerous international networks like the network of international elite universities “International Sustainability Campus Network (ISCN)”. As one of Europe’s largest research institutes, Fraunhofer-Gesellschaft has anchored the principle of sustainability in its current mission statement and initiated the internal project “Sustainability Strategy” in 2011 to promote the shaping of a sustainable society, economy, and environment (Fraunhofer-Gesellschaft Jahresbericht, 2011). As major research centers and important institutions in the education system, universities contribute sustainable solutions to the challenges of the 21st century through basic and applied research and by generating knowledge and suitable responses to complex interrelationships. Future decision makers in government, business, and other types of institutions and entities acquire the knowledge and skills required to shape the future through the integration of sustainability issues in the curricula at their universities (Barth, Godemann, Rieckmann, Stoltenberg, 2007).
- Due to the nature of their activities and their mission, universities have an important responsibility in transforming societies, and in particular, in contributing to the development of a more sustainable humanity (Barth, Rieckmann, 2012). HEIs can implement sustainability concepts and implement them to practices in different domains: e.g. education and curricula, research, facilities/campus operations, community outreach, organisational change management/institutional framework, and assessment and reporting (UNESCO, 2012; Lozano et al., 2015). They can achieve this either by applying just one or more of these domains or by adopting a whole-institution approach (UNESCO, 2012).
- Indeed, diverse efforts are being made by universities worldwide to make sustainable development (SD) part of their institutional frameworks by proposing new teaching and pedagogical approaches and curricula, collaborating with other HEIs, encouraging campus sustainability life experiences and running ‘educating-the-educators’ programmes (Lozano et al., 2013; Ramos et al., 2015). Across the world, but particularly in Europe, some universities have become leaders in the field with very good practices. But unfortunately, many of those efforts address only one or two of the sustainability domains at HEIs, which continue to compartmentalisation, instead of a holistic approach (e.g. an approach which is inclusive and takes into account inputs and knowledge from different subjects) and a systems thinking approach (Ramos et al., 2015). Lozano et al. (2015), developed an exploratory literature review to identify the different practices and

domains among HEIs within sustainability, and the results revealed that most are focused on education (including curricula, pedagogies, competences and ‘educating the educators’), followed by campus operations, institutional framework, outreach, and assessment and reporting. The least applied area seems to be research. Curriculum practices can vary from simple coverage of some environmental issues and material in existing courses to modules or new courses within a program, at both the undergraduate and postgraduate levels.

3. Materials and Methods

3.1. Research Objective

The literature presents numerous studies on sustainable development, especially concerning businesses, cities, or regions. There is also research focusing on sustainable development in higher education institutions.

The aim of this study was to assess the awareness of sustainability among higher education students, as well as their perceptions of sustainable development in higher education institutions and their expectations in this regard.

The main research questions were:

1. Are students aware of what sustainable development is?
2. What characteristics should define a sustainable higher education institution, and which of these characteristics are present at the institution where the students are studying?

3.2. Sample and Data Collection

The study was conducted in the first quarter of 2024 using a non-random sample. The respondents to the research questionnaire were students of a field of study: Management and production engineering from two universities in Warsaw: the University of Ecology and Management in Warsaw (a private institution with a technical-artistic and management sciences profile, currently operating under the name of University of Technology and Arts in Applied Sciences in Warsaw, hereinafter referred to as ATA) and the Technical University of Warsaw (a public institution with a technical profile, hereinafter referred to as the TUW).

The material used in the study was collected from a total of 150 respondents, including 82 from ATA and 61 from TUW.

Among the respondents, the majority were men—112, representing 74.67% of the sample. The study included 38 women (25.33%). It is worth noticing that that the gender spread in TUW is almost equal, while in ATA the male representation is more than ten times higher than women’s.

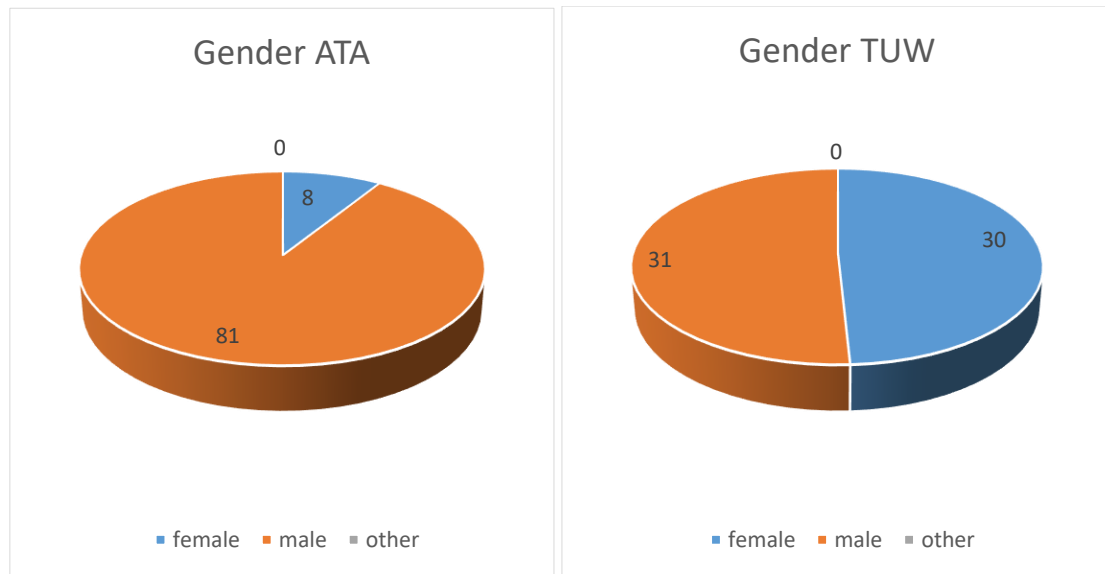


Figure 1. Gender representation in the surveyed sample.

Source: own research.

Regarding the type of studies, the largest group consisted of 1st cycle students—129 (86%). The second-largest group were students of 2nd cycle studies—21 (14%). None of the respondents was enrolled in postgraduate studies. Moreover, the students of ATA were entirely students of 1st cycle program.

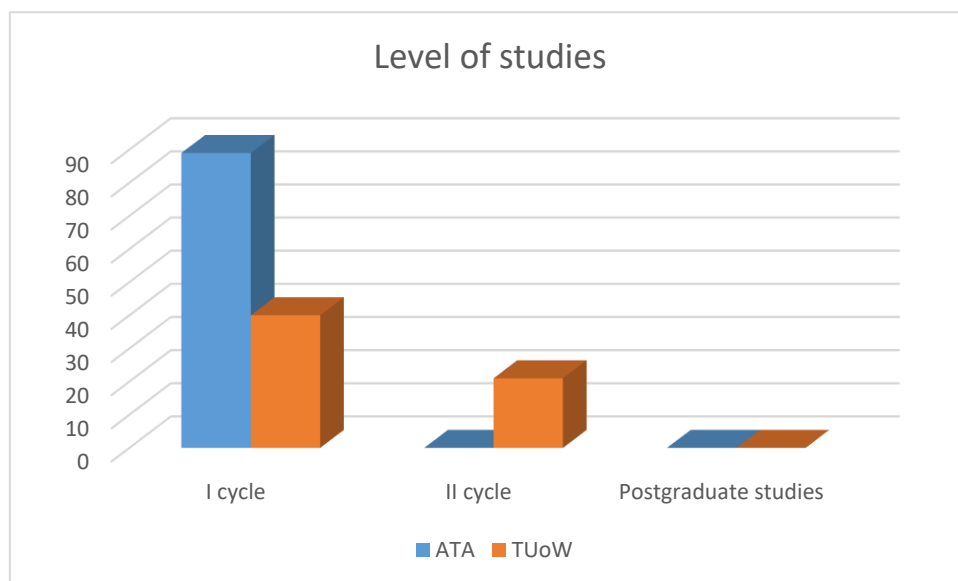


Figure 2. Level of studies by respondents.

Source: own research.

The predominant group by year of study was first- (55 students) and second-year (46) students, numbering 101 (68.24%). The third- and fourth-year students, totaling 47, were represented by 24 and 23 students respectively. None of the respondent was fifth-year student. Moreover, none of TUW students were at their third- and fourth-year of studies.

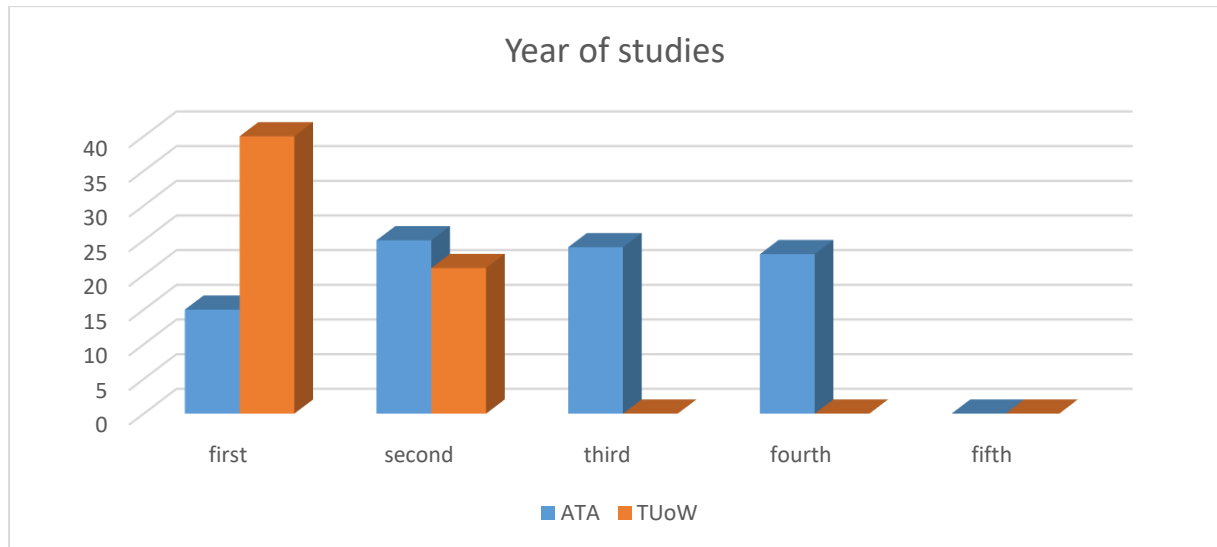


Figure 3. Year of studies by respondents.

Source: own research.

Respondents were categorized into four work experience groups:

- 0-3 years,
- 4-6 years,
- 7-9 years,
- Over 9 years.

The vast majority of respondents fell into the 0-3 years work experience category—82 students (54.67%), with majority of TUW students (56). The smallest group, consisting of 12 students were with over 9 years of experience represented 8% of the sample. The second-largest group, representing 21.33% of respondents, were students with 4-6 years of experience—32 individuals with majority of ATA students (29). Twenty-four respondents (16%) reported having 7-9 years of work experience.

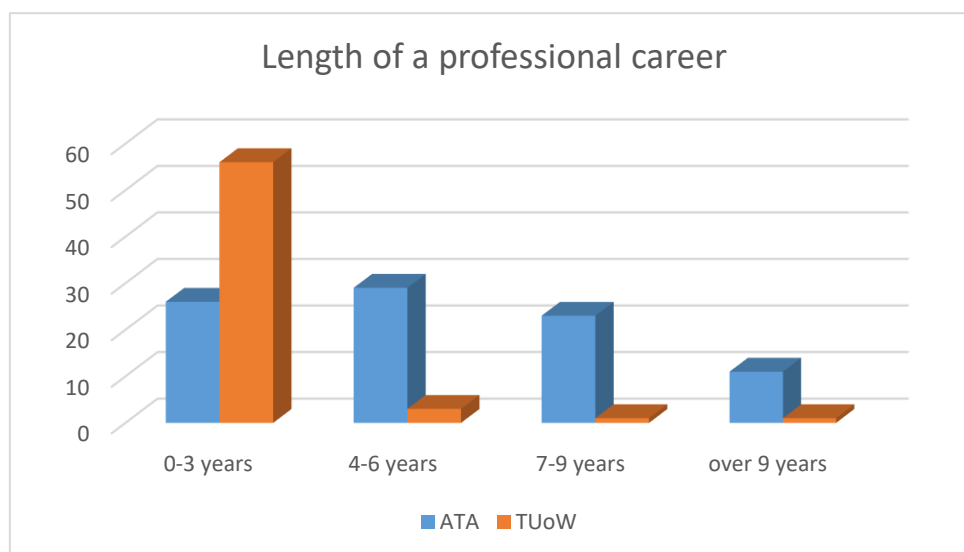


Figure 4. Length of a professional career by respondents.

Source: own research.

3.3. Research Methods

The study was quantitative and survey-based, utilizing a questionnaire method, and consisted of two stages. In the first stage, a literature review was conducted to provide a foundation for selecting the issues to be included in the questionnaire. Proper definition of the research topics was essential to ensure the reliability of the study.

The next stage involved administering a survey to the aforementioned research group using a computer-assisted web interview (CAWI) format. This method was chosen primarily due to facilitating anonymity, which may contribute to the reliability of responses and improve response rates. The advantages of this method also include its reach, the time required to conduct the study, and cost minimization.

The study employed methodological triangulation, primarily data triangulation—i.e., comparing research conducted across different populations and locations—such as two universities in Warsaw conducting studies in the field of Management and production engineering: the University of Ecology and Management in Warsaw (a private institution with a technical-artistic and management sciences profile, currently operating under the name of University of Technology and Arts in Applied Sciences in Warsaw, hereinafter referred to as ATA) and the Technical University of Warsaw (a public institution with a technical profile, hereinafter referred to as the TUW).

Additionally, comparisons were made with theoretical studies. To a lesser extent, researcher triangulation was used, as the study was conducted by two researchers.

Due to the sample selection and non-representative sample size, the study's results cannot be generalized to all students at higher education institutions in Poland. Nevertheless, the study provides new insights and can serve as an initial attempt at empirically verifying the awareness of students from all higher education institutions regarding sustainable development, their perceptions of the phenomenon of a sustainable higher education institution, and their expectations in this area. This is especially relevant given that the research questionnaire, due to its comprehensiveness, universality, and reliability, offers the potential for replication.

4. Research

The first question of the survey concerned students' awareness of what sustainable development is. A total of 146 students, representing 97.33% of the study sample, responded that they are aware of the concept of sustainable development. The remaining 2.67% of respondents answered this question negatively.

Among ATA students, 100% gave a positive answer to the question about their awareness of sustainable development, while 4 of TUW students (6,56%) responded negatively. The responses are presented in figure 5.

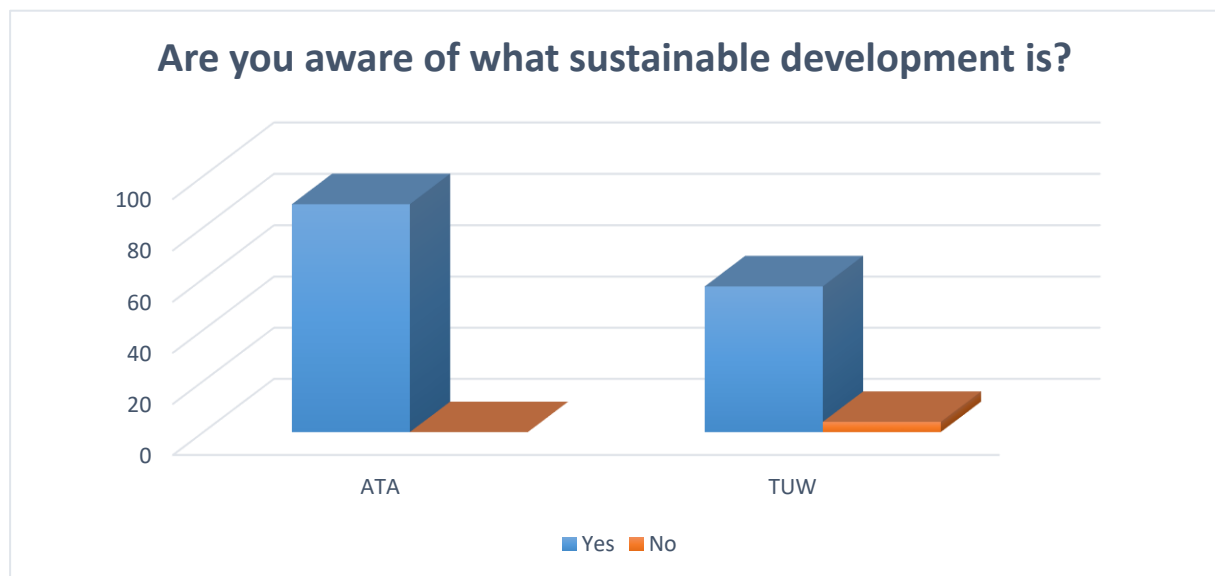


Figure 5. Students' awareness of sustainable development concept.

Source: own research.

Next, students were asked to indicate the characteristics they believe define a sustainable university. They could select any number of features from the list of responses:

- provides knowledge on sustainable development in courses not directly related to sustainable development,
- offers courses specifically on sustainable development,
- provides extracurricular activities that promote sustainable behaviors,
- offers a study program in "Sustainable Development",
- uses renewable energy sources,
- implements solutions aimed at saving water, heat and electricity,
- promotes sustainable waste management (sorting, recycling, reuse),
- promotes green mobility for students,
- promotes green mobility for employees,
- reduces the consumption of natural resources, including paper,
- encourages students to reduce their consumption of natural resources,
- encourages employees to reduce their consumption of natural resources,
- eliminates exclusion of people with disabilities among employees,
- eliminates exclusion of minorities among employees,
- eliminates exclusion of disadvantaged groups among employees,
- eliminates exclusion of people with disabilities among students,
- eliminates exclusion of minorities among students,
- eliminates exclusion of disadvantaged groups among students,

- eliminates exclusion of people with disabilities among prospective students,
- eliminates exclusion of minorities among prospective students,
- eliminates exclusion of disadvantaged groups among prospective students,
- promotes gender equality, minority rights and inclusion of disadvantaged groups within the organization,
- promotes high standards of environmental and social behavior through projects and initiatives,
- encourages charitable work and volunteer projects,
- implements projects aimed at social inclusion,
- provides scholarship programs for economically disadvantaged students.

Students provided answers grouped in Table 1.

Table 1.

Students' indication of characteristics of sustainable university

6. What do you think are the characteristics of a sustainable university?	ATA	TUW
Provides knowledge about sustainable development in classes not directly related to sustainability	44	25
Offers courses specifically on sustainable development	36	23
Provides extracurricular activities that promote sustainable behaviors	38	24
Offers a study program in "Sustainable Development"	10	6
Uses renewable energy sources	34	29
Implements solutions aimed at saving water, heating, and electricity	28	39
Promotes sustainable waste management (sorting, recycling, reuse)	30	45
Promotes green mobility for students	32	26
Promotes green mobility for staff	31	25
Reduces the consumption of natural resources, including paper	36	33
Encourages students to reduce their consumption of natural resources	24	29
Encourages employees to reduce their consumption of natural resources	22	25
Eliminates exclusion of people with disabilities among employees	18	30
Eliminates exclusion of minorities among employees	18	27
Eliminates exclusion of disadvantaged groups among employees	16	25
Eliminates exclusion of people with disabilities among students	20	28
Eliminates exclusion of minorities among students	16	23
Eliminates exclusion of disadvantaged groups among students	18	21
Eliminates exclusion of people with disabilities among prospective students	18	25
Eliminates exclusion of minorities among prospective students	18	22
Eliminates exclusion of disadvantaged groups among prospective students	16	18
Promotes gender equality, minority rights and inclusion of disadvantaged groups within the organization	20	27
Promotes high standards of environmental and social behavior through projects and initiatives	40	32
Encourages charitable work and volunteer projects	38	29
Implements projects aimed at social inclusion	38	18
Conducts scholarship programs for economically disadvantaged students	34	30

Source: own research.

The results were also visualized on the following figure. Firstly, ATA students identified the following as the most important characteristics of a sustainable university: "Provides knowledge about sustainable development in classes not directly related to sustainability" – 44 responses; "Promotes high standards of environmental and social behavior

through projects and initiatives” – 40 responses; “Provides extracurricular activities that promote sustainable behaviors”, “Encourages charitable work and volunteer projects”, “Implements projects aimed at social inclusion” each with 38 responses. The full set of ATA students responses is presented both in Table 1 as well as in figure 6.

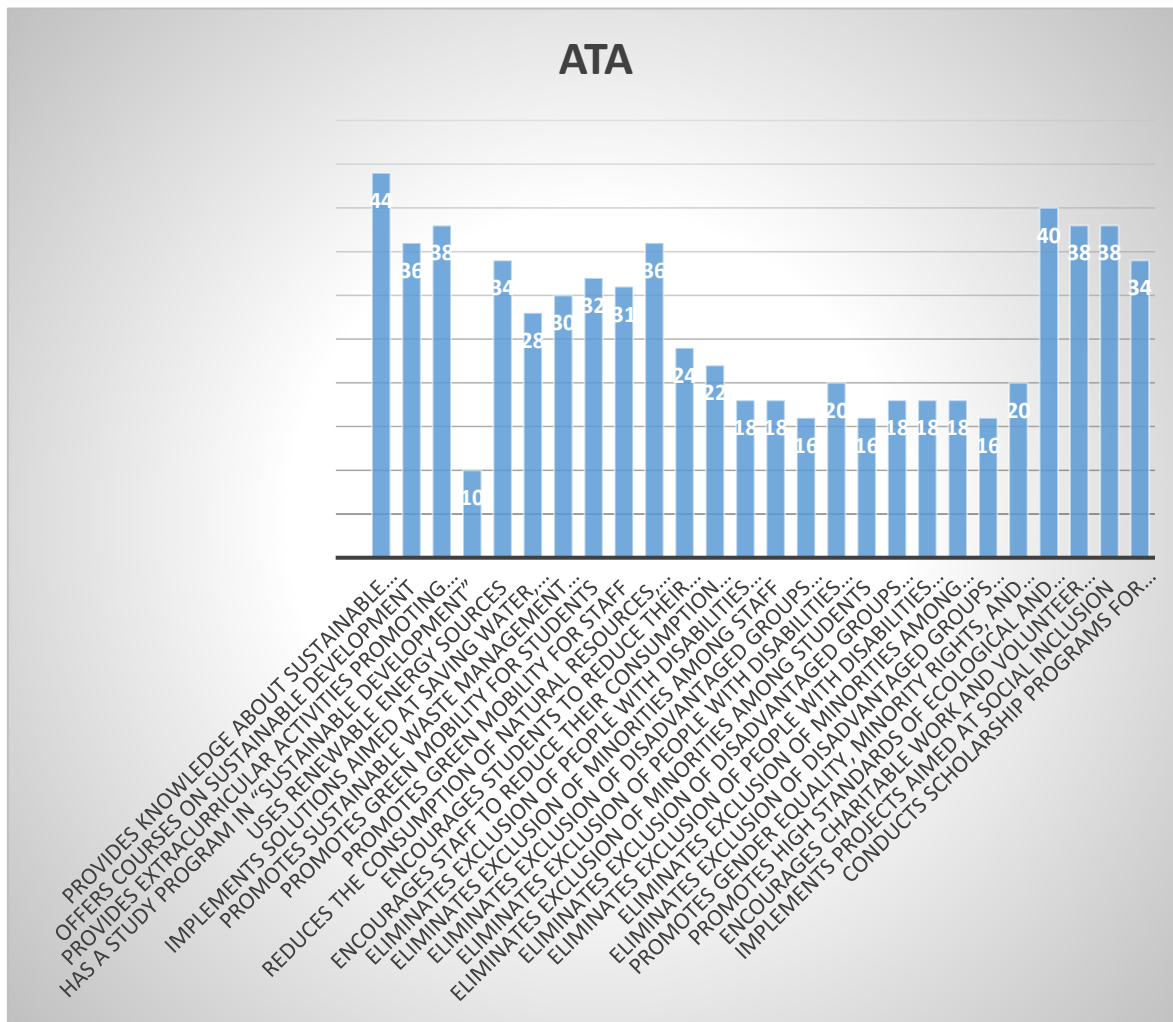


Figure 6. ATA students' indication of characteristics of sustainable university.

Source: own research.

At the same time TUV students provided highly different answers indicating “Promotes sustainable waste management (sorting, recycling, reuse)” – 45 responses, “Implements solutions aimed at saving water, heating, and electricity” – 39 responses, “Reduces the consumption of natural resources, including paper“ – 33 responses, one less response was provided to “Promotes high standards of environmental and social behavior through projects and initiatives” while 30 responses were approached to: “Eliminates exclusion of people with disabilities among employees“ and “Conducts scholarship programs for economically disadvantaged students”. The full set of TUV students' responses is presented both in Table 1 as well as in figure 7.

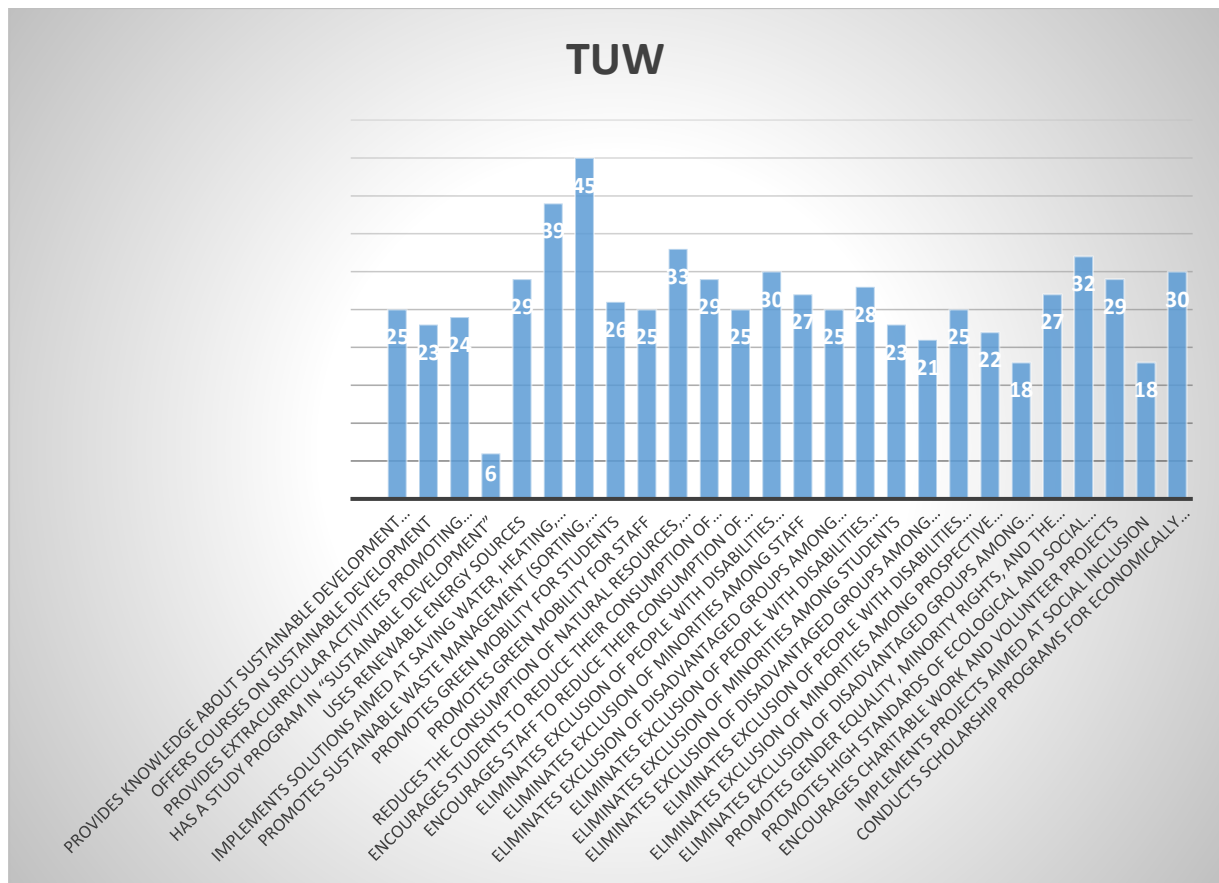


Figure 7. TUW students' indication of characteristics of sustainable university.

Source: own research.

Students of ATA and TUW indicated different characteristics they believe define a sustainable university. While Students of ATA provided more indicators of sustainable development of the university from the point of view curricular and non-curricular courses and classes provided by the university, students of TUW had more institutional approach to sustainable development of the university. For better visualization of the difference in responses between students of the two universities, two radar charts were introduced. Figure 8 presents ATA students' indication of most specified fields of sustainable university, while figure 9 TUW students' indication of most specified fields of sustainable university.

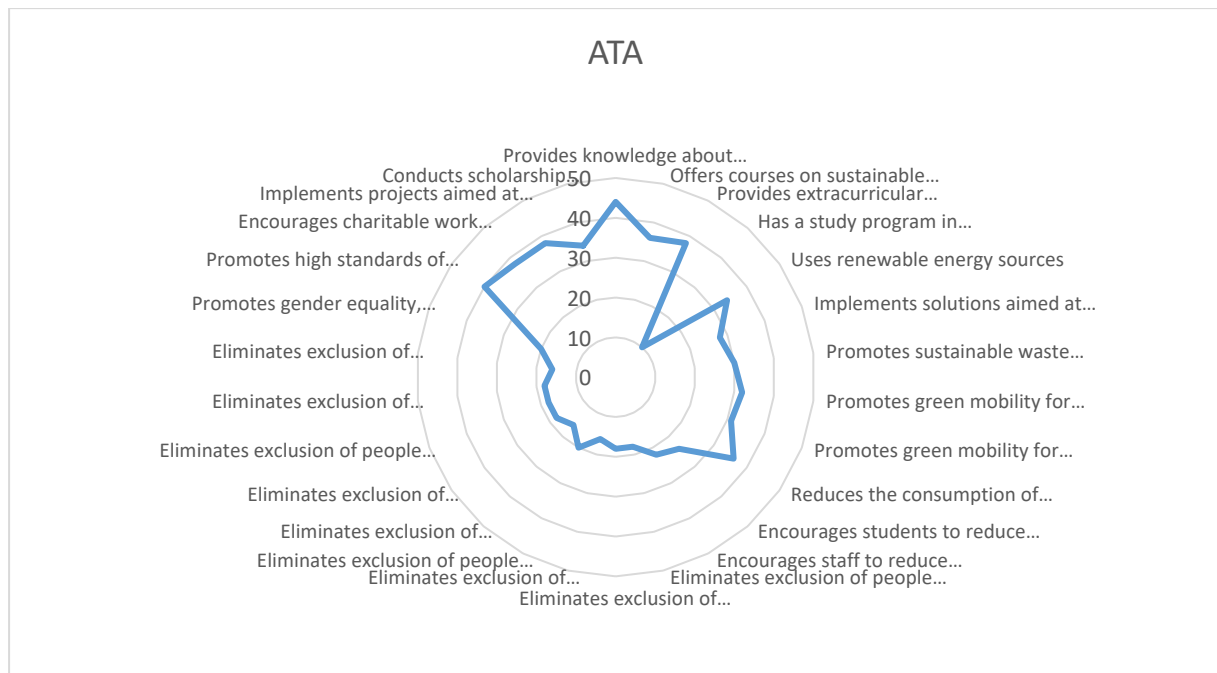


Figure 8. ATA students' perception of most indicated fields of sustainable university.

Source: own research.

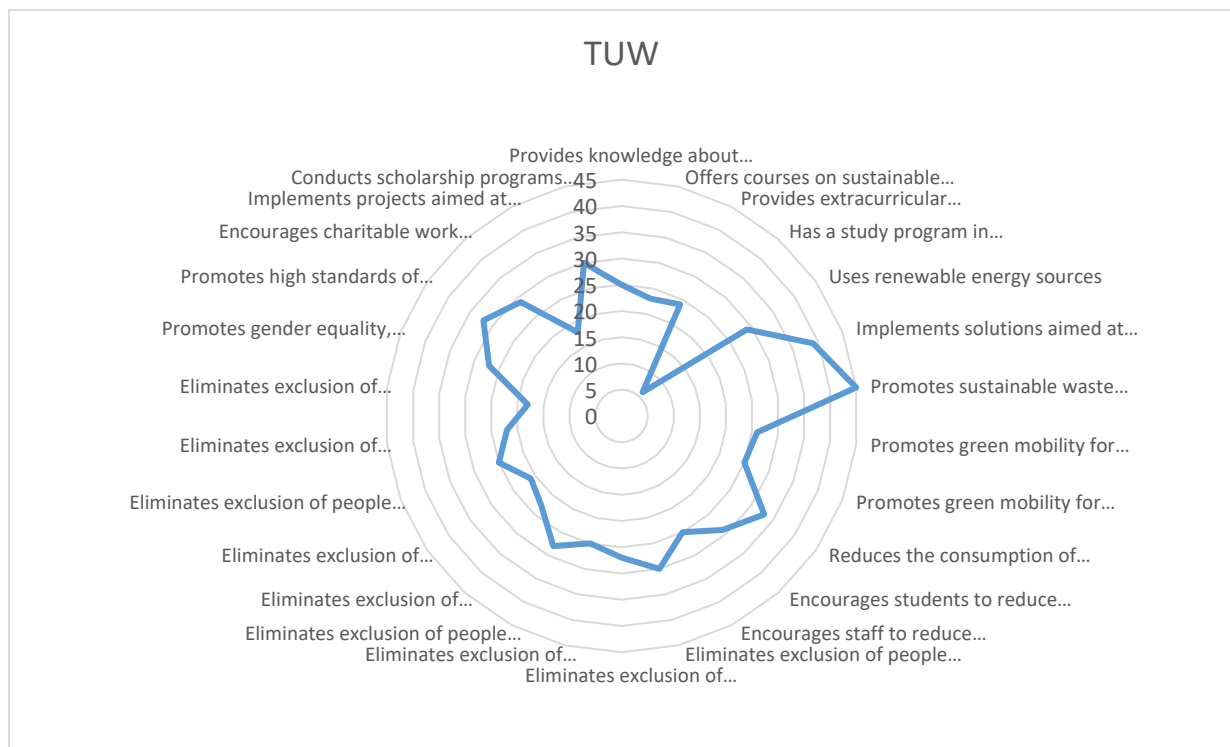


Figure 9. TUW students' perception of most indicated fields of sustainable university.

Source: own research.

The next question asked respondents to identify characteristics of sustainable development that are present at their own university. Once again, they could select any number of responses they deemed appropriate. The response options were the same as in the previous question.

ATA students most frequently selected: "Provides knowledge on sustainable development in courses not directly related to sustainable development" chosen by 34 out of 89 students, and "Promotes green mobility for staff" as well as "Conducts scholarship programs for economically disadvantaged students" which was selected by 26 students. Other characteristics received scattered selections, ranging from a dozen to 24 mentions. Notably, only one characteristic—"provides knowledge on sustainable development in courses not directly related to sustainable development"—aligned with WSEiZ students' vision of a sustainable university. Moreover, majority of characteristics of sustainable development university was not aligned to ATA by its students. A detailed breakdown of these characteristics is shown in Table 2 and figure 10.

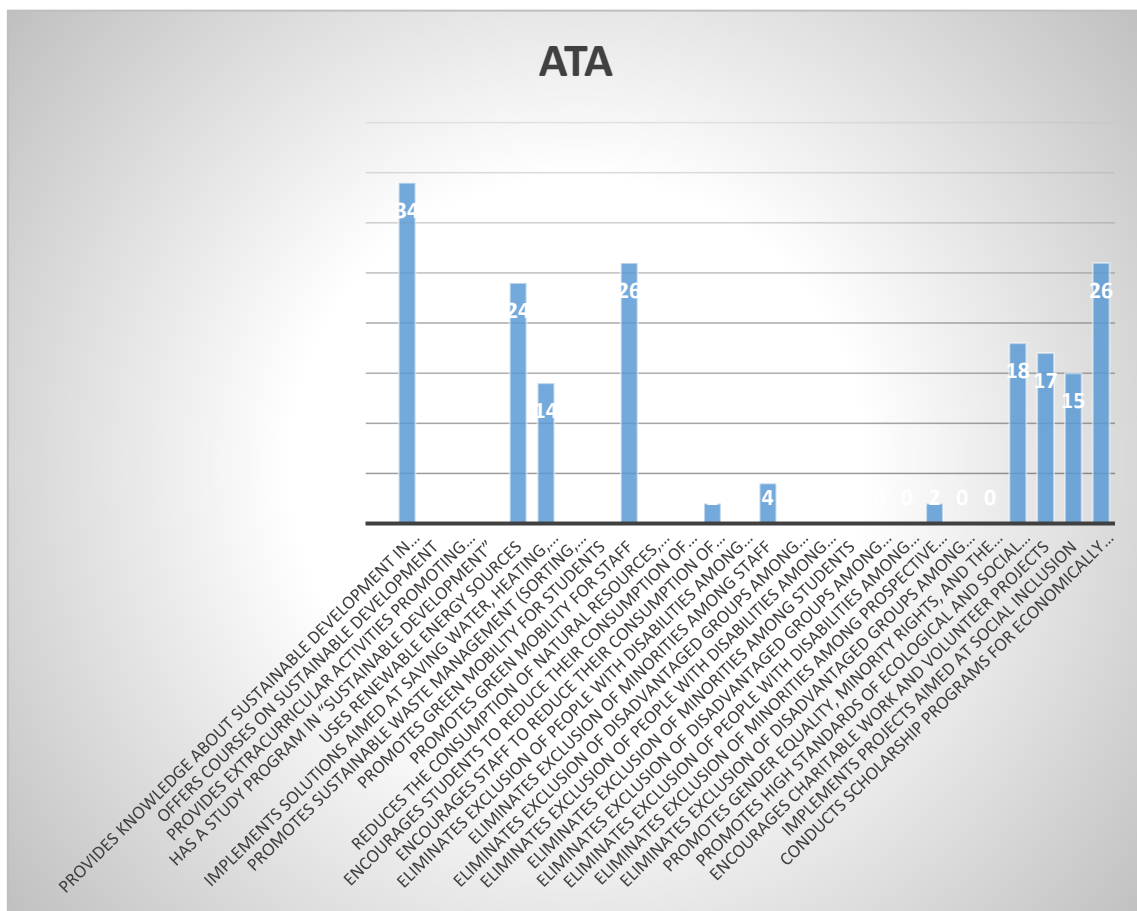


Figure 10. ATA students' specification of most indicated fields of sustainable university.

Source: own research.

Table 2.
Students' sustainability indications of their university

7. What characteristics of a sustainable university do you think WSEIZ possesses?	ATA	TUW
Provides knowledge about sustainable development in classes not related to sustainability	34	21
Offers courses on sustainable development	0	12
Provides extracurricular activities promoting sustainable behaviors	0	8
Has a study program in "Sustainable Development"	0	1
Uses renewable energy sources	24	11
Implements solutions aimed at saving water, heating, and electricity	14	14
Promotes sustainable waste management (sorting, recycling, reuse)	0	25
Promotes green mobility for students	0	10
Promotes green mobility for staff	26	6
Reduces the consumption of natural resources, including paper	0	15
Encourages students to reduce their consumption of natural resources	0	9
Encourages staff to reduce their consumption of natural resources	2	8
Eliminates exclusion of people with disabilities among staff	0	12
Eliminates exclusion of minorities among staff	4	15
Eliminates exclusion of disadvantaged groups among staff	0	16
Eliminates exclusion of people with disabilities among students	0	15
Eliminates exclusion of minorities among students	0	13
Eliminates exclusion of disadvantaged groups among students	0	12
Eliminates exclusion of people with disabilities among prospective students	0	14
Eliminates exclusion of minorities among prospective students	2	17
Eliminates exclusion of disadvantaged groups among prospective students	0	15
Promotes gender equality, minority rights, and the rights of disadvantaged groups within the organization	0	12
Promotes high standards of ecological and social behavior through projects and actions	18	13
Encourages charitable work and volunteer projects	17	18
Implements projects aimed at social inclusion	15	16
Conducts scholarship programs for economically disadvantaged students	26	29

Source: own research.

All the TUW students except two indicated different characteristics identifying a sustainable university than ATA students (figure 11 and Table 2). The only two similar appointed features were: "Provides knowledge about sustainable development in classes not related to sustainability" and "Conducts scholarship programs for economically disadvantaged students" which were also together with "Promotes sustainable waste management (sorting, recycling, reuse)" the most frequently chosen characteristic, with 21, 29 and 25 selections respectively. "Has a study program in "Sustainable Development"" was the least frequently chosen characteristics among TUW students. Remarkably, non of the features of sustainable development of the university of TUW was defined as non-existent.

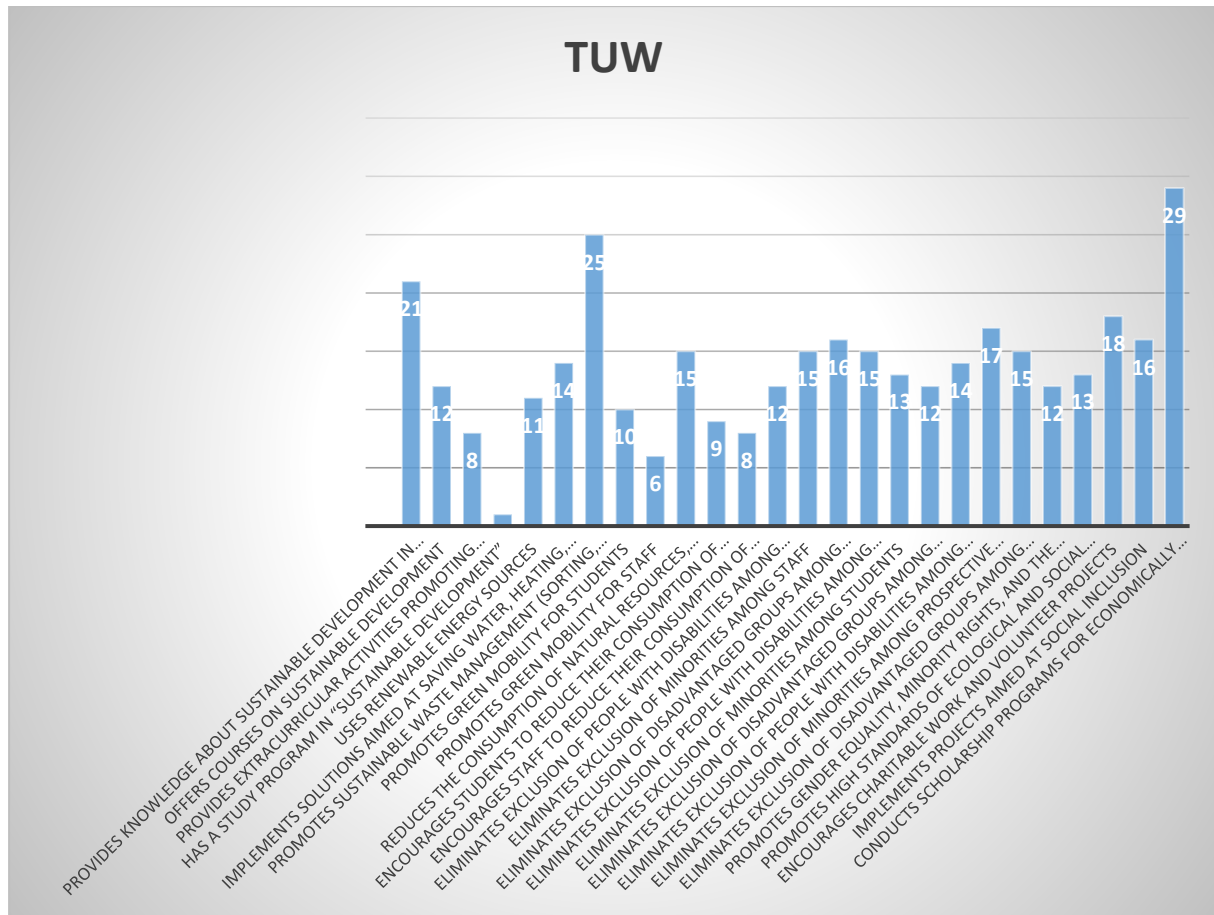


Figure 11. TUV students' specification of most indicated fields of sustainable university.

Source: own research.

The next question aimed to determine whether the universities surveyed provide their students with opportunities to engage in extracurricular activities, beyond the curriculum—such as social, charitable, organizational, and scientific activities—that help build sustainable development competencies.

45 out of 89 (50,56%) investigated ATA students indicated that the university does not provide such opportunities. Meanwhile, only 2 out of 51 responding students of TUV provided the same answer. Moreover, 44 out of 89 (49,44%) investigated ATA students indicated are unaware of these activities, while 18 of TUV respondents (30,51%) pointed out the same answer. None of ATA students are aware of opportunities to engage in extracurricular activities outside of the curriculum, including social, charitable, organizational, and scientific activities that build competencies in sustainable development. More than 66% of TUV students are aware of these types of activities (see figure 12).

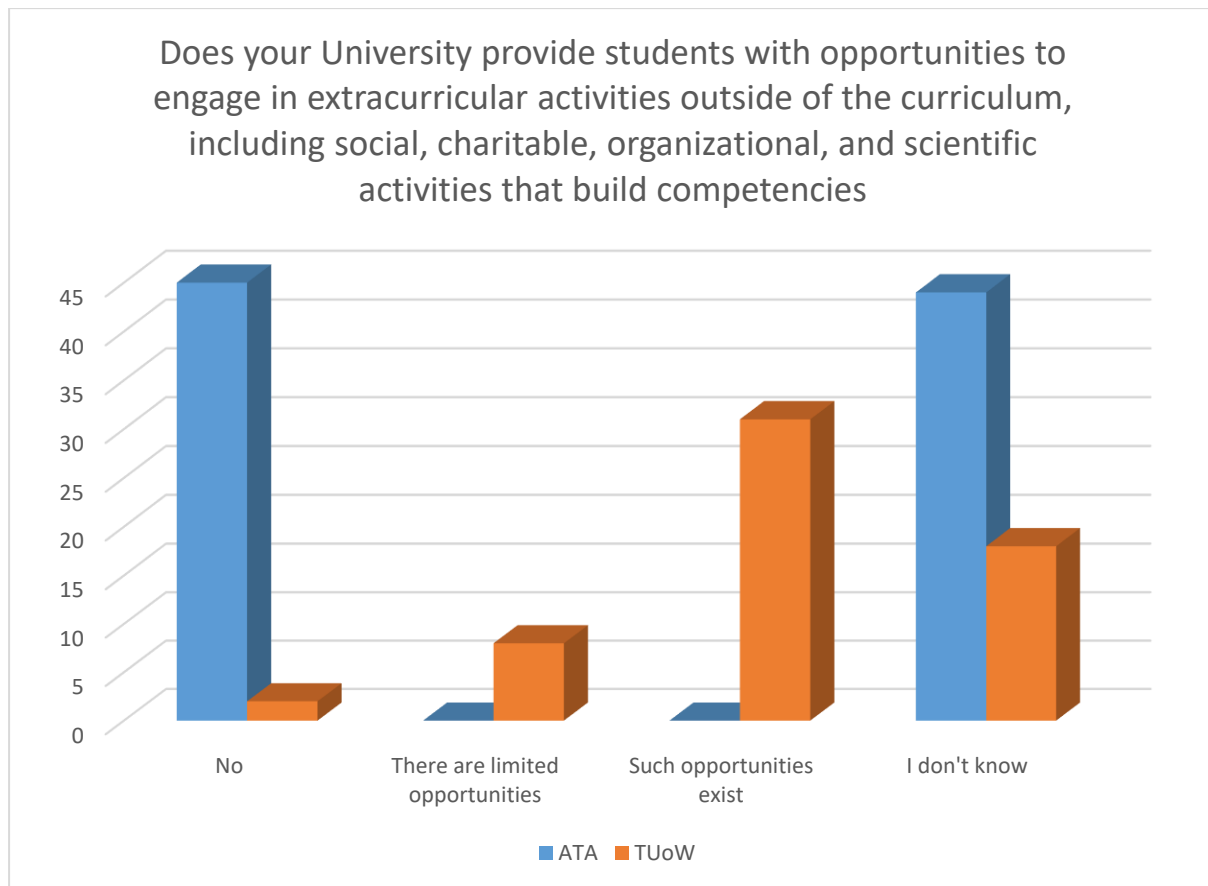


Figure 12. Students' awareness of opportunities to engage in extracurricular activities outside of the curriculum, including social, charitable, organizational, and scientific activities that build competencies in sustainable development organized by their universities.

Source: own research.

In response to the question of whether they participate in extracurricular activities, beyond the curriculum—such as social, charitable, organizational, or scientific activities organized by their university that build sustainable development competencies—100% of both ATA as well as TUW students answered negatively, as did 93% of Academy students (see figure 13).

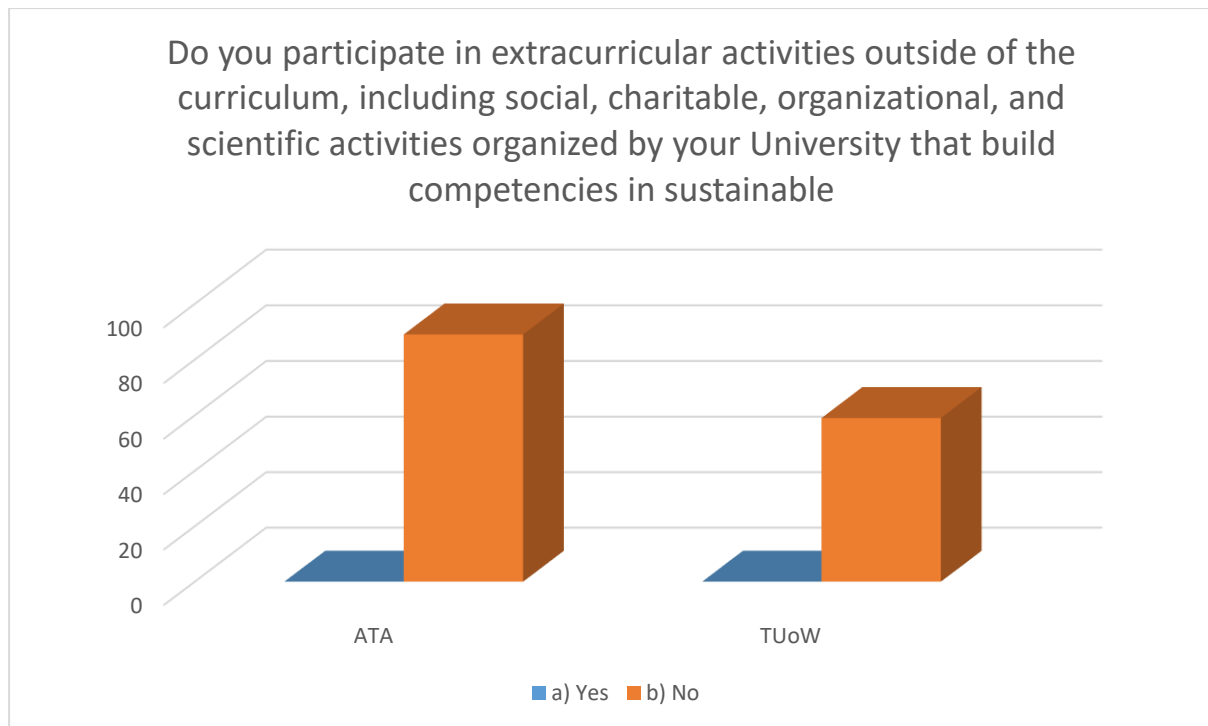


Figure 13. Participation in extracurricular activities building sustainable development competencies of students.

Source: own research.

Consequently, students of both universities did not appoint their motives of participation in such activities.

The next question asked which types of activities offered by their university students felt most effectively developing sustainable development competencies. The students of ATA did not appoint any. According to students from TUW, projects were the top choice, with 38 choices and workshops with 30. The detailed responses are presented in figure 14.

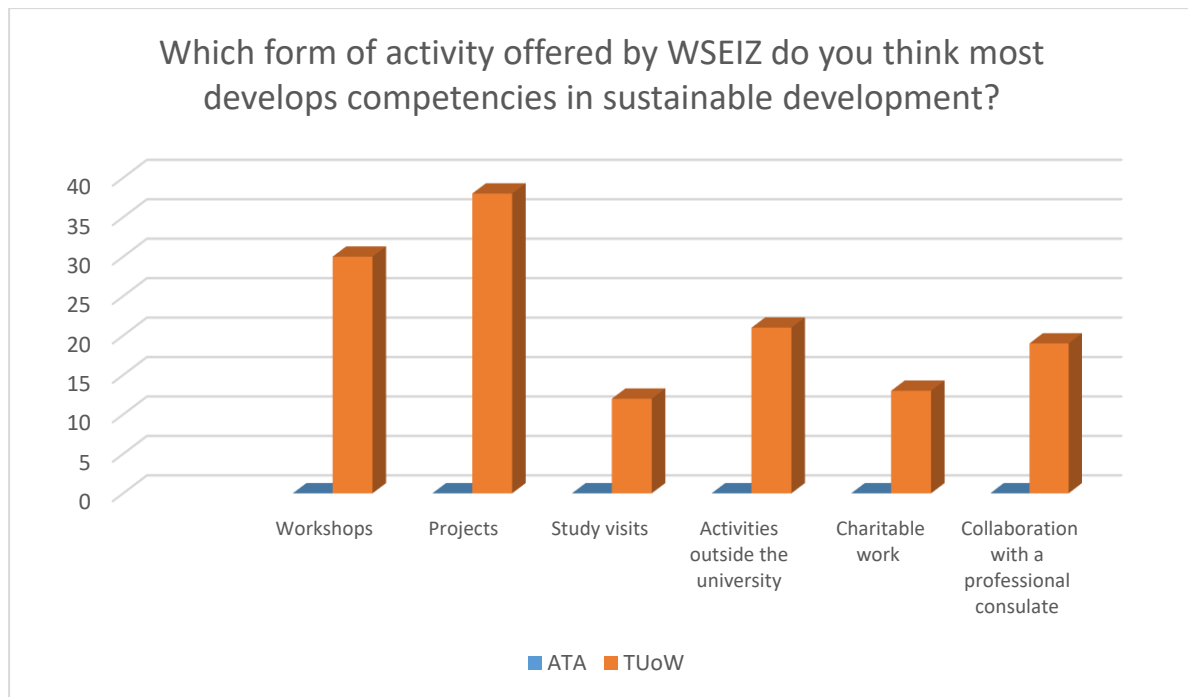


Figure 14. Types of activities offered by universities students felt most effectively developing sustainable development competencies.

Source: own research.

The final question asked how students plan to develop their competencies in sustainable development. Students from ATA and TUW prioritized participating in courses, training sessions, or workshops, with 46 and 34 students selecting this option, respectively. 43 students of ATA and 16 of TUW do not plan to develop their competencies in sustainable development. For detailed answers, see figure 15.

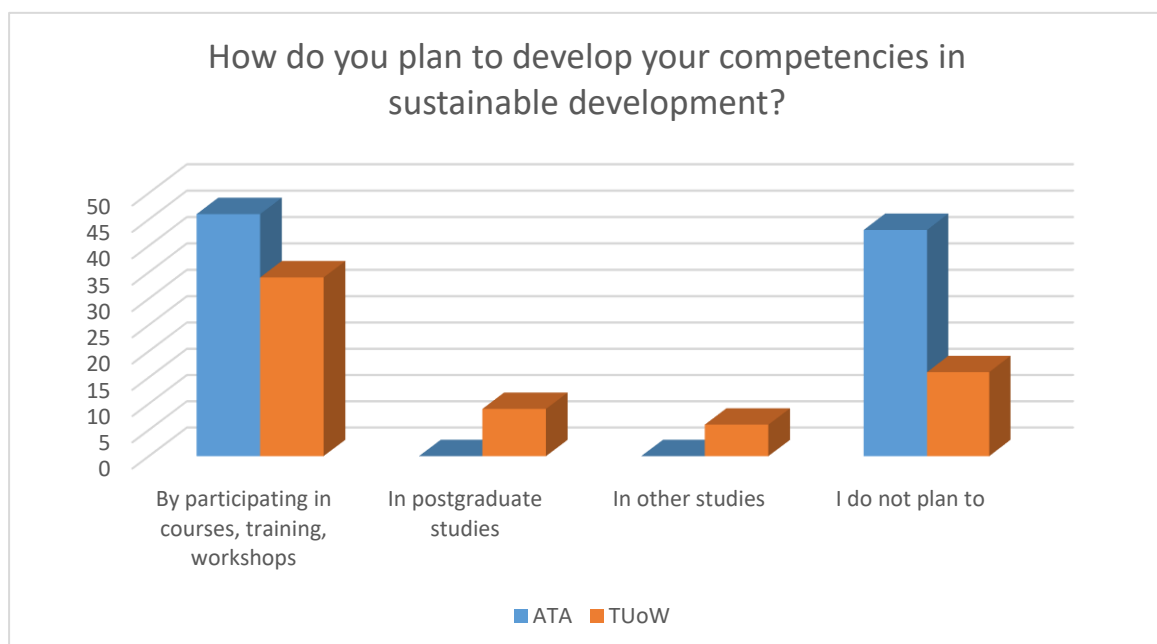


Figure 15. Students' plans to develop their competencies in sustainable development.

Source: own research.

5. Results and conclusions

The purpose of this study was to assess the awareness and expectations of university students from ATA and TUW regarding sustainable development at higher education institutions. The analysis focused on the students' perspectives. The study clearly revealed a high level of awareness among students on this topic, with 100% of ATA students and more than 93% of TUW students demonstrating awareness.

The surveyed students identified features they believe should characterize a sustainable university. Of the 26 proposed features, students from both Polish universities highlighted all of them with varied number of votes. The least score obtained a feature "Offers a study program in Sustainable Development". These findings suggest a noticeable lack of program solely dedicated to sustainable development neither as major or minor in none of the surveyed universities.

Moreover, the students of the same major of two different universities, perceive their higher education institution completely different in terms of sustainable development. Students of TUW, firstly see the university as any other institution (apart from educational mission) that cares about ecology and their internal and external stakeholders. While the students of ATA primarily perceive their university as sustainable developed institution through the prism of the program of studies.

The most surprising finding was no participation in extracurricular activities and initiatives among both Polish universities' students. These activities, which include social, charitable, organizational, and scientific endeavors, are essential for developing sustainable development skills find no interest among surveyed students.

The study thus suggests that, the Polish surveyed universities still incorporate considerably fewer sustainable development topics in their curricula and organize limited extracurricular activities to support these competencies. Nevertheless, overall students' awareness of the concept of sustainable development is considerably high and highly satisfactory. Considering the current labor market and the growing demand for sustainability specialists in Poland, Polish universities could benefit from implementing a model based on a holistic approach to sustainability education, integrating these topics widely across educational programs and fostering the development of practical skills in this critical area. That approach could be reached by including the business environment entities as well as by introducing micro-credentials to the program of studies.

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