Studia Periegetica nr 3(23)/2018
DOI: 10.26349/st.per.0023.03

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# Active Learning as a Means to Promote Education for Sustainable Development in the Classroom: A Case Study of Implementation in the Course "Multilevel Governance"

**Abstract.** The world is increasing in complexity and challenged by serious problems such as climate change, which have no easy solutions and involve stakeholders with competing values. Higher education has an integral role to play in navigating society through these daunting challenges. Educating the next generation of scholars and change agents through the framework of sustainable development clears a path for balancing environmental, societal and economic realities. Education for sustainable development must equip students with critical and "out of the box" thinking skills to develop innovative solutions to these problems. Whilst it is recognized that there is a need to develop pedagogical approaches for sustainability in education, there is a gap in the literature on pedagogical practices that promote education for sustainable development in the classroom. This study aims to bridge this gap by examining active learning as a means of promoting education for sustainable development. More specifically, it examines the use of active learning techniques in the course "Multilevel Governance" as a means of promoting education for sustainable development in the classroom. This article recommends that active learning techniques, such as group discussions, group assignments, Technology, Entertainment and Design (TED) talks, are critical to engaging students in the classroom on sustainability issues.

**Keywords:** active learning, Baltic Sea Region, governance, education for sustainable development, flipped classroom

## 1. Introduction

The world is increasing in complexity and challenged by serious problems, such as climate change, which have no easy solutions and involve stakeholders with competing values. Climate change compounds other daunting challenges includ-

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ing increasing conflict and war, poverty, lack of good governance, signs of failures of democracies including corruption, political instability, lack of access to vital services, such as education, water and sanitation, increasing populism and political instability, lack of economic opportunity and increasing population growth. Education, and in particular higher education, has a critical role to play in turning these challenges into opportunities for a sustainable future. Educating the next generation of scholars and change agents through the framework of sustainable development clears a path for balancing environmental, societal and economic realities. Education for sustainable development (ESD) must equip students with critical and "out of the box" thinking skills to develop innovative solutions to these perturbations.

United Nations Decade of Education for Sustainable Development (2005-2014) [UNESCO 2014] recommends including sustainable development issues, such as climate change and biodiversity in teaching and learning. There are many studies that examine education for sustainable development from varying perspectives. For example, one study presented online activities that can increase undergraduates' understanding of sustainability in business [Albibsson, Perera & Sautter 2011], whilst another recommended theoretical frameworks for incorporating sustainability in education [Ruisinko 2010]. While it is recognized that there is a need to develop pedagogical approaches for sustainability in education, there is a gap in the literature on teaching practices that promote education for sustainable development (ESD) in the classroom. This study aims to bridge this gap by examining active learning as a means to promoting education for sustainable development. More specifically, it examines the use of active learning techniques in the course 'Multilevel Governance' at Åbo Akademi University in Finland as a means of promoting education for sustainable development in the classroom.

## 2. Education for sustainable development

There are many definitions of sustainable development and sustainability, but one that is universally recognized is derived from the Brundtland report. The World Commission on Environment and Development Report entitled "Our Common Future" (more commonly known as the Brundtland Report 1987) defines sustainable development, as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [Bruntland et al. 1987: 8]. It is a process that reconciles ecological, social and economic imperatives; the ecological imperative to live within the earth's carrying capacity whilst maintaining biodiversity, the social imperative for

propagating values in a democratically governed society and economic imperative for meeting basic needs globally [Robinson & Tinker, 1997]. The definition of sustainable development was not specific, allowing stakeholders in each sector to work towards common ground.

Education for sustainable development is defined by UNESCO [2014a] as education that "allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future." Inherent in this definition is the idea that humans and the environment are interconnected, which is why this coupling must be considered in education in order to solve challenges for a sustainable future. Methods of engaging students need to change so as to help students switch from rote learning to critical thinking. This can be done by integrating sustainable development themes such as the sustainable development goals into the curriculum, as they are interconnected. ESD learning refers to: 'learning to ask critical questions; learning to clarify one's own values; learning to envision more positive and sustainable futures; learning to think systemically; learning to respond through applied learning; and "learning to explore the dialectic between tradition and innovation" [UNESCO 2011a: 8].

As such, ESD cannot be limited to courses on sustainability but must be interdisciplinary and incorporated into every subject. Using ESD as a guiding framework to teach multilevel governance is important, as governance refers to the steering of society by not just the government, but non-governmental actors including the private sector and civil society. Examining sustainability within the context of multilevel governance is important as sustainable development is governed in a multilevel environment. The goals are agreed upon by national governments at the international level, but are implemented at the local level by municipalities in each country. Understanding this can empower students to be agents of change in their role in society and through interaction with friends and family members.

In traditional higher education, students enter the classroom where lecturers fill them with information that represents the body of knowledge in a given subject. However, change through ESD at the student level requires more in-depth learning that engages critical thinking skills, self-reflection, dialogue and consciousness [van der Merwe & Albertyn 2009], moving away from the didactic approach. ESD requires "participatory teaching and learning methods like critical thinking, imagining future scenarios and making decisions in a collaborative way in order to empower learners to take action for sustainable development" [UNESCO 2014b: 20]. However, research is not aligned with this vision, as less emphasis is placed on methods used for integration of ESD and more on studying the impact of environmental issues [Wu & Shen 2016]. In the best case scenario, the closest universities come to ESD is incorporating "bolt-on" courses in the curriculum [Christensen et al. 2007], e.g. introduction to sustainability. There is consensus in the literature that there is a need for studies on new and innovative

pedagogical methods for ESD [Jabbour 2010; Springett 2005; Stubbs & Cocklin 2008]. As such, it is necessary to rethink the traditional mode of teaching to include innovative methods to hone critical thinking skills in students. This paper proposes active learning techniques as one means of renovating the traditional learning environment through teaching innovations.

## 3. Active learning

Active learning refers to a shift from didactic teaching towards a classroom culture with more responsible learners. It requires the lecturer to place emphasis on the student's participation over the lecturer's expert knowledge of the subject. The effectiveness of this technique of engaging students is supported by research indicating that student's attention span declines steadily after the first ten minutes of class [MacManaway 1970] and that it helps students learn by improving active construction of meaning of the material taught, by learning with others and by engagement with the material [Michael 2006]. Students can be independent readers of the course material, but they need lecturers and tutors to act as coaches to challenge their thinking and application of the material [Bergmann & Sams 2012]. Active learning stimulates students to explore attitudes and values by increasing motivation to acquire knowledge and skills. There are several techniques used by universities to apply active learning, for example, problem based learning [Wood 2008], experiential learning [Kolb 2014], action learning [Revans 1984], flipped classroom [Abeysekera & Dawson 2015] and inquiry based learning [Healey 2005]. These are implemented in the classroom through active learning activities, such as teamwork, debates, prior reading of material and discussion in class, self-reflection and case studies, worked examples, field research, peer teaching, project work and the use of games [Prince 2004]. This paper presents a course redesign to incorporate active elements into the course to better meet the goals of ESD.

## 4. The case study: multilevel governance at Åbo Akademi University

This case study takes place in Finland where higher education is divided into two categories: universities and universities of applied sciences. Traditionally, the latter are more geared towards education for the workforce while the former focus on the pursuit of scientific and academic knowledge and research. There are 26 universities of applied sciences and are 14 university level institutions [Fulbright

Center 2018]. This study takes place at Åbo Akademi University, the only exclusively Swedish language university in Finland, located in the former capital of Turku. The University was founded on the principle of scientific research, as captured in this quote attributed to Baron. R.A. Wrede, Åbo Akademi University Chancellor in his inauguration address in October, 1919 [Åbo Akademi University 2018]: "A prerequisite for the success of scientific research is that it remains unfettered, that it is driven only by a devotion to the truth. Liberated, in-depth research that is also aware of its limitations and, based upon it, an education borne out of an ideal ethos – such is what we expect of academia."

Currently, there are 5500 undergraduate students and 780 postgraduate students in two campuses at Turku and Vaasa, with an annual budget of 98 million euros and 1100 staff (650 work in teaching and research) [Åbo Akademi University Website 2018]. The university conforms to the European standards, with a Bachelor's degree lasting 3 years, and a Master's degree another two years. Students need 180 Finnish credits to complete the Bachelor's degree and an additional 120 credits to complete the Master's degree. Students have a degree of freedom to determine what courses they study and the rate of studying and can retake examinations up to two times if they are not happy with their grades. Students can attend lectures and pass examinations based on these lectures or can choose to take an exam based on reading materials that are considered the equivalent of lectures.

The course "multilevel governance" was taught in the Department of public administration based on the examination of reading materials. Students study the assigned texts and then submit an essay to be graded by the course instructor. This mode of delivery does not allow students to share views with other students or critically challenge their assumptions through discussions and a free exchange of ideas. In keeping with the University's goal of internationalization as captured in its vision ("by 2020, Åbo Akademi University will be a university that breaks linguistic and cultural boundaries, where the Swedish-speaking academic community is in full synergy with an international atmosphere, and where both education and research are of the highest quality" [Åbo Akademi University Website 2018]), the University hosts exchange students from Europe. The participants of the multilevel governance course comprised primarily of these exchange students with one Finnish student.

## 5. Results: active learning components utilized in the course redesign

The course redesign for "multilevel governance" was motivated by a desire to incorporate education for sustainable development (ESD) principles in the de-

livery of the course for enhanced student engagement. At the same time, a lot of pedagogical innovations were carried out quietly at Åbo Akademi University through courses designed to teach best practices in pedagogy to university lecturers. There was a collective momentum to move away from the traditional methods of reading courses, examined through one paper and the traditional lecture-based classroom. The goals of the 'multilevel governance' course redesign were to 1. Improve students understanding of and appreciation for sustainable development 2. Engage students as partners in their learning 3. Stimulate students' creativity through the use of digital methods such as Technology, Education and Design (TED) talks in the classroom and 4. Improve students' understanding and application of the theories multilevel governance in order to hone their critical thinking skills, problem solving skills and team interaction skills.

## 5.1. Offloaded content

The new course design utilized Moodle, an integrated learning platform, which was designed for educators to create a secure and personalized learning environment [Moodle 2018], to post lecture materials and communicate with students outside of the classroom. Ten course readings were preloaded to the course Moodle page at least one week prior to the start of class. Students were given rights to download the material and so were able to read at their own pace prior to the start of class. Material was carefully selected with links to sustainable development. One challenge in uploading material was to determine the right fit between the essential amount of reading for the students that would provide a theoretical foundation to the course and stimulate their interest without overwhelming them with too much reading material.

## 5.2. Micro-lectures and in-class group work

The micro-lecture is a modification of the traditional lecture to incorporate active learning activities throughout the classroom period. This was used by the lecturer to present foundational concepts in order to reinforce students' learning and, judging from the results of the in-class group work and activities, to redirect learning. The maximum duration of the micro-lectures was fifteen minutes, followed by an in-class active learning activity. These micro-lectures also provided an opportunity for the lecturer to redirect students' attention after the excitement of an active learning environment where there is a lively discussion and exchange of ideas. Students knew they could rely on added clarity and perspectives from

these bite-sized knowledge segments. Micro-lectures also provided students with the comfort of knowing that they can seek further answers from the lecturer, allowing them to extend and explore the topic further.

Students were also shown relevant videos in class that were pertinent to the subject being discussed and then broke off into group work to discuss and answer probing questions. For example, students were shown a video on the Integrated Rhine River program (www.youtube.com/watch?v=trPhVP8N6ng) and then asked to work in groups to discuss elements of multilevel governance that were shown in the video. They were asked whether those elements were working effectively and if not, what could be improved. There was much animated discussion and debate in the groups. At the end of the group work, students presented their thoughts to the rest of the class. There was much expanded discussion and sharing of different country perspectives, including those of students who lived in the Rhine River watershed. This brought home the value of using materials in class that are relatable to students to motivate their interest and to share personal experiences.

## 5.3. Think-pair-share activities

Each class contact period included several think-pair-share activities. In one such activity, students were presented with a discussion question that they spent a few minutes thinking about on their own and jotting the answers down. Then they turned to the person next to them and discussed their answers and came up with combined and consolidated answers. Students were eager to share their perspectives with other class members, which led to expanded discussion and feedback from the lecturer. As a simple example, students were asked to think about what the term sustainability meant. They were given a few minutes to think about their answers, and then they discussed answers with their neighbor and shared their combined answer with the class. This, as predicted, led to a lot of discussion and surprising answers about sustainability. Students reported that this exercise helped them to open their eyes to new aspects of sustainability, as students shared perspectives from their home countries.

## 5.4. Technology, Education, Design (TED) talks

The history of Technology, Education and Design (TED) talks can be traced back to a 1984 and Richard Wurman's conviction about the convergence between technology, entertainment and design. This developed further to the first TED conference (with Harry Marks), which included a demo of compact discs,

e-books, 3D movie graphics, and a demonstration by mathematician Mandelbrot on how to map coastlines using geometry [TED 2018]. Since 1990, the conference has become an annual event and broadened the list of topics and its influence by going online. In 2001, TED was acquired by media entrepreneur Chris Anderson of the nonprofit Sapling Foundation [TED 2018]. The first TED talks were shared on the Internet on June 27, 2006, amassing more than one million views by September 2006. Today, TED has evolved as a forum consisting of 'ideas worth spreading' taking the format of short (usually 18 minutes or less) influential talks. According to the website, TED is a "clearinghouse of free knowledge from the world's most inspired thinkers" [TED 2018]. Its mission as stated on the website is that, as a global community, "welcoming people from every discipline and culture who seek a deeper understanding of the world. We believe passionately in the power of ideas to change attitudes, lives and, ultimately, the world." TED talks can be accessed online through TED.com.

A search on the right hand side of the TED website for 'sustainable development' produced 89 results. Some of these results were used in class to listen to and discuss ideas from some of the world's most innovative speakers. Students were then asked to discuss the groups what worked well in the talks, what ideas most resonated and how the talk could have been improved. This helped in developing critical thinking and assessment skills in students. The lecturer then regrouped students and provided further clarification of ideas and summed up the elements of good TED talks. Students were introduced to their assignments, which was to produce a 5 minute TED talk on the subject of sustainable development from any perspective. One example talk from one of the students can be accessed here: www.youtube.com/watch?v=M65CH6q2Sl8&feature=youtu.be

## 5.5. Expert/industry guest lecturers

Guest lectures were carefully selected to present students with real world problems and applications of the principles they were already discussing in the classroom. Guest lecturers were selected from a broad disciplinary background and used varying techniques to engage the class in discussion. One expert lecturer had sent material prior to the class, which was uploaded to the Moodle course page for access before class. This content was then discussed with the class and solutions to real world problems also discussed. Another guest lecturer utilized group work to introduce the class to the problems that his organization faced and asked for solutions from a sustainable development and multilevel governance perspective.

There were a total of three guest lectures. The expert from the Union of Baltic Cities (network of cities in the Baltic Sea region) explored the role of the local

level in governance of sustainable development with students. Another guest, an ex-official from the Helsinki Commission (The Baltic Marine Environment Protection Commission- the governing body of the Convention of the Protection of the Marine Environment of the Baltic Sea Area, a convention signed by coastal countries for the protection of the Baltic Sea) engaged students on sustainable development in the Baltic Sea Region. The third guest facilitator was an official from Interact (an EU-funded programme to foster cross-border, transnational and interregional cooperation), who engaged students in a debate on the usefulness of macro-regional strategies in achieving environmental goals.

## 5.6. Teamwork

The class assessments were designed such that one component incorporated group work to allow students to develop team working skills. Each randomly selected group of five persons (different from the class discussion groups, which changed for each class) was assigned to groups and given a general topic and a period of four days to decide what aspect of the topic they would like to explore, conduct the research and report on it in class and in the final report. Groups were randomly assigned topics such as governance of sustainable cities, marine and water governance and governance of sustainable development. The instructor was present in the classroom for a certain period of time to act as a coach or mentor for group work. Groups reported that one of the hardest parts of the assignment was deciding on what aspect of the topic to focus on, as the topics were general. This showed that one of the aims of the exercise was achieved, namely that students were able to understand that ill-defined problems in the real world, such as climate change, are harder to solve than those narrowed down to one sector or area of society.

Students presented their results to the class in group presentations lasting 15 minutes each. Other groups were allowed to question each presenter and this lead to lively discussions and learning in class. Students were then asked to fill in peer group evaluation forms, where they had to rate group members' participation and contribution to the group work. Students reported benefits of working in a group included learning from different perspectives and being able to develop strategic and problem solving skills. Here is a sample of one student's experience of working in a group: "Working in the group showed me the different perspectives and ideas all of us had in our group concerning our topic".

They were also asked to reflect on their own participation and contribution. This encouraged self-reflection, and led to some useful insights. For example, one student wrote that: "I like to work in groups because it gives you an opportunity to test your ideas and thought processes before you start a project. Also, as the project

goes along, you have a lot better chances to get help or see problems more clearly, when you can discuss the process with your colleagues. Of course, working in a group puts you in a more responsible position because the work isn't only depending on your input, but in the other hand your input is as needed as the rest of the groups. With this I mean you have a responsibility towards your group to do your part, but also you can control your part a lot better, and not have to do everything."

## 6. Discussion

This paper presented a redesign of the course "multilevel governance" to include active learning elements to foster education for sustainable development skills in students. This section discusses how the active elements incorporated in the course were able to foster elements of ESD as defined by UNESCO. These elements are: "learning to ask critical questions; learning to clarify one's own values; learning to envision more positive and sustainable futures; learning to think systemically; learning to respond through applied learning; and, learning to explore the dialectic between tradition and innovation" [UNESCO 2011a: 8].

### 6.1. Learning to ask critical questions

The course was redesigned with the intent of fostering critical thinking skills in students. One sign of developing critical thinking skills is the ability to ask meaningful questions. This developed spontaneously through the active learning activities, as students listened to different perspectives from peers. In the beginning the lecturer modeled the behavior of asking questions by asking probing questions during group work, such as "What made you think that? Can you give an example that you know of? Does someone have an alternative opinion? Is there another possible solution to this problem?" As the class progressed, students were actively questioning each other and the lecturer and guest lecturers more and more. Questions were also utilized as a technique by students in their TED talks to engage the audience.

### 6.2. Learning to clarify one's own values

The guest lectures provided the perspective of the expert in the field. Students were able to question their assumptions about "what happens in the real world" as opposed to what's written in theory. The group activities in the classroom and outside of the classroom provided fertile ground for students to clarify and ques-

tion their own values. This was done through listening to different perspectives and critically questioning this in relation to the theory and material presented in class and in the world. This was captured in the words of one student: "I learned about looking from a different point of view. Because, when I study individually, I focus on just one issue. I wasn't looking in a different way. But, by working with a group, I learned much more information from others."

## 6.3. Learning to envision more positive and sustainable futures

The world is increasingly plagued by complex and challenging problems with no easy solutions and lecturers have a role to nurture students to think about and solve these problems. One of the ways students could envision a more sustainable future was through looking at TED talks. TED talks revealed worlds that consisted of best practices, breaking with tradition in favour of innovative solutions and solving complex problems through lateral thinking. In their own TED talks, it was clearly evident that students had acquired the skills of envisioning a more positive and sustainable future, as the majority of TED talks ended with a call to action for the audience to contribute to a more sustainable society.

Although it was not possible to present feedback from all the students here, one student captures how the course helped him to envision sustainable futures: "I expected to learn more about multi-level governance systems and theories. Also, the practical applications of these solutions interest me. I believe it is very important when I myself construct my theories and hypothesis in my master thesis, that I know as much as possible of all the different real solutions in this case. The sustainable development part of the course is in my view a bonus. I argue that if we ever want to achieve truly sustainable solutions, governance models should follow cooperative systems and policies. Only if we work together and understand each other, and where we want to be, can we make society a much more healthy and better place for everybody."

## 6.4. Learning to think systematically

Learning to think systematically entails being able to approach an issue from a holistic perspective, examining the interrelationships between its parts and not merely thinking about individual components. This entire course was designed to help students grasp the interconnectedness of the modern world. The very definition of multilevel governance highlights the interconnectedness of the governance system. Multilevel governance can be defined as [OECD 2011].

"The explicit or implicit sharing of policymaking authority, responsibility, development and implementation at different administrative and territorial levels, i.e., (i) across different ministries and/or public agencies at central government level (upper horizontally); (ii) between different layers of government at local, regional, provincial/state, national and supranational levels (vertically); and (iii) across different actors at the sub-national level (lower horizontally)."

Through the analysis of multilevel governance structures and their implications for society, students were forced to see the interrelatedness of issues. Topics of sustainable development that were explored in class and through the guest lectures highlighted its multidisciplinary nature. Topics covered economic, cultural, environmental aspects and included many sectors including transportation, business, agriculture, engineering, and law and also examined short, medium and long-term perspectives from the local, regional and international levels. The active learning techniques used in the classroom were carefully designed to enable students to appreciate the complexity, interrelationships and the global picture. Students were able to link their own lifestyles to consequences and influences from the local, regional and international level. Although all students were from the European Union, they were able to appreciate the differences in country contexts and the interrelationships through class discussions.

## 6.5. Learning to respond through applied learning

Students were able to apply their learning through the assignment and research activities. For example, for group work, students chose their own topics from the general guidelines. Students then explored these cases and applied the theory gained in class to the analysis of their case studies. This was clearly evident in the final presentations, as students began with the question they were researching and the methodology utilized in answering the question. Students were also able to apply their knowledge to answering group questions on videos looked at in class and in answering questions posed by the lecturer on the spot in class.

## 6.6. Learning to explore the dialectic between tradition and innovation

The subject matter of the course lends itself readily to explore the dialectic between tradition and innovation. Traditionally in the Baltic Sea Region, governance was mainly done by governments. The Helsinki Convention arose through governmental diplomacy during the Cold War period but gradually expanded to

broaden in focus and scope to include non-governmental actors and other issues. Governance refers to the steering of society by actors other than government, including civil society, the private sector and nongovernmental organizations. Students examined the evolution of government to governance, recognizing that society's problems are so complex that they can only be solved when different perspectives and knowledge is brought to the table through wider participation. Whilst in the past governments were seen as the authority that solves social problems, students were able to appreciate through the topics discussed that wider participation can lead to innovative solutions.

## 7. Conclusion

Education for sustainable development aims to disrupt the preconceptions of students in higher education, making them uncomfortable with rote learning and to provide them with knowledge and skills that can solve real world problems in an innovative manner. Recognizing this, the course on 'multilevel governance' taught at Åbo Akademi University, Finland was redesigned to better foster these skills. At the core of the new format was the incorporation of active learning techniques into the classroom and beyond for the students. Active learning techniques have proven to effectively engage students in the material, making them partners in their learning. Active learning activities, such as prior offloaded course content, group work, TED talks, think-pair-share and guest lecturers, were introduced in the flipped classroom format for 'multilevel governance'. Students reported increased awareness and understanding of sustainable development issues and this was captured in the 5 minutes TED talks submitted as part of the course assessment.

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## Uczenie się aktywne jako środek promowania edukacji na rzecz zrównoważonego rozwoju w klasie: przykład wdrażania kursu „Wielopoziomowy ład organizacyjny"

**Streszczenie.** Świat staje się coraz bardziej złożony i staje w obliczu wyzwań związanych z poważnymi problemami, takimi jak zmiany klimatyczne, które nie mają prostych rozwiązań i dotyczą wielu interesariuszy reprezentujących sprzeczne interesy. Szkolnictwo wyższe odgrywa istotną rolę w wytyczaniu kierunków dla społeczeństwa w tych wymagających warunkach. Kształcenie nowego pokolenia specjalistów oraz osób, które będą zmieniać oblicze świata według zasad zrównoważonego rozwoju, otwiera drogę ku znalezieniu równowagi między zagadnieniami środowiskowymi, społecznymi i ekonomicznymi. Edukacja na rzecz zrównoważonego rozwoju musi wyposażyć studentów w umiejętności myślenia niestereotypowego i krytycznego w celu tworzenia kreatywnych rozwiązań aktualnych problemów. Choć uznaje się potrzebę rozwijania pedagogicznych podejść do zasad zrównoważonego rozwoju w edukacji, istnieje luka w literaturze na temat przykładów działań pedagogicznych promujących edukację na rzecz zrównoważonego rozwoju. Niniejszy artykuł ma na celu wypełnienie tej luki poprzez analizę aktywnego uczenia się jako środka promowania edukacji na rzecz zrównoważonego rozwoju w klasie. Autorzy opisują zastosowanie technik aktywnego uczenia się w kursie „Wielopoziomowy ład organizacyjny". Wśród zalecanych technik omówione są dyskusje w grupach, zadania grupowe, referaty TED, które służą zwiększeniu zaangażowania studentów w podejmowanie zagadnień zrównoważonego rozwoju.

**Słowa kluczowe:** aktywne uczenie się, region Morza Bałtyckiego, ład organizacyjny, edukacja na rzecz zrównoważonego rozwoju, odwrócona klasa