



The transformation of sustainable lifestyle practices in ecoclubs

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ABSTRACT

The lifestyle and consumption habits of individuals are crucial in the question of ecological sustainability. Current consumption patterns need to be changed, requiring societies to shift cultural norms and create new consumer habits which are within planetary boundaries. In the practices of teaching sustainable consumption in higher education participatory and action-oriented research and teaching methods can facilitate the transition towards a more sustainable lifestyle for students. In this paper, we present a method operating at the boundary of education and research, the so-called ecoclubs, based on the characteristics of cooperative inquiry and transformative learning. Ecoclubs enable systematic and democratic knowledge creation to achieve concrete social change. In this paper, we explore how the method can promote transformation in the knowledge, attitude and everyday practices of the participating students regarding a sustainable lifestyle. To analyse the transformative potential of ecoclubs we used qualitative content analysis on 38 semi-structured interviews and reflection diaries of co-researchers of ecoclubs. The results show that according to the members of the ecoclubs, the most important characteristics of this non-formal education are the community, autonomy of decision-making, knowledge sharing and experience-based format. From the students' point of view, these characteristics can contribute to their higher level of engagement with sustainability and additional changes in their lifestyle.

1. Introduction

Ecological crises pose a significant social and political challenge in contemporary societies. Eventually, consumption presents one of the biggest difficulties in the shift from material and energy-intensive economies and lifestyles toward environmentally sustainable societies (Spash and Dobernig, 2017). Current consumption patterns need to be changed, requiring societies to shift cultural norms and create new consumer habits which are within planetary boundaries. Beyond pressuring societal norms of continuous consumption growth, behavioural change for the adoption of a sustainable lifestyle is challenging due to the complexity of human behaviour (Costanzo et al., 1986). Nevertheless, this much-needed shift can be supported by the social nature of consumption and with the help of communities. Individuals could receive emotional, cognitive, and practical support from groups by being members and participating in shared meaning-making processes (Forno and Graziano, 2014).

Teaching and learning sustainable consumption is not easy.

Everyone is positioned somewhere in this process with his/her knowledge, experiences, and engagement. Helping this transformation in students' heads, hearts and hands is also challenging for educators in higher education as it is part of our everyday lives (Middlemiss, 2018). Personal knowledge and experiences could make anyone an expert, a researcher or an educator in the co-creation of knowledge about sustainable lifestyle. This learning process can be supported by a group of people who form a community with a transformative aim to achieve.

Moving away from the ideal of value-free science, and taking into account the need for immediate change, participatory and action research methods can offer a new paradigm of knowledge generation and implementation of transformative societal change. To explore, understand and contribute to moving toward sustainable lifestyles, we have initiated participatory research among university students in the form of "Ecoclub". Ecoclub refer to a group of people interested in sustainable consumption who regularly meet to exchange their everyday practices and habits. Our research relies on two concepts: (1) the concept of eco-teams developed by the Global Action Plan International

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organization (GAP) and (2) Eco-clubs and Eco-School programs in public education (Lee, 2017).

Following the principles of action research methods, among them especially cooperative inquiry, ecoclubs were organized as joint learning sessions in which every participant equally takes part in the process of knowledge-creation and implementation of change. Participants all become co-researchers of sustainable consumption during the cycles of planning-acting-reflecting. Between 2021 and 2023 five ecoclubs were organized among business students of the Corvinus University of Budapest, each consisting of 5–9 participants. During their weekly meetings, they acted as peers to explore the different aspects of sustainable consumption and to implement changes in their lifestyles and consumption habits.

In this paper, we introduce this cooperative inquiry and nonformal learning process and explore its theoretical foundations in action research and transformative learning concepts. After the description of this methodology, we analyse the results of the process on participants' attitudes and behaviour from their perspective. We used qualitative content analysis to find the answers to our research question: How do ecoclubs enable transformative learning about sustainable lifestyles among university students? The aim of this paper is not to present students' sustainable lifestyle patterns or their changes, we rather focus on the transformative learning potential of the ecoclub method.

2. Theoretical foundation of ecoclubs

2.1. Transformative learning in sustainability education

The role of education is emphasized in the transformation towards an ecologically sustainable and just society (Lange, 2012). Although primary and secondary education is extremely important in changing the socialization of new generations, in the urgency of the ecological crisis, we must focus not only on future generations but on young adults working and studying in the present. Their lifestyle, employee attitude, and citizenship already determine the current processes; therefore, it is essential to apply approaches and learning methodologies in higher education that encourage action and even lead to changes in values (Sidiropoulos, 2014). The importance of transformative learning in relation to sustainable development is increasingly recognised (Moore, 2005; Singer-Brodowski, 2023). Such is the case in economic higher education, where responsible decision-makers and consumers should be trained instead of indoctrinated in a profit-oriented, utilitarian way of thinking (Dallyn et al., 2023).

Business schools are increasingly looking at how to incorporate sustainability into their programs and their operations (Bernert et al., 2022; Thürer et al., 2018). Sustainability education should enable the exploration of complex problems, the management of the uncertainty arising from the topic and the frustration resulting from the lack of concrete solutions. In education, there is a need for a space in which students are allowed to think critically and to question beliefs and entrenched customs and values (Lee, 2017; Roberts, 2009). This is only possible if they are given the freedom to discuss the problems that affect them, to solve problems without value judgments by not only wanting to fulfil instructions from an authority. In this way, they will be able to analyse complex problems with their existing and new knowledge and find completely new (out-of-the-box) solutions for them (Lee, 2017). In such a process, students are addressed and invited to think together, encouraged to discuss relevant, urgent, and difficult questions about issues that are crucial for their present and future (Biesta, 2013). Moreover, if they find solutions independently, it empowers them and makes them more responsible (de Vreede et al., 2014). In this way, students also learn about themselves and their relationship to the world, (Biesta, 2013). If they can come to their own decisions, they can also be prouder of their results (de Vreede et al., 2014).

To develop the critical thinking and independent problem-solving skills needed to map complex problems, research on sustainability

education highlights the need to move away from traditional, frontal forms of education (de Vreede et al., 2014; Häggström, 2022; Wals, 2015). Students can best acquire these skills with the help of learning methods that are based on participation and own experiences. These methods enable experiential learning through solving a specific problem that affects the participating students. During experiential learning, there are no pre-written solutions, new knowledge is created through experience, which can be accompanied by disagreements, and discussion of opposing points of view, and reflection (Kolb and Kolb, 2005). However, commitment also requires a certain level of freedom (Kiss et al., 2021). For example, students can have the opportunity to define the goals and the path leading to their achievement on their own (de Vreede et al., 2014; Chawla and Cushing, 2007). The learning circle completes when the students can try their solutions, draw conclusions about their functionality or non-functionality for themselves and reflect on the process. In this way, responsibility for problems increases and students can become more responsible and active citizens for both environmental and social issues (Häggström, 2022; Lee, 2017).

The reflections on the learning experiences - especially those related to sustainability - could question the student's previous values and their frames of reference (Moore, 2005). This can be an opportunity in the learning process to reach a real transformation. When such a shift appears, a lasting change can also occur in the subsequent actions of the participants (Mezirow, 1997, 2003). In that sense, in sustainability education in economic higher education, a need arises to question the mainstream economic ideas that determined the economic and social dynamics and the consumption ideologies of the past centuries and current business education (Racko, 2019). Transformative learning provides an opportunity to change those values of students which resulted in unsustainable consumption patterns and decisions. However, this is difficult to achieve within the formal framework of higher education (Kiss et al., 2021) and is slowly developed in education programmes and learning modules (Bernert et al., 2022; Lange, 2012; Dallyn et al., 2023). Therefore, there is an obvious need to develop and implement alternative ways in education and research that can enable transformative learning and change (Roj, 2022, Fischer et al., 2023). In sustainability-oriented higher education teaching, the integration of research and community engagement processes would provide new possibilities for learning and can give opportunities for practice and action (Lotz-Sisitka et al., 2015).

During a transformative learning process, belonging to a community can be an important driver (de Vreede et al., 2014). Peer learning in a group can make the learning process more valuable through knowledge sharing. Additionally, students can receive positive feedback - which is also a well-proven way to deal with frustration - and the formation of relationships can transform learning into a joyful activity (de Vreede et al., 2014). Belonging to a community is of great importance in terms of commitment and it spurs a change in attitude and behaviour because young people try to conform to each other by establishing common group norms, and even follow each other's behaviour as an example (de Vreede et al., 2014). The concept of the "community of practice", as presented by Lave and Wenger (1991), can facilitate the process of situated learning in a group. By participating in a community, learners have the opportunity to engage in social learning and enhance their understanding of a subject. Since students are not just individuals, but members of communities, learning is also a social activity.

In addition to acquiring knowledge and belonging to a community, emotional involvement is essential in the field of sustainability education (de Vreede et al., 2014; Häggström, 2022; Ojala, 2015). It is possible for negative emotions to escalate or become more intense while one is in the process of learning. Encountering the issue of sustainability, students may struggle with anxiety and frustration when they are faced with the environmental damage of their daily activities (Kiss et al., 2021; Schusler and Krasny, 2010). Positive emotional involvement can only occur in a trustful environment in which students are not afraid to express themselves (Häggström, 2022). The acceptance of emotions and

appropriate emotional responses can be supported by a safe learning space. Through this supportive learning environment, emotions can be channelled into the activity and the creation of new solutions (de Vreede et al., 2014).

In the case of transformative learning methods, the role of instructors in creating a safe space is crucial, as they can handle interactions within the group with attention and empathy (de Vreede et al., 2014). The questioning of values, the acquisition and reflection of experiences, and the expression and management of emotions make it necessary to reinterpret the role of instructors (Moore, 2005). Although learning from peers is emphasized and the students themselves are responsible for sharing and acquiring knowledge, instructors are present in the role of facilitators (Biesta, 2013). Furthermore, it is the instructor's responsibility to help students reflect critically when confronted with previously unquestioned "truths" and to help them construct new knowledge. Learning needs to become the process of collective discovery as students and instructors are co-subjects and students feel the freedom to dynamically engage with the world around them through their own understanding and action (Freire, 1970). The instructors should not decide on the outcome of the transformation and determine the direction of the change (Mezirow, 1997) but should only help to form the framework of thinking and free decision-making. In this sense, the instructor must provide the framework for safe learning, confront students with appropriate challenges, help them manage their emotions, encourage them to find positive solutions and remind them of their subjectivity (Biesta, 2013). Thus, it is crucial to develop a partnership between students and instructors so that they can work together in a democratic environment where roles are redefined, and power relations are balanced.

2.2. Cooperative inquiry as a transformative action in sustainable lifestyle

The equal partnership which characterizes the relationship between instructors and students in transformative learning practices can be very similar to the relationship between researchers and not-trained researchers in participatory research methods. In participatory research methods, all the research participants take part in the problem identification, planning of research steps, carrying out of the research, and the knowledge-creation process (Reason, 2006; Heron, 1996; Heron and Reason, 1997; Guba and Lincoln, 1994). In contrast to conventional research - usually based on a positivist research paradigm - in which not-trained researchers are usually considered as research subjects and the researchers act as external observers, the research is carried out in collaboration with the problem holders. Participatory methods recognize all the participants as knowledgeable actors. The research is not controlled by trained researchers but is carried out in a democratic process which allows the co-creation of knowledge and in which all participants become co-researchers (Cornwall and Jewkes, 1995).

According to the participatory approach, researchers and other research participants are linked to the world which surrounds them, and they cannot be independent from that (Reason and Bradbury, 2001; Freire, 1982). Therefore, participatory research takes an objective-subjective stance (Heron, 1996), which, on the one hand, refers to the subjective nature of human beings defined by emotions, life experiences and interactions with others. On the other hand, subjectivity needs to be reflected. The validity of the research lies in the reflection process in which co-researchers critically overview their assumptions, beliefs, and habits and attempt to change them (Csillag, 2013; Reason, 2006).

The participatory approach appears in many qualitative methodologies, such as participatory action research, cooperative inquiry, participatory rural appraisal, participatory learning and action, and participatory learning research (Bergold and Thomas, 2012). Among these approaches, cooperative inquiry in particular, pursues a deepening understanding of personal habits and beliefs in a safe communicative space in order to change behaviour (Heron, 1996; Reason, 2006; Heron

and Reason, 1997).

During cooperative inquiry, people with similar interests join together in order to understand a certain topic and to improve their behaviour (Reason, 2006; Heron, 1996; Heron and Reason, 1997). Similarly to other participatory research approaches, cooperative inquiry is characterized by research cycles which consist of the phases of planning, acting, and reflecting. During the research cycles, co-researchers identify common issues which they would like to address during the research process. During the planning phase, they plan actions which help them to understand and learn about the issue and develop potential solutions. During the action phase, they execute the planned actions, and then they reflect on those. Learning from the shared experiences, and critical reflectivity on the emotions, beliefs and challenges plays a key role. The next research cycle builds on the previous one in an iterative way which ensures systematic knowledge creation (Reason, 2006). The research cycles and the learning process are linked to scientific knowledge which supports understanding the issue, as well as to the lived experience of the co-researchers (Levin, 2012).

Bergold and Thomas (2012) suggest that participatory research - including cooperative inquiry - can only be realized and empower co-researchers under the following conditions and principles.

1. Democracy: 1, participatory research requires a democratic social and political context, which allows the inclusion of groups with different situations. 2, the research process itself is also democratic, since the entire research process is developed jointly by the co-researchers.
2. Safe space: cooperative inquiry requires a safe space in which co-researchers feel comfortable to share their personal experiences and emotions. They must be sure that their opinion is accepted and that they are not discriminated because of their shared thoughts. Controversial opinions must be discussed by paying attention to the acceptance of the differences without negative consequences.
3. Defining research participants: co-research must have a shared interest which is more likely to arise by inviting those who share similar financial and socio-psychological environment or have a similar experience background.
4. Different levels of participation: the level of participation in the research process may vary among co-researchers.

The main challenges of cooperative inquiry are related to the uncertainty which characterizes the research process. This tension stems from the facts that (1) the research issue that the co-researchers wish to explore is not known in advance, (2) the quality of the co-researchers' participation and their commitment may fluctuate, (3) the level of critical reflectivity may vary and therefore, subjective distortions might apply. Furthermore, Ozanne and Saatcioglu (2008) add that the relationship among the participants can affect the research process as well as the time that co-researchers are able to devote to the inquiry (Staats et al., 2004). According to Bradbury and Reason (2008), these difficulties can be addressed by (1) providing flexibility in identifying the research question and accepting the shifting focus of the research process, (2) trained researchers to remain as facilitators, (3) accepting the different levels of participation. In the following, we outline how to combine the elements of cooperative inquiry and transformative learning within the ecoclubs.

2.3. Communities to promote a sustainable lifestyle - the eco-teams and the ecoclubs

Communities can play an important role in impacting the individuals' behaviour when promoting sustainable lifestyle (Middlemiss, 2010, 2011; Neulinger et al., 2023; Veress et al., 2023; Kiss et al., 2018). According to this community-based approach, a group of people can achieve more efficient changes than individuals alone. Communities can be created to change their everyday practices and move towards a more

sustainable lifestyle. Accordingly, an eco-team can be organized with a group of people who are interested in sustainable consumption and who meet regularly to change their daily habits and, thus, be able to follow an increasingly sustainable lifestyle (Harland and Staats, 1997).

The methodology of eco-teams was developed in 1994 by the Global Action Plan International (GAP) organization to achieve behavioural change. Eco-teams are also successfully used in school environments in connection with environmental education. In school eco-teams, in addition to teachers' moderation, students themselves figure out how to make school operations more sustainable (Cincera et al., 2017). Eco-teams are organized without hierarchy, there is no distinction between experts and laymen, and the initiators facilitate individual learning with the help of the group. In the process, everyone becomes a researcher and an implementer of sustainable consumption and becomes part of the creation of common knowledge (Gershon and Gilman, 1992). Getting involved in eco-teams requires the active participation and commitment of the members. During the meetings, the members can reflect on their own practices and thus consciously change their consumption habits in the direction of sustainability by exchanging knowledge and experiences.

According to the original GAP scenario, the group typically consists of 6–10 people who know each other, such as members of some community (e.g. school, church, workplace, leisure), but they can also be members of a group of friends or even neighbours. The members typically meet monthly and discuss their experiences, ideas, and results at the meetings. The groups deal with six topics, such as waste, gas, electricity, water, transport, and shopping. The program lasts about eight months, and the group is supported by an initiator dealing with the topic. The eco-team methodology has been applied and distributed in Hungary by the Association of Conscious Consumers (TVE) since 2010 (TVE, 2021, 2022), thereby contributing to encouraging the population to adopt a more sustainable lifestyle and to a deeper understanding of consumer motivations and actions.

Small communities can be created in schools also with the aim of non-formal education of sustainability. The terms Ecoclub and Eco-School used in public education (Lee, 2017) originally programs set up in a primary or secondary school environment. The common features of those are that (1) the majority of members are school children or young people, and there is at least one adult facilitator (often a teacher), (2) the learning is informal but a formal learning environment and (3) members meet regularly to achieve their goals (Lee, 2017). School ecoclubs usually carry out various practical activities and organize discussions while students and teachers have very different roles.

In our research we developed ecoclubs in higher education that are based on the public education ecoclub activities. In addition to those practices, their specific objective is to promote a sustainable lifestyle among the members. Ecoclubs require democratically structured, project-like participation in regular meetings. The concept means a non-formal learning and research program based on a participatory approach. Fig. 1 shows the conceptual framework of the ecoclubs. In this sense, the eco-team concept is merged with original school groups at the university level and integrated into a transformative learning and action research approach. In the following, we describe the details of this non-formal learning and research program.

3. How to combine learning with research - the ecoclub methodology

The university ecoclub lasts for one semester, it is usually five months long. During this period, two initiating members organize the group, which typically consists of 6–9 members. The initiators recruit members from their social network during the preparation phase. For this reason, the members are mainly university students or young people who have previously graduated and belong somehow to the university. Members are interested in a sustainable lifestyle and join the ecoclub in order to learn sustainable consumption habits. During its five-month

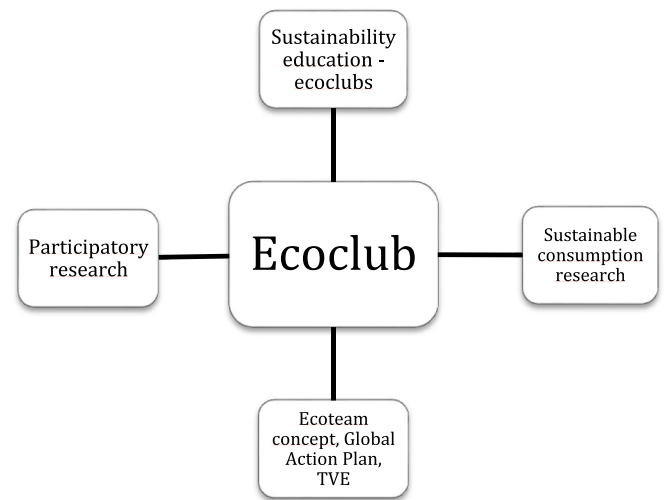


Fig. 1. Conceptual framework of the ecoclubs.
Source: Own compilation

operation, members meet every two weeks, six times in total. On each occasion, they work on different areas of sustainable lifestyle, which are chosen by the members usually in a participatory manner. The topics cover various areas of a sustainable lifestyle, such as clothing, food, cleaning, waste, energy and water consumption, or transportation.

The sessions are conducted by one member, who prepares for the given topic, and shares the acquired or already existing knowledge with the other members of the group during the meeting by applying different teaching methods. Using the methodological framework of cooperative inquiry, these meetings mark the step planning, from the planning-action-reflection cycle (see Fig. 2). In addition to processing and discussing the given topic, the members of the ecoclub undertake individual challenges for each topic, which must be completed by the next meeting. Challenges and their implementation mark the action phase. These challenges are aimed at deepening the acquired knowledge and allowing the members to experience it through their everyday practices and thereby initiate behavioural change. The fulfilment of the challenges is concluded by a written and a personal reflection at the next meeting of the ecoclub, where the members report their own experiences to each other - this represents the reflection phase of the research cycle.

As Fig. 2 illustrates, each ecoclub session represents a research cycle (planning-action-reflection). In addition, the six sessions also fit into a larger cycle, since between each meeting, the initiating members also meet with the mentors for a one-on-one reflection discussion. The topic of these mentoring occasions is not focusing only on lifestyle changes (content), but the process and quality of the group discussions. Such a cycle is completed when the semester ends, and the closing takes place after the sixth session. Then, by carrying on the experiences, the mentors start a new cycle by inviting new students in the next semester, with whom the next preparation phase begins.

3.1. Participants and roles

We can distinguish three groups of actors that are connect to the ecoclubs, according to the extent and form in which they participate in research, learning and reflection: co-researchers, initiating researchers and mentors (Fig. 3).

Initiating researchers are the students who start organizing an ecoclub. They invite members and develop the main frameworks based on participatory research methodology. In addition to participating in the ecoclub events and completing the chosen challenges, the initiating researchers keep a research diary in which they write down their

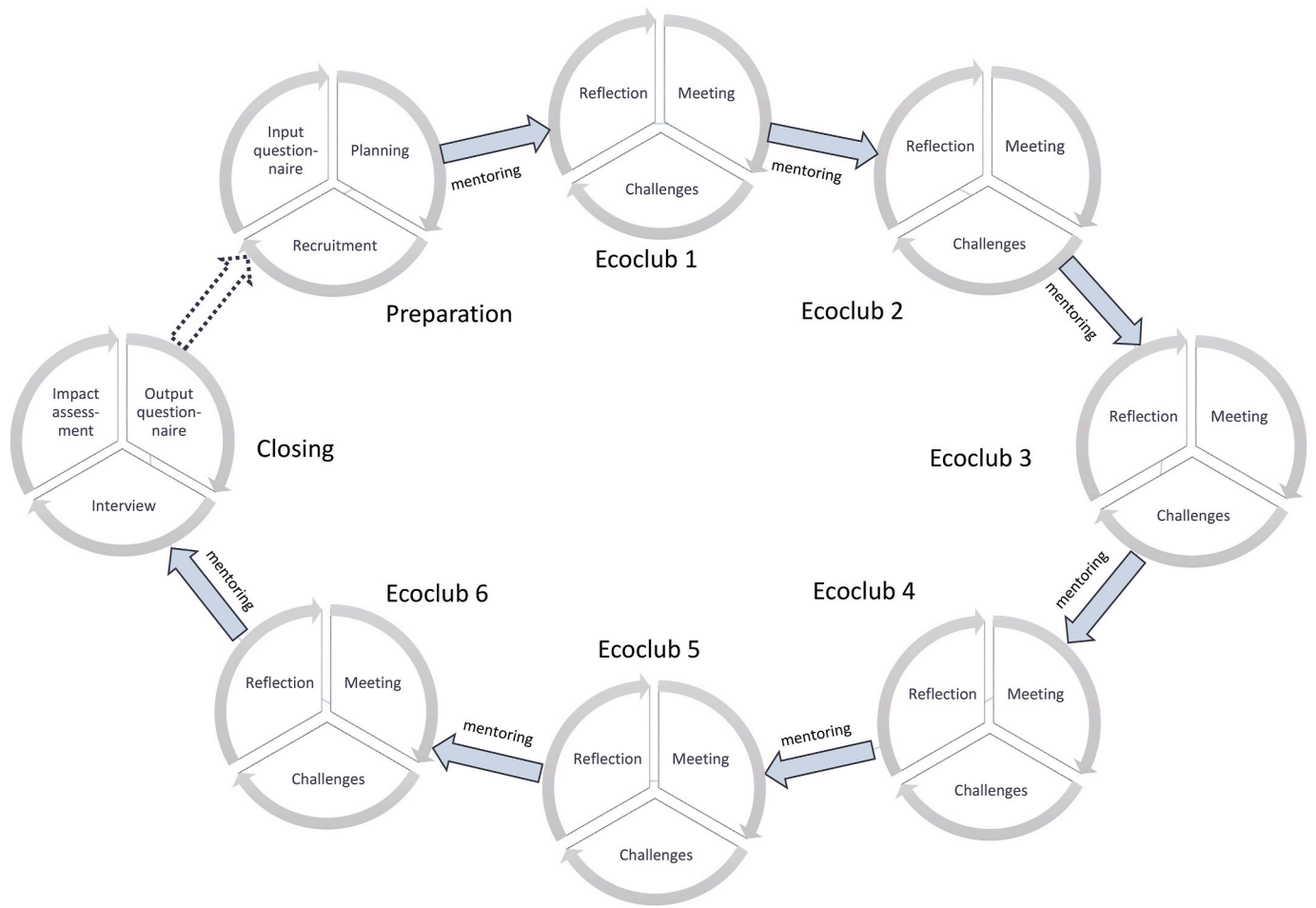


Fig. 2. Ecoclub, a cooperative inquiry concept.
Source: Own compilation

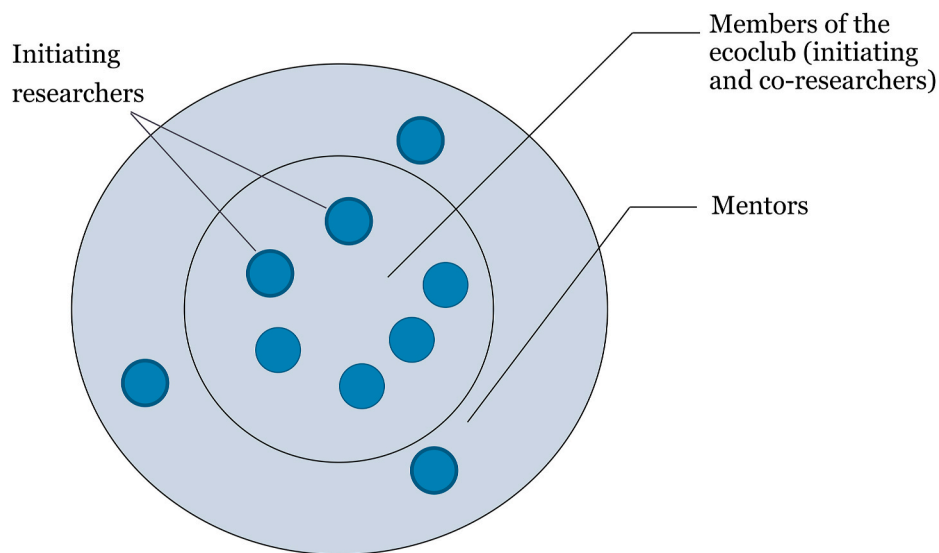


Fig. 3. Group of actors and roles in ecoclubs.
Source: Own compilation

experiences, feelings, possible conflicts and thoughts after each meeting. The researcher’s diary is used to reveal their subjective biases and to be able to track and, if necessary, revise both content-related and process-related elements.

Co-researchers are students who join an ecoclub, attend bi-weekly meetings and complete challenges. They participate in the research-learning process through their personal experience and knowledge sharing. They reflect on their completed challenges in writing (reflection

diaries) and in person during meetings.

The initiating researchers are assisted by external actors as mentors – as is usual in cooperative inquiry – to ensure the validity of the process and to promote reflection. The mentors, in this case instructors and senior researchers can view the process as outsiders in such a way that their participation does not affect their subjectivity, they do not get emotionally involved in the process and the life of the group. In this way, the mentors can indicate possible distortions in the form of questions and constructive feedback or provide professional and emotional support. The initiating researchers meet with the mentors every two weeks between the ecoclub meetings. They are members of the Urban Sustainability Research Group (USRG) and are responsible for the development of the research methodology and the delivery of the methodology (Czirják et al., 2022). For the design of the ecoclub, the members of the research group prepared a methodological guide to facilitate the preparation and to help the application of the method for the following participants (Czirják et al., 2022).

3.2. Data collection and analysis in the cooperative inquiry

While the knowledge-creation process within ecoclubs is marked by shared experiences, thus oral discussions between the co-researchers, traditional research methods are applied to observe the behavioural change and the shift towards a sustainable lifestyle and explore the process of the methodology. Some of these also support the reflection of the co-researchers. The co-researchers of the ecoclub document their own behaviour, i.e. the fulfilment of the challenges. This is carried out through self-reflection, online journaling, or social media display. The initiating researchers also record their reflecting observations in research diaries after each ecoclub session.

Furthermore, the sustainable behaviour patterns of the co-researchers are assessed with a questionnaire. The questionnaire is filled out before and after the start of the ecoclub. The questionnaire explores the sustainability aspects of the co-researchers' consumption and lifestyle habits. At the end of the semester, an in-depth interview is carried out with each co-researcher to learn about their personal experiences both in relation to the process and to their possible behavioural changes.

A total of five ecoclubs were organized between 2021 and 2023, each with 5–9 participants (Table 1). Due to the Covid 19 pandemic, the first round took place online, the others in person. All rounds were organized with business students from the Corvinus University of Budapest.

Qualitative analyses were carried out using the experiences of the 5 waves of ecoclubs.

For the purpose of this paper, we used all written and transcribed data based on the personal observations of the co-researchers (reflections on challenges, research diaries), and the interviews.

The data analysis was carried out in a deductive-inductive process to shed light on the lived experiences in light of the theoretical background. While deductive analysis builds on a theoretical framework in a rather top-down process, inductive analysis ensures that the results are grounded in experience (Bingham and Witkowski, 2022). The combination of these two different approaches gave us the opportunity to engage with the data and build on the perceptions of the co-researchers by continuously reflecting on the research question and on the theoretical background.

Table 1
Characteristics of ecoclubs at Corvinus University of Budapest 2021–2023.

	1. Wave	2. Wave	3. Wave	4. Wave	5. Wave
Number of participants	9	7	8	7	5
Timing	2021.05.20–2021.06.22.	2022.02.01–2022.06.30	2022.02.01–2022.06.30	2022.09.01–2023.01.30	2023.02.01–2023.06.30
Format	online	in person	in person	hibrid	in person
Number of meetings	6	6	6	6	6
Frequency of meetings	1 week	2 weeks	2 weeks	2 weeks	2 weeks

Altogether 38 interviews, 35 reflection papers and 10 research diaries were involved in the analysis. Transcribed interviews, reflection papers and research diaries were open-coded through thematic analysis (Braun and Clarke, 2006). Repetitive codes and patterns were organized into categories. The codes and categories which have emerged from the texts were contrasted with the theoretical background. This process helped to form analytical concepts which explore the research question and reveal new categories which are not pointed out in the related literature.

4. Results: transformative learning in ecoclubs

Answering our research question “How do ecoclubs enable transformative learning on sustainable lifestyles among university students?”, our analysis revealed several characteristics of the ecoclubs. These aspects were grouped into four dimensions (community, autonomy, knowledge sharing, and experiencing) which provide an overview of the main findings (Fig. 4). Each dimension includes (1) characteristics of the ecoclubs that enable transformative learning, (2) potential difficulties that have been raised by the co-researchers, and (3) the effects of the characteristics mentioned by the participants. The order of the categories does not refer to their importance. The dimensions overlap to a certain extent which shows the complexity and interconnectedness of the ecoclub method. The effects that are aligned to the dimensions may also be the results of several aspects but were mostly mentioned in connection to those included above them.

4.1. Community

The first dimension expressed by the co-researchers is community as it proved to play a vital role in the learning process. The participants of the ecoclubs often reported a sense of belonging to the small group that evoked positive emotions and motivation in them: “It was very good to speak to people who were also interested in the topic. For me, it was the most interesting part [of the ecoclub] that I have never done in a community. It gave me the drive to do it properly” (wave 3, interview with co-researcher). However, motivation can only arise when members of the group feel safe and confirm each other's behaviour by giving and receiving positive feedback during the meetings. Experiencing learning together in a safe space means that members of the group feel that they can freely share their opinions and receive support and attention from others: “Everybody was very attentive to each other, we didn't cut each other off and we listened to all opinions” (wave 2, reflection journal of initiating researcher). This quote also shows that the quality of interpersonal communication matters when considering the psychological environment that is created in the ecoclubs.

Implementing a constructive feedback culture could contribute to this process because it fosters the exchange of knowledge and the motivation to act. For example, reporting about the success of the challenges may be a delicate situation during a session because members are reflecting on their own behaviour in front of the whole group. However, many participants noted that the presence of others was rather motivating for them. One of the initiating researchers in wave 3 wrote in his reflection paper about a fellow participant: “With peer pressure, he is more enthusiastic about things, feeling that he will be able to meet challenges by not having to do it alone. He said that if he had to tackle

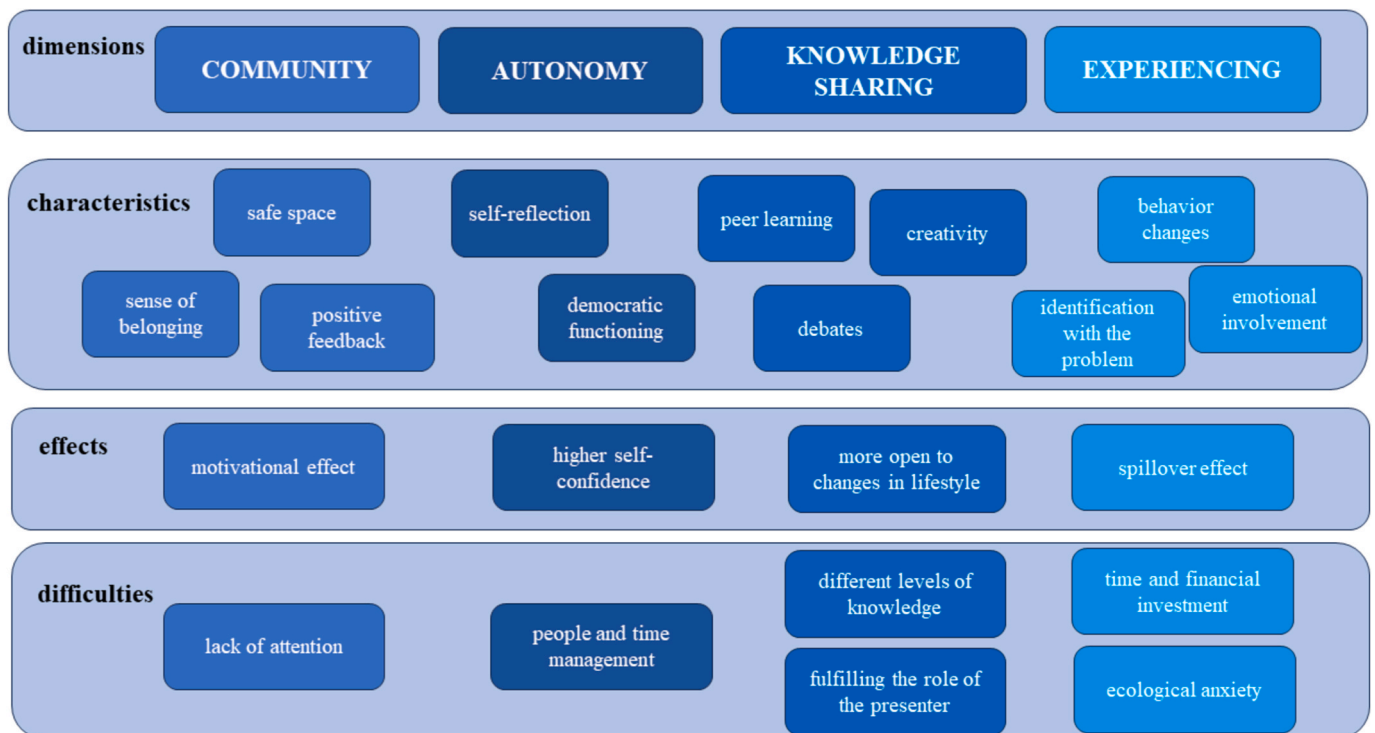


Fig. 4. Characteristics, difficulties, and effects of the analysed ecoclubs.
Source: Own compilation

sustainability alone, he wouldn't even get involved". Thus, the results show that a community which the members feel part of, experience as a safe space, and where they receive positive reinforcement motivates them to participate and change their behaviour. However, paying attention to each other and maintaining the quality of the interactions may present a difficulty for the participants.

4.2. Autonomy

The second dimension which emerged from our analysis is closely connected to the community and focuses on personal autonomy of the participants. As the methodology of the ecoclubs ensures, the learning process involves a higher level of autonomy than in traditional learning environments where an instructor is involved in the process. Democratic functioning is a cornerstone of the methodology. It means that the co-researchers can decide on the topics they will discuss, the date, time, and form of the meetings, and the challenges they will execute. "In the selection of topics, there were already some issues where common agreement was needed. Everyone had the right of veto, so if someone was not happy with a topic, they could indicate it and it was shaped until it suited the group, so we discarded some topics and reshaped others" (wave 4, reflection journal of initiating researcher). This shows the process of democratic decision-making. It may seem time-consuming and complicated, but some of the co-researchers reported having a higher level of self-confidence in the end. While experiencing freedom, confidence and equality, the people and time management caused difficulty for most of the groups. For instance, it was hard to find a date that suited everyone and sometimes the place of meetings was changed in the last minute which required flexibility from co-researchers. As the ecoclubs were organized outside the realm of university education, the learning environment had to be created by them. On the one hand, this situation strengthened their autonomy, and provided them room for creative solutions like a meeting outside, in the city park. On the other hand, the initiating researchers had to embrace managerial tasks.

Participants could also experience a high level of autonomy due to

another methodological element of the ecoclubs, self-reflection. Questioning one's habits, behaviour, and values provides an opportunity to learn about oneself which is a significant aim of the ecoclubs. For example, one of the co-researchers wrote in his reflection diary: "I was careful not to let the older members overwhelm the younger ones, and fortunately that didn't happen. For example, I restrained myself and tried to speak less during the session" (wave 5, reflection journal of initiating researcher). Comparing oneself to others also evoked reflection: "I heard a lot of new things, and I realized how much more environmentally friendly other people's behaviour was compared to mine. During the ecoclub, it turned out that I was doing the bare minimum [for the protection of the environment]" (wave 1, interview 3 with co-researcher). Some participants mentioned a desire for self-improvement during and between the sessions – not just in connection to a more sustainable lifestyle but also their interpersonal and time management skills. These recognitions show that the method allows students to experience a high level of autonomy which may result in skill-development.

4.3. Knowledge-sharing

Closely connected to community and autonomy, the knowledge-sharing process in the ecoclubs plays an important role. The ecoclubs are organized in a way which allows participants to learn from one another and share their own knowledge and experiences during the sessions in a peer learning process: "We have done the research, we dug in a little bit deeper into the topic, and it wasn't always the same presenter that we listened to, but we worked together" (wave 4, interview 4 with co-researcher). Teaching one another and presenting the topic in an engaging way, required creativity from the students. Fulfilling the role of the presenter was reportedly demanding for some participants. However, when it was successful, some students had a flow-experience. "During the meeting, I wasn't checking my phone wondering when it was going to end, and I wasn't thinking about anything else (...) I was able to completely shut out the outside world and focus on the ecoclub"

(wave 1, reflection journal of initiating researcher). This experience seemed to be dominant in sessions which were well-organized and engaging for the co-researchers.

Knowledge-sharing in the group and the diversity of the presentations often resulted in debates that contributed to engagement and deepened understanding of the topic: “Thanks to the Oxford debate, I was able to go into great depth! I had to think a lot about the pros and cons, and I felt like I was really using my brain” (wave 3, interview with co-researcher). Debates also drew the attention of the co-researchers to the controversies of sustainable consumption and the versatility of possible approaches. In connection with this aspect, some controversies were revealed. For example, participants debated about public transportation options between their homes and the university and how gift-giving or fashion contributes to overconsumption.

The levels of knowledge about certain topics varied among the co-researchers. On the one hand, more experienced members felt bored or bad about suppressing the others in conversation. On the other hand, less experienced members felt motivated and thankful during knowledge-sharing. “I think you really need to talk to people who have experience, and then you get much closer to the subject” (wave 5, interview 1 with co-researcher). However, this caused a difficulty in some ecoclubs because not all topics were inclusive. “The occasion was democratic, even though not everyone spoke the same amount. The only point at which I felt that we excluded the only male member of the team was when we talked about feminine hygiene. Everyone felt that this was not the correct procedure, so we moved on quickly. But we didn’t want to leave the topic out because all the women were very interested” (wave 5, reflection journal of initiating researcher). Despite similar challenges, multiple participants mentioned that they became more open for changes that contribute to a more sustainable lifestyle.

4.4. Experience

One of the key elements of the ecoclubs is to execute actions related to the topics that are discussed during the ecoclub sessions. These actions on the one hand ensure that the learning process which occurs during the ecoclubs while co-researchers share their knowledge, is linked to a real-life experience. On the other hand, these actions can be catalysts for behavioural change. The co-researchers, choosing their own challenge to improve their habits in a sustainable manner, tried out many new habits in different areas of their life (e.g. transportation, cleaning practices, meat consumption). The real-life experience induced emotional involvement with these topics and identification with the problems that were tackled, which contributed to commitment and could encourage behaviour changes. “I felt very committed, and I am proud to say that we are now also composting at home” (wave 1, reflection journal of initiating researcher).

Reflecting and discussing the results and barriers of different issues were an important part of the ecoclubs. A participant drew the conclusion that “it is not necessary for participants to be particularly committed to sustainability in the beginning, as this may change and evolve during the research. The personal meetings mean a lot to people [...] Some bonding can also happen just through the honest sharing of everyday experiences, the key is to make everyone feel involved” (wave 2, reflection journal of initiating researcher). These experiences may also help to deal with ecological anxiety which is a threat for many members of the younger generations. The experiences of participants were mixed in this regard. On the one hand, the challenges meant a relief because they felt that they were doing something to prevent the climate catastrophe. On the other hand, the knowledge of co-researchers was widened during the ecoclubs which meant a higher level of awareness and presumably more reasons for anxiety. Collecting own experiences in topics connected to sustainability contributed to a sense of responsibility. The biweekly challenges provided an opportunity to feel committed to a cause.

In every ecoclub that we analysed, experiencing resulted in a

spillover effect. Co-researchers started to share their experiences outside the group with other friends and family members and maintained some of the habits. “Some things from the ecoclub stayed with me, not only for two weeks (...) but I kept them, and I’ve been trying to do them the same way ever since and spread them in my family” (wave 5, interview 2 with co-researcher). Observations like this show that the effects of discussing sustainability and sustainable consumption practices based on own experiences might result in a long-lasting change of behaviour. In this study, we did not measure the long-term effects of the ecoclub participation. However, these findings show the necessity for longitudinal research about the changes in lifestyle and personal values after the ecoclub-participation.

However, some factors hinder the implementation of a sustainable lifestyle. Some co-researchers mentioned that the investment of additional time and money sometimes causes an obstacle for them. Their lifestyles as university students do not always allow for changes because the rules of dormitories and diverse expectations of flatmates provide difficulties. Some ecoclubs were organized by dormitory communities where we could observe that the students reported of difficulties in implementing something new in the kitchen or sanitation areas. Co-researchers who were living in their own households claimed that sometimes it is hard to implement new habits because of the high study or workload they face at the beginning of their careers. However, the ecoclub provided them an opportunity for experimenting with solutions that may fit into their lifestyles in the long run.

5. Discussion

One of the key elements of ecoclubs which enables transformative learning about sustainable lifestyles based on our findings, is the democratic manner of knowledge creation. The democratic knowledge creation which is carried out in a peer learning process provides autonomy for the co-researchers and empowers them, similar to the findings of [de Vreede et al. \(2014\)](#), [Lee \(2017\)](#), and [Häggeström \(2022\)](#). Besides their freedom in certain decisions (discussed topics, presentation methods, etc.), the participatory learning process enhances the students’ responsibility, since the quality of the shared knowledge depends on their level of preparation, engagement with the given topic and on their performance. During participatory forms of education, such as the ecoclubs, students can look for solutions to certain problems themselves, and to participate in identifying the problem. This enables them to identify challenges and real problems affecting them and to become owners of the problem ([de Vreede et al., 2014](#); [Biesta, 2013](#)). In this way, they can be much more engaged in solving them than in dealing with matters that are far from them ([Häggeström, 2022](#); [de Vreede et al., 2014](#); [Chawla and Cushing, 2007](#)). Experiencing the teaching and learning process as meaningful contributes to a sense of autonomy. Compared to the findings of [de Vreede et al. \(2014\)](#), empowerment was rather experienced by the ecoclub participants on a personal than a societal level.

Peer learning carries the risk of fluctuating quality of knowledge-transfer in terms of content and presentation method. While some members gain confidence, others may withdraw or threaten the viability of the team ([de Vreede et al., 2014](#)). The democratic nature of the ecoclubs, the self-reflection exercises and the regular mentoring sessions prevented the groups from disintegration. The success of the peer-learning process however is also dependent on time and resources – which was identified as a difficulty by the co-researchers – thus, the commitment of participants is necessary ([Staats et al., 2004](#)).

Our analysis revealed that the sense of belonging to a group supported the engagement with the process. A strong sense of belonging to a dedicated community helped the participants to overcome time management issues and prioritize the ecoclub. They felt responsible for their peers, for the extent of knowledge shared, which are similar results to previous studies that point to the importance of a cooperative and supportive group ([Harland and Staats, 1997](#); [Staats et al., 2004](#); [TVE,](#)

2021, 2022). Belonging to the community is of great importance in terms of commitment and the will to do, and lastly, it spurs a change in attitude and behaviour, because young people try to conform to each other by establishing common group norms, and even follow each other's behaviour as an example (de Vreede et al., 2014). However, our results show that these processes should be supported by more experienced researchers. As Bernert et al. (2022) mention, the role of mentoring and a stable, supportive organizational background – provided for example by a higher education institution – contribute to the success of study programs which foster transformative learning.

The framework provided by the ecoclub methodology – marked by safe space and learning/research cycles – was also highlighted as a vital element in creating a communicative space in which the students could engage in constructive discussion about complex issues. As some of the co-researchers pointed out, the ecoclub sessions were unique opportunities to discuss sustainability issues. Co-researchers who joined the ecoclubs have had an interest in sustainability a priori, but they would not have necessarily engaged in such a systematic way of learning and knowledge creation process elsewhere. It was revealed that the joint effort to tackle complex issues, common struggles and the acknowledgement of the shared interest (knowing that everybody is interested in the issues) increased their commitment and were highly appreciated. It highlights that cooperation is more important in connection to issues than competition.

Combining the elements of transformative learning and cooperative inquiry, allowed the ecoclubs to become more than a 'friendly discussion'. Engagement in the research cycles and following the phases of planning, acting and reflecting enabled theoretical learnings to become practical knowledge and catalysing change in their everyday practices. The reflection on the weekly challenges helped co-researchers to raise their dilemmas, celebrate successes and share struggles. As pointed out by transformative research and learning theorists' achievements and opinions need to be addressed in a critical way, reflecting on the subjectivity of the co-researchers and their previous beliefs (Reason, 2006; Heron and Reason, 1997; Moore, 2005). Compared to transformative learning methods, in which teachers take the role of provocateur and guide this critical reflection (Mezirow, 1997, 2003), within ecoclubs the reflection process was given in the hands of the co-researchers, which affected the quality of the reflection process.

On the one hand, co-researchers having different levels of knowledge and experiences could support critical reflection and thinking. More experienced members could initiate conversations that tackled the complexity of the topic and started debates. Depending on the characteristics of the participants, however, the level of critical thinking and addressing subjectivity varied. Based on our findings, most of the inquiry groups did not go behind the existing socio-economic system and did not address the institutional context of the current consumption patterns. Most of their discussions and the actions they executed were related to the consumption of 'greener' products (e.g. using green detergents and purchasing clothes from sustainable manufacturing). The shift to consuming environmentally friendlier goods – which are offered by the current socio-economic system – was discussed but the real transformational thoughts and the idea of systemic change with alternative pathways or reducing consumption did not occur regularly. In one session of the fifth wave, a co-researcher with a background in economy questioned the amount of cleaning and washing needed to lead a healthy lifestyle instead of contributing to the discussion about environmentally friendly products. He introduced the notion of zero consumption as the best solution in many everyday situations which turned out to be a provocative idea and stirred a debate about traditional consumption and housekeeping values. However, the results of other discussions mostly did not go deep and proved to be insufficient to decrease environmental impact based on the rebound effect or on the behaviour-impact gap (Csutora, 2012; Spash and Dobernic, 2017). In ecoclubs, co-researchers rarely concluded that consumption habits need to be questioned based on sufficiency to shift from material and

energy-intensive economies and lifestyles to sustainable and only some aspects have been argued against (Akenji, 2014; Akenji et al., 2021; Spash and Dobernic, 2017). Therefore, while peer learning and the equal relation among co-researchers thanks to the lack of instructors within ecoclubs were essential to empower and engage participants, it hindered the opportunity to raise questions about the institutional context and introduce critical ecological thinking by trained provocateurs (Mezirow, 2003).

6. Conclusion

The paper presented the application of the ecoclub methodology in higher education developed by the authors. Combining the elements of transformative learning and cooperative inquiry, ecoclubs allow the participants (co-researchers) to engage in a peer learning process through the cycles of planning, acting, and reflecting. Compared to conventional learning and research methods, ecoclubs empower participants through co-creating knowledge and having a high level of autonomy during the process. The emotional involvement reinforces participants' commitments to make sustainable choices, and the personal relationships and the community provide a positive reinforcement for their engagement in sustainability. As a result of this process, co-researchers can experience many sustainable practices in various areas of their lives, which, accompanied by cognitive knowledge and reflection, can catalyse long-lasting changes in their consumption behaviour. In that sense, participatory research methods have the potential to enhance transformation in the field of sustainable lifestyle practices.

The main controversies of the ecoclub methodology concern the ability for critical self-reflection. Journaling and reflecting exercises can contribute to thinking critically and questioning customs and beliefs (Roberts, 2009), but our results show that it is an ability which needs to be practised. To ensure the democratic nature of the ecoclubs, instructors only interacted with the initiating co-researchers in the form of mentoring, which limited their capacity to take the role of a provocateur. As outsiders, however, they could point out possible distortions and provide constructive feedback related to the organization of the meetings.

The limitation of the research is that it takes place in a non-formal educational environment, which requires resources and cannot be applied at any university. The generalizability of the results draws attention to the fact that university students of a similar age participate, and the evaluation of results can be interpreted in this narrow cultural environment. A selection bias is likely to arise, since the condition of the ecoclub method is that students interested in sustainability join, so its effect among less committed students is questionable. The ecoclub did not attempt to achieve a broader social impact and transformation or learning at the social level, but its expansion would deserve further research. In addition, it may be worth conducting future research regarding the measurement of changes in values, which is even possible with longitudinal follow-up. The planned next step of this research is to conduct follow-up interviews with former ecoclub members and understand the longer impact of the ecoclub on their lifestyle. Additionally the transformational effects of ecoclubs could be measured in different educational contexts too because this method provides a community- and experience-centred, democratic and engaging way of researching and learning more about sustainable lifestyle.

CRedit authorship contribution statement

Gabriella Kiss: Conceptualization, Methodology, Writing – original draft, Writing – review & editing. **Orsolya Lazányi:** Conceptualization, Formal analysis, Writing – original draft, Methodology. **Tünde Taxner:** Formal analysis, Writing – original draft, Writing – review & editing. **Tamás Veress:** Methodology, Writing – review & editing. **Ágnes Neulinger:** Data curation, Methodology, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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