

Article

Collective Public Commitment: Young People on the Path to a More Sustainable Lifestyle

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Abstract: Society's development toward more sustainable lifestyles can only succeed if changes are also performed at the individual level. We, therefore investigated whether the participation of teenagers (14–19 years old) in a collective public commitment and accompanying workshop on plastic consumption strengthened their willingness and ability to take action. Previous projects such as the EcoTeam Program served as workshop templates. Over a period of five weeks, the teenagers met once a week for the workshop, an exchange of ideas, and the establishment of weekly goals for their commitment. Semi-structured interviews were carried out to investigate the outcomes directly after the project and three years later. Participants developed a more conscious environmental perception, which led to behavioral changes and the willingness to maintain or improve those changes. Beyond this outcome, most participants functioned as multipliers and ambassadors for a more sustainable lifestyle in their social environment. Even three years after the commitment project, all former participants had maintained their behavioral changes. Collective public commitment could thus be a suitable method for ESD, and a vehicle to support young people on their path to a more sustainable lifestyle.

Keywords: education for sustainability; collective commitment; young people; eco-workshop; interviews



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1. Introduction

Newspaper headlines are full of threats to humanity such as climate change, loss of biodiversity, and pollution of air, land, and oceans. Images of environmental disasters are published daily along with statistics and figures, often accompanied by disturbing warnings. The message that society is facing multiple environmental challenges has been received, and many people know that change is needed [1]. However, who will execute the course of change? Sustainability goals can only be realized if all relevant stakeholders, including civil society, are involved in sustainable developments. Consequently, citizens must critically question their own lifestyles. After all, maintaining the quality of life while taking responsibility for future generations is only possible if consumption and behavior patterns are becoming more sustainable [2,3].

Young people, i.e., people between the ages of 15 and 24 [4], are the least responsible for climate change and other environmental challenges and the most affected by their consequences. However, as future consumers and decision makers, young people are an important target group when it comes to the pursuit of more sustainable lifestyles in society [5,6]. In 2020, the German SINUS institute investigated for the fourth time the living conditions of young people in Germany [7]. As part of its youth survey, participants were asked about their attitudes toward environmental protection and consumption. The results indicate that young people consider environmental protection important, which is also evident in other youth studies [8,9] but, at the same time, have little confidence that this task can actually be accomplished [7]. They are especially uncertain about their own contribution to a more sustainable world. Young people, who consider environmental protection less important, want to change their behavior only if positive outcomes can be

guaranteed, or if everyone else would also take action [7]. Few participants of the youth survey associated critical consumption with courses of action. For many young people in Germany, critical consumption is primarily a question of financial possibilities and does not play a central role at school, in families, or among friends [7]. On the contrary, individual lifestyles are often in contrast to sustainable consumption patterns, as young people want to participate in society's wealth [9]. The question, therefore, arises how young people could be motivated to adopt a more sustainable lifestyle. There is no question that this has to be accomplished in view of the growing sustainability debate and corresponding educational requirements, including education for sustainability (ESD) as a guiding principle in school curricula in Germany [10,11]. This project aimed to encourage young people, with the help of an entirely voluntary commitment approach, to engage in sustainable behaviors they had not carried out before. Evaluation of the project focused on both short-term and long-term outcomes of the project.

1.1. Theoretical Background

Many studies have shown that mere transmission of environmental knowledge is not sufficient enough to induce long-lasting behavioral changes, e.g., [12–14]. Barriers to sustainable behavior could be the impression of struggling alone [8], a lack of ideas and practical suggestions on how to achieve it [13,15,16], or could be due to habits, which shape up to 50 percent of all human behaviors [17]. As habits often occur unconsciously, considerable effort is needed to discard or transform them [18–21]. Collective public commitment could be one approach to overcome barriers to pro-environmental behaviors [22].

Commitment can be defined as the binding of an individual to a behavioral act [23]. People who make a voluntary commitment declare that they will change a certain behavior for a certain period of time, for example, riding a bicycle instead of driving a car for a week or shopping plastic-free as best as possible. To change a behavior, self-commitments have been shown to be more successful than incentive-based techniques [24,25]. Even highly attractive incentives rarely lead to lasting behavior changes because they do not allow individuals to find their own reasons for the behavior they perform [26,27]. Commitments can foster action skills and be successful in both the short- and long term [28–30]. To be most effective, commitments should be confirmed in writing or otherwise, i.e., be public rather than private [31]. In a study on energy conservation, participants were divided into three groups—those who made no commitment, those who made a private commitment, and those who were informed that their names would be published in a newspaper article about the study (=public commitment) [32]. After one month, individuals in the public commitment group had consumed significantly less energy than those in the other two groups. They also maintained their energy-saving behavior in the subsequent months. In other studies, self-commitments were also successful but only in the short term [33,34].

Most commitment studies so far have involved adults. However, one study has also worked with young people [35]. In this study, the impact of environmental education and a public commitment on teenagers' conservation behavior was investigated, and results indicate that both interventions were successful when compared with a control condition. A commitment can be carried out alone (individual commitment) or in a group (collective commitment). When both types of commitments were compared in an intervention study, only members of the individual commitment group continued with their newly acquired behavior (paper recycling in a college dormitory) after the treatments were removed [36]. However, if people strongly identify with a group, collective commitments can also result in long-term behavior changes, as shown by the EcoTeam Program [37].

1.2. The EcoTeam Program

In the early 1990s, the non-profit environmental organization "Global Action Plan for the Earth" launched the "EcoTeam Program" (ETP) to improve ecological behavior in Dutch households [38,39]. The core of the program is the formation of "EcoTeams", which usually consist of six to ten persons who are often neighbors, friends, or families [37]. The

program lasts about eight months, during which monthly group meetings are held. Each team is supported by a moderator. Information is provided in form of a workbook, which originally consisted of six chapters dealing with the reduction of household waste, the saving of gas, electricity, fuel, and water, and with sustainable consumer choices [39]. In addition, the Dutch workbook included a questionnaire that allowed team members to review their progress and to receive feedback. Results were also recorded in a logbook. In this way, ETP members were able to track their own progress and that of their team.

An ETP wants to empower people, i.e., to provide participants with a feeling that they can make a difference with their efforts. This strengthens optimism and a sense of self-control, self-efficacy, and collective belonging [40]. Follow-up studies have shown that participants were still engaged in sustainable behaviors two years after the program had ended [37]. In addition, 83 percent reported that they had changed their own behavior, but also that of other people such as family and friends. For the purpose of this study, a slightly modified ETP approach was used (as outlined in Section 2.1).

1.3. Rationale of the Study and Research Questions

ETPs and other public commitment approaches rarely involve young people (but see [35]). Moreover, their outcomes are largely unexplored (but see [37]), and it is hardly known whether collective public commitments can be a suitable method in terms of ESD. In addition, commitment studies have often focused, for example, on behavior changes related to recycling [36], energy saving [20,41], and car-free mobility [29]. This research focused on the avoidance or reduction of plastic and microplastic in daily life, a behavior that has recently received considerable attention among young people in Germany [42]. However, similar to vegan nutrition and car-free mobility, it belongs to a group of behaviors with a high degree of execution difficulty [42–44].

It was, therefore, investigated whether collective public commitment (in the following just called “collective commitment”) in combination with a rather difficult behavior could successfully encourage young people to adopt more sustainable lifestyles. Following [37], we examined possible behavior changes immediately after the workshop and three years later.

The study was based on the assumption that unlike school lessons, where learners are often extrinsically motivated to act according to a moral prescription [45], a voluntary commitment manifests itself in intrinsic motivation. In this way, changes in consumption patterns might not be perceived as something that has been prescribed but rather as a mature and deliberate choice. In this project, the collective commitment was accompanied by a workshop, in which a substantial amount of time was set aside for group members to exchange ideas and to prepare their weekly pledges. In addition, in-depth information about plastic/microplastic and plastic consumption was presented. Being well informed about an issue is one important driver for actual behavior changes [46,47]. The following questions guided the research:

Q1: What has motivated participants to attend the eco-workshop?

Q2: Do participants feel that the eco-workshop and the collective commitment have increased their environmental awareness?

Q3: Do participants feel that the eco-workshop and the collective commitment have resulted in behavior changes?

Q4: What are the success factors of the project, and what could be improved in view of participants?

Q5: What are the outcomes of the project, and how confident are participants to continue with their new behaviors in the future?

Q6: Are behavior changes still detectable after three years?

2. Materials and Methods

2.1. Overview

In the course of the project, participants had to fulfill collectively made pledges and to join weekly group meetings (eco-workshop). Unlike an ETP, where information is provided in form of a workbook [39], the present approach used presentations by a moderator (author 2). We, therefore, speak of “eco-workshop” instead of ETP. Moreover, the topic of the workshop, i.e., plastic and microplastic reduction in everyday life, was chosen by the researchers and not the participants. The project was based on de Young’s framework for successful and sustained behavioral change [48]. It provided detailed information on the topic (workshop presentations), a supportive social environment (fixed group), and a feedback system on the behavior and development of each participant (workshop discussions).

As with any ETP, the focus was on the group and its collective actions. This is particularly significant for young people who need, especially during adolescence, friends, and acquaintances who provide emotional security and stability and ensure well-being [49]. The feeling of not having to tackle something alone, but having like-minded persons by one’s side, also increases the willingness to take action [40]. Feedback from other group members strengthens the group but can also serve as a critical evaluation of the goals that have been set [15,50].

2.2. Recruitment of Participants

The project was carried out with two groups of teenagers (14 to 19 years old) in winter 2017/2018. Recruitment of the first group occurred in a youth circle of the YMCA in Nufringen, a village in southwestern Germany, and that of the second group at a vocational school in the nearby city of Böblingen. Members of the youth circle were invited via personal communication and social media to a short information event. The information event and subsequent eco-workshop occurred in the local protestant parish hall, which was familiar to the teenagers, well-equipped for workshops, and easily accessible. Of the initially 45 teenagers contacted, 12 committed themselves to the project (Table 1). At the vocational school, the school management (after approval by the principal) fixed the workshop schedule in advance, reserved a suitable classroom, and pre-selected four classes. Of the 100 students addressed, only 6 confirmed their participation at the end of a short information event (see Table 1). The other students were already involved in other projects or had no interest in the chosen topic. However, both group sizes were in line with the ETP recommendations (about 6–10 persons).

Table 1. Description of participants.

No.	Group	Age (Years)	Sex	Education	Living at Home 2017	Interview 2017	Interview 2021
1	1	15	Girl	Secondary school	Yes	Yes	Yes
2	1	17	Girl	Hotel manger training	No	Yes	Yes
3	1	18	Girl	Vocational high school	Yes	Yes	Yes
4	1	15	Girl	Vocational high school	Yes	Yes	Yes
5	1	19	Boy	University	Yes	Yes	Yes
6	1	18	Girl	Vocational high school	Yes	Yes	Yes
7	1	19	Girl	Fed. volunteer service	Yes	No	No
8	1	18	Girl	Vocational high school	Yes	No	No

Table 1. Cont.

No.	Group	Age (Years)	Sex	Education	Living at Home 2017	Interview 2017	Interview 2021
9	1	18	Girl	Vocational high school	Yes	No	No
10	1	18	Girl	Vocational high school	Yes	No	No
11	1	15	Girl	Secondary school	Yes	No	No
12	1	18	Girl	Pre-school training	Yes	No	No
13	2	16	Girl	Vocational high school	Yes	Yes	Yes
14	2	16	Girl	Vocational high school	Yes	Yes	Yes
15	2	15	Girl	Vocational high school	Yes	Yes	Yes
16	2	15	Girl	Vocational high school	Yes	No	No
17	2	16	Girl	Vocational high school	Yes	No	No
18	2	14	Girl	Vocational high school	Yes	No	No

2.3. The Eco-Workshop

The eco-workshop was conducted for five weeks. During this time, both groups met separately once a week for 90 min. The 18 young people who had committed to the project attended all meetings. In an introductory session, group members were invited to share their experiences with plastic and plastic alternatives (shared information pool). In addition, their workshop expectations and current level of knowledge were fixed on cards that would be displayed again at the end of the project. Afterward, participants received a short lecture on the different types of plastics. In order to consolidate their newly acquired knowledge, participants were asked to investigate the recycling codes on plastic packages at home. They were also asked to keep a plastic diary for at least five days, preferably during the whole project, in which to document their daily plastic consumption and disposal behavior.

The subsequent four group meetings followed a similar pattern (Table 2). In the beginning, experiences during the previous week, and newly gained insights were communicated and discussed in the group (with the aid of the plastic diaries and set action goals). Afterward, the moderator provided new background information, which was supplemented by short video clips. Moreover, materials such as plastic packaging, cosmetic products containing microplastic, synthetic clothing, but also alternative products such as homemade cosmetics, a wash bag to collect microplastic particles, and bamboo toothbrushes illustrated the information provided. Following the presentations, in small groups of two to three persons, participants exchanged ideas for alternative courses of action, which were afterward discussed in a plenary session. Thereafter, the weekly goals, which were the same for all group members, were adopted. At the final meeting, all group members reflected on their previously set goals and achieved outcomes. The moderator encouraged participants to maintain and further develop their newly acquired behaviors, and to firmly incorporate them into their daily lives.

Table 2. Overview of the eco-workshop.

Date and Topic	Content and Methods	Weekly Goals
Week 1: Introduction and overview of plastic/plastic materials	Become acquainted with each other (partner interviews); experiences with plastic and plastic alternatives (shared information pool); prior knowledge of participants (brainstorming, fixation on little cards); different types of plastic (PowerPoint presentation by the moderator and presentation of illustrative examples); introduction of plastic diary and weekly goals by the moderator	Assessment of own and other people's plastic consumption; investigation of recycling codes on plastic packages; keeping a plastic diary for at least five days
Week 2: Recycling, disposable and reusable system in Germany	Experiences of the previous week including plastic diary and newly gained insights (exchange in plenum); background information on the topic (video clips, PowerPoint presentation by the moderator); ideas for alternative courses of action (exchange in groups of 2–3 persons and subsequent presentation and discussion in plenum); development and adoption of weekly goals	Do not use disposable bottles and use a reusable bottle instead; avoid plastic bags when shopping and use a reusable bag instead; use a lunchbox instead of disposable plastic bags
Week 3: Journey of plastic into the world's oceans; formation of microplastic; microplastic in textiles	Experiences of the previous week including plastic diary and newly gained insights (exchange in plenum); background information on the topic (video clips, PowerPoint presentation by the moderator); ideas for alternative courses of action (exchange in groups of 2–3 persons and subsequent presentation and discussion in plenum); development and adoption of weekly goals	Avoid plastic bags completely; wear clothes several times before washing; buy sweets with as little packaging as possible
Week 4: Microplastic in cosmetic products	Experiences of the previous week including plastic diary and newly gained insights (exchange in plenum); background information on the topic (video clips, PowerPoint presentation by the moderator); ideas for alternative courses of action (exchange in groups of 2–3 persons and subsequent presentation and discussion in plenum); development and adoption of weekly goals	Use the “code check” app and search for microplastic-free products; talk to other persons about (micro)plastic, its impact on the environment and on human health
Week 5: Closing event	Reflection of set goals and achieved outcomes (use of cards from the first week); outlook (ocean clean up by Boyan Slat); final encouragement	Continue with the weekly goals

2.4. Data Collection

Semi-structured interviews were used to evaluate the outcomes of the workshop. Since the interviews were long and time consuming, only six participants from group 1 and three from group 2 were interviewed (see Table 1). Interviewees were selected at random, and all of them agreed to be interviewed. The interviews lasted between 30 and 45 min. They were conducted in the two weeks after the workshop and carried out by author 2. All interviews occurred in the workshop locations and were audio recorded.

At the start of each interview, permission for audio recording was obtained, followed by an explanation of the purpose and procedure of the interview and the assurance of anonymity. As all interviewees were older than 14 years, permission by their parents had not to be obtained. Participants were encouraged to answer all questions freely and honestly. Demographic data were recorded first, and each interview started with an open question (narrative kick-off; interview guideline in Table 3). The order of the following questions was flexible and developed during the interviews. In line with the research questions, interviewees were asked about their motivation to participate in the eco-workshop (Q1), the impact of the workshop on their environmental awareness (Q2), the impact of the project on their environmental behavior (Q3), positive and negative

elements of both eco-workshop and collective commitment (Q4), and perceived outcomes of the whole project for themselves and for others (Q5).

Table 3. Interview guideline (first round of interviews in winter 2017/2018).

Topic	Content or Questions
Introduction and recording of demographic data warm-up question	Information about audio recording, anonymity, goals of the survey, encouraging honesty and critical responses; age, sex, education, living situation. What motivated you to participate in the eco-workshop?
Environmental awareness	Did your environmental awareness change as a result of the workshop? Do you perceive the environment more consciously now? If so, what do you perceive more consciously now? Did the plastic diary help you to become more aware of your plastic consumption?
Behavior and habits	Did you change your personal behavior as a result of the workshop and your commitment? If so, what did change and why? Did the weekly goals help you in changing your behavior? What influenced you in your development toward a more sustainable lifestyle? What made it difficult for you to act sustainably?
Mediating factors (group, workshop content, and structure)	Did you know some group members before the workshop? If so, briefly describe your relationship with them. Did this have any impact on your success/progress, e.g., in meeting the weekly goals? Did the group in general and the shared feedback in the group have any impact on you? If so, in which way? How do you evaluate the workshop in terms of structure, time management, content? Suggestions for improvement are welcome. Was the topic appropriate? Why/why not? Would you have preferred to choose a topic yourself? Did you enjoy the 2–3 min presentations by the participants? Would you have wanted more input from the participants? Did you enjoy the short video clips? Would you want to participate again in such a workshop? If yes, on what topic? If no, why not?
Perceived impact of the workshop	Did the workshop motivate you to talk with other people about plastic/plastic consumption? If yes, with whom did you speak and about what? Do you think that the workshop has a continuing effect on your perception of the environment and on your behavior? Do you plan to maintain or even further develop your newly acquired behavior? If so, how? Expectations (showing cards): Here, are the expectations you mentioned at the first meeting. Were your expectations met?
Conclusions	Should the eco-workshop be offered in school or is it important that it takes place out of school? Please summarize the essence of the eco-workshop in one or two sentences.

Three years after the eco-workshop, in May 2021, all individuals who had been interviewed in winter 2017/2018 were contacted by phone again (Figure 1). They were asked if they were still keeping their self-commitments and if any new ones had been added (Q6). All interviewees willingly provided information and were rather pleased to be interviewed again. The interviews lasted about 20 min.

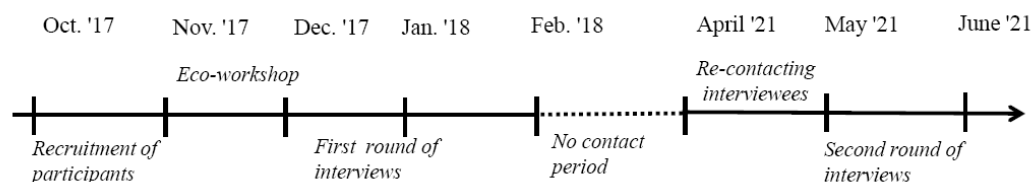


Figure 1. Timeline of the study.

2.5. Data Analysis

After transcription of the interviews, qualitative content analysis was used, and inductively obtained categories were formed [51]. A joint analysis of the interviews from group 1 and group 2 seemed justified as workshop procedure, and content was the same for both groups. In addition, there were no special incidents in any group that would have affected the results. To ensure the validity of the category system, descriptions of the

categories, coding rules, and anchor examples were included in a coder guide. In addition, ad hoc questions were used in the semi-structured interviews, which can be described as communicative validation. The reliability of the category systems was ensured with an interrater procedure. After the material had been paraphrased and coded, approx. 1/3 was coded again by two persons who were familiar with the field of qualitative social research. The results were compared with those of the first coder, consultation was held, and interrater agreement was calculated (sum of matched codings by the total number of coded objects). Cohen's kappa coefficient was also calculated. Interrater agreement was 0.94 for the first group (Cohen's kappa = 0.86) and 0.91 for the second group (Cohen's kappa = 0.83).

3. Results

3.1. Motivation to Attend the Eco-Workshop (Q1)

For all interviewees, interest in the topic was their main motivation for attending the eco-workshop (summary of all results in Table 4). Typical statements included the following: *"Because I found it totally interesting. I did not know much about the topic of plastic and I thought 'yeah, it's actually cool to know more about it'"* (girl, 18 years old). *"I found it exciting to learn more about plastic because so many things are made from plastic. I wanted to know what all these cosmetic products actually contain"* (girl, 16 years old).

Table 4. Summarized results of the first round of interviews in winter 2017/2018 (n = 9). The statements were sorted into broad categories (following the research questions). Multiple answers were possible.

Category	Sub-Categories	Responses
Motivation	Interest in topic	9
	Learning how to reduce/avoid plastic	4
	Participation of friends	3
Awareness raising	More conscious perception of plastic in daily life	9
	More conscious perception of personal plastic consumption and disposal; search for alternatives	8
	More conscious perception of other people's behavior	4
Behavior/habit changes	Reported change of personal behaviors	9
	Reduction, rejection, or avoidance of plastic	7
	Abandonment of plastic bags/foil and use of alternatives	6
	Avoidance of disposable bottles and use of alternatives	3
Success factors	Collective commitment and weekly goals	9
	Group exchange, feedback, inspiration through the group	9
	Support from the group	7
	Topic and workshop structure; perceived knowledge gains	9
	Small presentations by the group members	8
	Supportive parents	7
	Keeping a plastic diary	6
Impact of the project	Sense of being a multiplier	8
	Exchange with family members about the topic	7
	Exchange with friends about the topic	7
Perspective	Willingness to continue with the acquired behaviors and, if possible, further changes	7

Four interviewees mentioned in addition that they wanted to learn how to avoid or reduce plastic, with statements such as *"All this plastic in the oceans has made me curious. How can we prevent it, what can we do about it?"* (girl, 16 years old). *"I wanted to know where plastic is used and what impact it has. I wanted to learn how to deal with the issue"* (girl, 15 years old). *"If you live alone like I do, you have more responsibility. It is thus important to know how to deal with it"* (girl, 17 years old).

For three respondents, it was also motivating that some of their friends wanted to participate in the eco-workshop (see Table 4). *“I wanted to take part in the workshop and I thought ‘yes, if I know a few people, then it is really cool’ and that’s how it was”* (girl, 15 years old). *“Because I knew some people who wanted to participate”* (girl, 17 years old).

3.2. Perceived Environmental Awareness (Q2)

All interviewees reported that the project had opened their eyes to the amount of plastic in their environment (summary of all results in Table 4). Typical statements included the following: *“I see plastic now where I have not seen it before, and notice that it is everywhere”* (girl, 15 years old). *“When I just sit somewhere, I notice plastic. I have not thought about it before; nor have I thought about the amount of plastic in my school stuff”* (girl, 16 years old). *“It is so gross: when I am babysitting, for example, I say to myself ‘oh all these toys—all made of plastic’”* (girl, 18 years old). *“I have started to look at labels and ask myself what’s in this product, which substances have been processed. I am now definitely more aware of plastic”* (boy, 19 years old). *“I think you really see things differently now; when you look at something, you really want to know if it’s plastic or not”* (girl, 15 years old). *“It strikes me now how much plastic waste there is. For example, at lunch—all these salad bowls and plastic forks. That has already changed my perception”* (girl, 15 years old).

Interviewees were not only aware of plastic; they also addressed the topic when meeting others (see Table 4), as indicated in the following statements: *“You have started to ask friends almost in a ridiculous way ‘why do you take a plastic bottle with you?’ I would say that you perceive the environment differently now”* (girl, 17 years old). *“I pay much more attention to it. When I am somewhere, I recognize plastic—for instance when someone uses a plastic cup. I have told a friend that this is really bad for the environment: you use the cup only once and then you throw it away”* (girl, 15 years old). *“I noticed that whenever I came home, I started asking ‘why do we use disposable bottles and not the others?’”* (girl, 16 years old).

3.3. Reported Behavioral Changes (Q3)

All respondents had critically reviewed their own use of plastic products and actually changed some of their behaviors, with statements such as *“I notice that I already act completely differently. I had never thought about whether or not to put vegetables in a plastic bag. And now I just avoid the plastic bag because it is so unnecessary”* (girl, 17 years old). *“I now give plastic bags back to people when they hand them over. I would never have done that before”* (girl, 18 years old). *“At home, we usually wrap rolls in a plastic foil to keep them fresh. Later we throw the foil away. I never thought about that. But now we put all rolls in a storage box”* (girl, 16 years old). *“I used to buy a plastic bottle at least every second day. Now I have a refillable hard plastic bottle”* (girl, 17 years old). *“I now think three times before I take a ready-made salad that is packed umpteen times, and with dressing and plastic forks that are also in a bag. We have also started to buy milk in glass bottles, but they are really heavy and only fresh milk is available. That makes it difficult”* (girl, 18 years old). *“The project made me aware of plastic, what plastic can do, and of my own plastic consumption. I found alternatives to replace plastic”* (girl, 18 years old).

3.4. Reported Success Factors and Obstacles (Q4)

Both the topic and workshop content reached the participants (see Table 4). Typical statements included the following: *“Because it is timely, and we are now at an age where we think more about what is right and what you could change yourself”* (girl, 16 years old). *“It was a pretty timely topic and you could learn a lot of new things”* (girl, 15 years old). *“Because it affects everybody and everybody is confronted with it, everybody can do something and everybody might have a different idea on how to save plastic. And you actually think about it every day because you deal with plastic every day”* (girl, 18 years old).

All participants were sure to have learned something. During the last workshop and subsequent interviews, they reported freely and with pleasure about the knowledge they gained, with the following statements: *“I honestly did not know that plastic was ending up in the oceans. I knew that plastic is harmful to the environment, but I did not pay much attention to it.”*

And I know now what the consequences can be. That when you eat fish, for example, you ingest all the microplastic yourself” (girl, 15 years old). “I found it crass that there is so much garbage in the oceans and where the garbage comes from. That was the reason why you say okay, you try to do without it. I also found alternatives like the bamboo toothbrush mega interesting” (girl, 18 years old). “Recycling codes were new to me as a way to assess the environmental impact of plastics and other materials” (boy, 19 years old). “I was unaware about microplastic in cosmetics and that clothes can actually emit it” (girl, 16 years old). “I did not know much about plastic and never felt that another topic would have been a better choice. I had mega fun and definitely do not regret my participation because it was cool to learn so much” (girl, 17 years old).

Keeping a diary helped most interviewees become aware of their plastic consumption and disposal behavior, as evident in statements such as *“In the beginning, I did not think of it [plastic], but when you really document everything from morning to night, it is so blatant, you notice a thousand things” (girl, 17 years old). “It made me realize how much plastic I actually consume in a day” (girl, 15 years old). For three interviewees, however, the workshop was sufficient enough to increase their awareness. “I think you were made so aware of plastic; you would have noticed that without a diary” (girl, 18 years old).*

The weekly goals were important to all interviewees, with statements such as *“Setting weekly goals was good because we were not just busy for one day, but for the whole week” (girl, 15 years old). “The weekly goals. It was cool to change a behavior and that you are not doing it alone, but with a group” (girl, 15 years old). “The weekly goals were cool. You could do something special, and it has also continued. Without the weekly goals, you would not have rejected things or change something” (girl, 17 years old).*

All respondents highlighted the group as a positive experience, stating *“It is good to be with people and to exchange ideas—see what their goals are and what are yours. That was particularly beneficial for me” (boy, 19 years old). “If several people do it, it is just cooler than if you do it alone” (girl, 17 years old). “I thought it was good that some of my friends were there and that we talked about how everyday life can be managed without plastic” (girl, 18 years old). “Honestly, I could not say ‘oh my God, I absolutely have to go there’ [to the workshop]. But then I asked my friend if she would come with me. When she said yes, I found it interesting. In the end everything was pretty cool” (girl, 15 years old). “It was good that you could exchange ideas and talk to others about your experiences with the weekly goals. Getting new impulses was great” (girl, 18 years old).*

Two interviewees especially pointed out that belonging to a like-minded group of people had strengthened their will to make changes, stating *“What the other participants said about what you can do was pretty cool. What they managed to do, you can do too. When you hear what a ‘normal’ person like me does, then you think, ‘yeah, maybe you can do that too’ and then you are more motivated” (girl, 15 years old). “In the group were no perfect people who could handle plastic perfectly, but people who also had problems with it. This makes it easier to accept ideas than if you think, oh dear, I cannot achieve that at all” (girl, 18 years old).*

Negative or disturbing aspects directly related to the eco-workshop were not mentioned. The difficulty of finding plastic alternatives and the time it takes, however, was an issue. To address this obstacle, some interviewees had started to make cosmetics themselves or to reduce their consumption. For the one interviewee who no longer lived at home, plastic alternatives were too costly: *“The wooden toothbrush, for example, is cool. However, I will probably buy a normal one again, because it is cheaper” (girl, 17 years old). The other interviewees mentioned supportive parents. Only two respondents faced troubles and stated, “For a while, I used a refillable drinking bottle, but my mom said it might explode if you put in sparkling water, and I do not want to risk that” (girl, 15 years old). “My parents told me that taking a glass bottle to school is totally dangerous. But I said, ‘no, I refuse to take plastic bottles because they are so unnecessary’” (girl, 15 years old). Only one interviewee was rather critical toward the workshop and stated, “The workshop went very much in the direction that plastic is something bad. I felt that I am no longer in control of the situation, that I am being manipulated. Well, I always get that feeling rather quickly” (boy, 19 years old).*

3.5. Outcomes of the Project (Q5)

Three main outcomes of the project could be drawn from the interviews as follows: (1) participants became multipliers and (2) wanted to keep and intensify their newly acquired behavior, but (3) they were also aware of the huge amount of plastic in their daily lives, which made their own contribution seem very small.

Through conversations and by practicing a new behavior, participants became multipliers of their set goals and values (see Table 4), as evident in the following statements: *"There was usually no way around it. If someone asked 'what are you doing today' and I answered 'I am going to the eco-workshop', it was immediately a topic of conversation: you could always tell something and my family was totally interested in what I did"* (girl, 18 years old). *"My friend asked me if I had time and I said 'no, I am going to the eco-workshop'. And then she said, 'huh, that sounds really weird,' and I said, 'well, actually, it is really interesting,' and then I talked to her about it. At school, I also talked to my friends and shared my knowledge"* (girl, 15 years old). *"I use a wooden toothbrush now. My siblings picked up on it and wanted one too"* (girl, 15 years old). *"We now use recyclable bio bags in our family for the organic waste"* (girl, 17 years old). *"I noticed that whenever I went home, I suddenly started asking why we use this type of bottles [plastic] and not the other type [glass]. We switched from yogurt in plastic cups to a glass reusable system"* (girl, 16 years old). *"For the interdisciplinary competence examination at school, we have to develop, document, and present a project. We have decided to work with a collective commitment approach"* (girl, 15 years old).

Almost all interviewees wanted to continue and even intensify their newly acquired behaviors. They argued, for instance, as follows: *"The program has changed my life. It sounds really weird, but you perceive the environment differently now. I will continue with the weekly goals because I think they are pretty good. And I would like to talk with others about my goals"* (girl, 15 years old). *"Before the workshop, I only paid attention to separating trash, but now I avoid trash. I want to keep my new behavior"* (girl, 16 years old). *"Man is a creature of habit. But if you have already changed something [giving up plastic bottles and plastic garbage bags], then at some point you do it automatically and no longer think about it"* (girl, 17 years old). *"You cannot do without plastic from one day to the next. But you think about alternatives, for example, snacks that are not wrapped in plastic. I will pay attention to it and if alternatives exist, I will take them"* (girl, 18 years old). *"At the moment my motivation is strong. It may weaken a little bit, but I do not think that I will stop to improve my consumption behavior. Once you have started, you do not think 'oh now it's plastic' every time you have a bag in your hand. That goes into your subconscious and then you change and optimize something without thinking about it"* (girl, 18 years old).

Only two interviewees were reluctant to change their consumer behavior, stating *"That I will only buy plastic-free things is not an option. But to pay more attention to it and no longer take bags at H&M could be an option"* (girl, 15 years old). *"When you go shopping, you can take a cool cloth bag, but I will not buy a bamboo toothbrush or extra stuff like that. I can try to reduce plastic, but I will not stop buying things made of plastic"* (girl, 16 years old). More importantly, some interviewees were not sure about the impact of their behavior, with statements such as *"I do not think there is that much you can do. Even in a health food store, there is a lot of stuff packed in; you cannot even tell that they are paying attention to plastic. And that is why I think it is really difficult to get by without plastic"* (girl, 18 years old). *"It is funny somehow: when I see trash on the ground, I now feel guilty when I just walk by. For instance, I saw a plastic cup on the floor. That upset me, so I took it with me and threw it in the nearest trash can. But I do not know whether it makes a difference whether I throw it in the garbage or leave it where it is. What do you think? Is it important to pick it up?"* (girl, 15 years old).

3.6. Long-Term Outcomes of the Project (Q6)

More than three years after the eco-workshop, the former participants still held on to their commitments. Some had even extended their activities into other fields of sustainable action (Table 5).

Table 5. Long-term outcomes of the collective commitment in view of the former participants. The follow-up interviews were carried out in May 2021, i.e., almost 3.5 years after the eco-workshop.

Participant (P) and Interview Summary	Example Citation
P1 (girl, 15 years old in 2017) has maintained her behavioral changes and added new ones. When a certain behavior was no longer possible due to COVID-19, she replaced it with another one. For example, she used to take home food that other students wanted to throw away, which is no longer possible. Instead, she now uses plastic-free chewing gum, completely avoids plastic bags, and strictly reduces garbage, which she did not do at the time of the workshop. She had picked up garbage on the street and now wants to collect garbage when jogging with her friend as plogging is a recent trend on Instagram.	<i>"In any case, the eco-workshop has had an impact. I still think a lot about plastic and plastic consumption. I also gave an oral exam on the subject of plastic. In the last two years, I have dealt with the topic of plastic rather intensively."</i>
P2 (girl, 17 years old in 2017) has maintained her behavioral changes. When a certain behavior was no longer possible due to COVID-19, she replaced it with another one. She previously lived in a shared apartment where she had introduced a common sustainable behavior among her flatmates. She now uses a bamboo toothbrush and natural cosmetics to avoid (micro)plastic.	<i>"The eco-workshop has continued to have an effect. I am particularly interested in the topic of waste and have even written a seminar paper on economic growth and the waste crisis."</i>
P3 (girl, 18 years old in 2017) continues to avoid plastic when shopping. She is now rather strict in avoiding plastic bottles. She buys only natural cosmetics, which she did not do at the time of the workshop.	<i>"Especially in terms of cosmetics, the workshop has had a strong impact on me."</i>
P4 (girl, 15 years old in 2017) has maintained her behavior changes and would want to extend them further. She does not take plastic bags when shopping, always carries a bag with her, and avoids plastic bottles and bags.	<i>"The eco-workshop was interesting and continues to have an effect. Lately, after graduating from high school, I have been thinking more about where I can cut down on plastic and about new behavioral changes."</i>
P5 (boy, 19 years old in 2017) found the workshop interesting and stated that it had trained systemic thinking so that the complexity of the plastic issue became clearer to him.	<i>"Systemic thinking gave me a new perspective on environmental protection. You cannot just say that you will burn all plastic and everything is fine. Harmful substances are left behind. I am now more able to grasp the complexity of the issue."</i>
P6 (girl, 18 years old in 2017) has continued with her behavioral changes and also developed new behaviors. She now buys mostly recycled clothes, uses unpackaged shampoo, and makes cosmetics herself. Already at the time of the workshop, she avoided plastic bags and even handed them back when given. Now, she brings her own Tupperware to the shop and lets it fill with food. She no longer possesses plastic bags. When she wants to buy a coffee to go and does not have her own cup with her, she rejects the idea. She feels good, as the plastic-free lifestyle is receiving more recognition in society than it did a few years ago.	<i>"The eco-workshop was a big trigger for my change in awareness and also an important knowledge base. Over time, other influences also contributed to the development of my environmentally positive behaviors. I was better able to apply and implement my new knowledge when I moved out. In addition, the supply of alternative products to plastic grew, which made it easier for me. I now post on Instagram about the plastic-free trend because it has become a lifestyle to me."</i>
P13 (girl, 16 years old in 2017) has continued with her behavioral changes. Moreover, her family has also changed some behavior. They buy now, for instance, unpackaged fruit. She has also developed environmentally positive behaviors in other areas (cosmetics, personal care products). She tries to buy only organic food.	<i>"I do not think much about it. I just do it unconsciously."</i>
P14 (girl, 16 years old in 2017): At the time of the first interview, she had not changed her behavior. Now she pays attention to the fabric of her clothes and prefers cotton to synthetic fibers.	<i>"The workshop had an impact on me. I have talked a lot about it with my family. As a result of the workshop, I became more involved in the topic of environmental protection. I had even considered studying sustainable business management, and I fancy sustainable mobility."</i>
P15 (girl, 15 years old in 2017) continued and reinforced her behavior change. In addition, new behaviors have been added. She now pays attention to fair-trade and organic cotton and second-hand clothes. At the time of the workshop, she already tried to buy plastic-free. Now, she has fully reduced her plastic consumption to zero.	<i>"The eco-workshop was the impetus for me to become more informed about environmental and climate protection (carbon dioxide and driving). I now pay much more attention to the topic of plastic and to sustainability."</i>

Finally, the flowchart (Figure 2) illustrates the most important components derived from the interviews that contributed to more sustainable behaviors among the participating young people, both in the short- and long term.

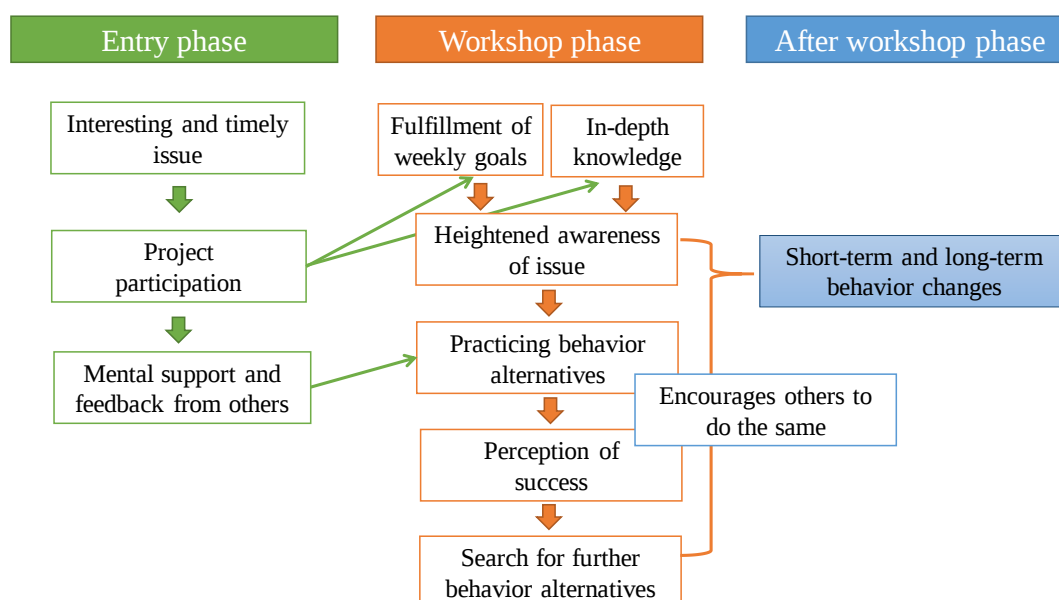


Figure 2. Graphical summary of the main project results. Arrows indicate causal effects.

4. Discussion

The project was successful in helping young people on their way to a more sustainable lifestyle. During the project, participants became more aware of plastic and plastic-related consumption behaviors, and the combined intervention of eco-workshop and collective commitment improved their environmental performance (as in [35]). Despite the short duration of five weeks, participants felt rather confident to maintain or even intensify their new behaviors in the future. They were correct in this assessment, as the follow-up interviews more than three years later showed. All participants had either retained their new behavior or replaced it with another one. In addition, they had also familiarized themselves with other sustainable behaviors and, in some cases, already tried them out.

During the project, participants enjoyed the group exchange, and also the exchange with family members, friends, and other persons about their commitment. In collective commitments, exchange with others and the feeling of being part of a community were found to be major success factors [37]. Approval and encouragement of others serve as mental support [15] and can deliver a “warm glow” [52,53], i.e., a reward for doing the right thing, which is a strong motivator for pro-environmental behavior [54]. Through the collective commitment, participants became also multipliers of actions at home and in their circle of friends. The positive impact of teenagers on pro-environmental practices at home and in their peer group was also shown in previous studies [55–57]. Moreover, as in previous studies [56,58], best friends had played a crucial role in participants’ motivation to engage in the project and take action.

Participants were satisfied with the workshop and did not want to change much. However, they faced obstacles due to the execution difficulty of their intended behavior, which was also apparent in studies on anti-consumption [59,60]. In particular, the unavailability of green products is a major barrier for consumers to follow their principles [60]. Furthermore, high costs and a great deal of time in searching for alternatives can hinder environmental action [34,61,62], which was also mentioned during the interviews. However, although plastic-free shopping was perceived as difficult, participants did not give up and made their best effort to make this possible.

Since most participants still lived at home and were not of legal age, their opportunities for change were rather small. Interviewees frequently reported the refusal of plastic bags, plastic foil, or disposable plastic bottles as behavior changes. Changes in purchasing behavior are often more beneficial for the environment than the mere recycling of products, but a refusal of plastic bags when shopping makes only a small contribution to sustainability [42]. It has thus been proposed to focus on high-impact activities such as not driving a car or installing a solar system rather than on low-impact ones [20,42,45]. However, low-impact activities allow young people to contribute, small though it may be, and to influence, e.g., through changing consumption patterns, political decisions. Moreover, small commitments, such as the reuse of towels in a hotel or the refusal of plastic bags, can make a difference, as people might gravitate from easy-to-fulfill behaviors to more difficult ones [61,63,64].

Achieving a sustainable future requires transformative action and, as a prerequisite, the development of appropriate competencies [22,65]. Participants mentioned competencies such as awareness and mindfulness, reflectivity, and feelings of responsibility, which are key drivers on the way to a more sustainable society. Among others, these competencies are summarized under the concept of “Gestaltungskompetenz”, which is defined as the capacity of an individual to act and solve problems, and in doing so, to contribute to sustainability [65]. For competence-oriented education, as envisaged in the German educational plans, collective commitment approaches could, on the one hand, make a valuable contribution. On the other hand, the obligatory fulfillment of pledges could represent a kind of manipulation. With one exception, however, interviewees felt not pressured or manipulated in their thinking and actions. This was also the case when Australian students had to make pledges as part of a university course [66]. As in this study, self-commitment was not perceived as indoctrinating but, on the contrary, as an eye-opening and valuable experience.

There are certain limitations to this study that have to be addressed. Results are based on self-reports of only two groups of adolescents in one region of Germany and cannot be generalized. Moreover, participation in the project was completely voluntary. It is, therefore, possible that only those young people participated who were already pre-sensitized to environmental concerns. This would explain the high number of non-participants, although non-participation in the project could also be attributed to other school and private obligations. Although a fairly balanced number of female and male youth were invited to participate in the project, only one male respondent ultimately participated. One reason for this could be a greater interest among women in environmental topics. In the German Youth, Information and Multimedia (JIM) study, for instance, significantly more girls than boys showed interest in being informed about environmental topics [67]. Another reason could be that the focus of the present self-commitment was more likely to appeal to women than men, as the targeted behavioral changes may have been associated with household activities such as recycling or sustainable shopping. Several studies have shown that women are more likely to go green in the private sector, while men are more likely to go green in the public sector, i.e., become active outside the household [68–70]. It could be assumed that five weeks are too short to practice and adopt a new behavior. However, more than three years after the workshop, all former participants were still practicing behaviors that were consistent with a sustainable lifestyle. Whether all of these behaviors can be attributed to the commitment project cannot be said without a doubt, although the interviewees repeatedly referred to their workshop experiences three years earlier.

5. Conclusions

Education for sustainable development seeks to support and empower individuals to contribute to a more sustainable society, and a range of intervention techniques have been proposed to accomplish this aim. However, public commitment approaches are hardly mentioned in teaching materials in Germany, nor are they mentioned in the country's National Action Plan for ESD [71]. To our knowledge, only one booklet for elementary

schools recommends collective commitment as an option to tackle energy consumption and also describes how it could be used in the classroom [72] (p. 47). The results of this study indicate that collective public commitment can be a suitable method in terms of ESD in schools. It could be directly integrated into lessons in which environmental topics are dealt with, but it could also be part of project-oriented teaching. Commitments could also be made online, as proven by examples from other countries. Campus EcoChallenge, for example, is a customizable sustainability program for class and campus engagement (<https://ecochallenge.org/> and <https://campus.ecochallenge.org/>, accessed on 27 August 2021). Each team can set their own timeline to meet the goals of their initiatives and can track and share their progress via smartphone app or computer website. Teams are rewarded with action points that they can use to enter a competition. In contrast, there were no incentives for participating in the eco-workshop in our study. Participants were rewarded with an increase in factual and practical knowledge, which corresponded with their primary motivation to participate in the project. Nevertheless, in more extensive workshops, it might be advisable to provide some kind of reward to ensure satisfactory participation. Instead of teams, online commitments can also be made individually. In this case, students are asked to confirm on their school's homepage what they want to give up, and what they want to take on (<https://www.sustainablewellesley.com/green-certify-your-elementary-classroom.html>; <https://www.bagladyproductions.org/>; <https://askhrgreen.org/gtk-gtd/green-classroom-take-pledge/>; https://action.earthday.org/foodprints_2020_pledge, accessed on 27 August 2021). The disadvantage of this approach, however, is that the direct exchange in a group may be lost. This, however, was a particular strength in the present study. Reinforcement and support provided by the group were repeatedly highlighted as particularly valuable by our interviewees. With regard to the age group, it seems particularly useful to offer the collective commitment during adolescence. Here, an interest in political and social issues is present, and the exchange in a like-minded group of peers is desired. In addition, long-term goals are beginning to be set. Even if it is too difficult for adolescents to significantly change a behavior, e.g., to dispose of plastic altogether, collective public commitment promotes important areas of action competence, as revealed by our results. At the same time, young people experience that they can make a difference with their own behavior, even if perhaps only in a small way. Collective public commitment could thus be a suitable method for ESD and a vehicle to support young people on their path to a more sustainable lifestyle.

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