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The relationship between student participation and students’ self-perceived action competence for sustainability in a whole school approach

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\textbf{ABSTRACT}

This study examines the relation between student experiences of participation in a whole school approach (WSA) and students’ self-perceived action competence. We surveyed 902 students in three Norwegian upper-secondary schools participating in an education for sustainable development (ESD) programme. The questionnaire measured students’ experiences in decision-making and influencing within a WSA, containing the components: (1) school and leadership, (2) teaching and learning, (3) community connections and (4) student council. We measured students’ self-perceived action competence through: (1) knowledge of action possibilities, (2) confidence in one’s own influence and (3) willingness to act. A structural equation model indicates a positive relation between student participation in ESD teaching and learning and students’ knowledge of action possibilities and confidence in their own influence. Participation through the student council positively related to all action competence components. We found no significant relation between participation in school and leadership or community connections on any action competence factors. It is important to note that this cross-sectional study with a limited number of schools does not establish causality, necessitating further research. Nevertheless, the results suggest that promoting student participation in teaching and learning and facilitating a well-functioning student council can promote students’ development of action competence for sustainability.

\textbf{Introduction}

Education for sustainable development (ESD) is seen by policy-makers as a means to empower students to make sustainable choices, promote sustainable development (SD) and prepare students for the urgent societal and environmental issues the world is facing (Leicht, Heiss, and Byun 2018;
To help embed SD in all educational processes, UNESCO (2020) and the European Union (European Commission 2022a, 2022b) recommend a whole school approach (WSA). A WSA is a way to challenge traditional ways of teaching and learning and support a more holistic and participatory approach to education, one that seeks to enhance students’ learning opportunities about societal needs by implementing improvements in their environments (Goldman et al. 2018; Gough 2005; Mogren, Gericke, and Scherp 2019). In a WSA, the school also seeks to become an authentic and valuable learning environment by leading by example (Bjønness and Sinnes 2019; Gericke 2022; Goldman et al. 2018; Holst 2023; UNESCO 2020). A critical aspect of the WSA to SD is democratic student participation (Hargreaves 2008; Henderson and Tilbury 2004; Shallcross and Robinson 2008). Thus, by ‘walking the talk’, the students become actively involved in developing the sustainability focus at the school. This way, a WSA to SD can help students prepare to take action for SD, while at the same time increase the school’s democratic practices by letting the students experience democracy in practice (Flutter and Rudduck 2004; Kronvald and Thyssen 2017; Robertson 2015; Sund 2022).

The WSA to SD is seen as a participatory approach where democratic student participation is essential (Cincera et al. 2019; Gough 2005; Shallcross and Robinson 2008; Verhelst et al. 2020). Student participation and influence are also seen as essential for developing action competence, which is one of the learning objectives for a WSA to SD (Cincera and Krajhanzl 2013; Sass et al. 2020; UNESCO 2017). Although student participation is recognised as an essential part of a WSA to SD and for students developing action competence, there is little research on the relation between student WSA participation and action competence. This article, therefore, aims to investigate the relation between students’ experiences from participation in a WSA to SD and their self-perceived action competence for sustainability.

**Previous studies about action competence**

Behavioural change, including the beliefs, attitudes and values that lie beneath, has traditionally been the goal of ESD. However, researchers increasingly see this goal as empowering students with competences to take sustainability actions, rather than of behaviour modification (Jensen and Schnack 1997; Wals 2011). Recognising the importance of empowering students and seeing that behaviour, unlike an action, is not necessarily caused by someone consciously making up their mind (Kollmuss and Agyeman 2002), several researchers have focused on the concept of action competence (e.g. Almers 2013; Jensen and Schnack 1997; Olsson, Gericke, and Boeve-de Pauw 2022; Sass et al. 2020; Sinakou et al. 2019; Verhelst et al. 2022).

Fostering action competence is considered one of the learning objectives and key learning outcomes of ESD (Jensen and Schnack 1997; Rieckmann 2017). However, there are many interpretations of what constitutes action competence (Sass et al. 2020). Sass et al. (2020) attempted to introduce some clarity by creating a more generic definition that considers action competence to be the competence of people to act towards solving controversial problems in different domains. In their definition, action competence has the following core features:

1. Knowledge and skills about the problem and its action possibilities.
2. Confidence in one’s own skills for change and influence possibilities.
3. Willingness to act.

Several factors are believed to be important for people’s development of action competence. The researchers found that sustainable leadership, democratic decision-making and pluralistic communication are important for action competence on a student level. Consequently, people’s action competence seems to be affected both by external and internal factors. However, several factors are believed to be important for people’s development of action competence. Some of these are using pluralistic and holistic teaching in ESD (Olsson, Gericke, and Boeve-de Pauw 2022).
receiving trust and faith from adults (Almers 2013); creating space for emotions and values (Almers 2013); inviting participation in decision-making at school (Cincera and Krajhanzl 2013) and having action-oriented role models (Almers 2013). Verhelst et al. (2022) found that the way a school is organised also seems to be important for students’ action, but there is still limited knowledge about action competence in relation to student participation in a WSA to SD (Olsson, Gericke, and Boeve-de Pauw 2022).

WSA to SD and the role of student participation

A WSA is a way for schools to work with school improvement on complex matters like SD (Shallcross and Robinson 2008). There are many models and conceptualisations of a WSA, from policy to research (e.g. Buckler and Creech 2014; Henderson and Tilbury 2004; Mogren, Gericke, and Scherp 2019; Shallcross and Robinson 2008). One of these conceptualisations is the Flower Model developed by Wals and Mathie (2022). This conceptualisation represents the WSA as a flower, with the school’s vision, ethos, leadership and coordination surrounded by different aspects of the school (see Figure 1). It is not enough to teach students about sustainability if other aspects of the school are unsustainable. The overlapping petals in the model emphasise that everything is interconnected and that the whole organisation and its stakeholders must work together systematically to create a holistic ESD (Wals and Mathie 2022). In order to enhance targeted characteristics at all levels, the WSA engages all aspects of the school in joint efforts (Gericke 2022; Scott 2011). In a WSA to SD, it is common for students to investigate real-world problems within familiar contexts, which is derived from project-based learning (Fielding 2001; Gough and Robottom 1993). This way, a WSA can help schools in modelling and teaching understanding of ESD through the explicit curriculum and pedagogy, as well as through the physical and operational environment of schools, community engagement and the management’s priorities (UNESCO 2019).

People’s beliefs in the political and societal system start to develop when they are children (Bandura 1997). While some of these beliefs develop through observing and listening to adults,
young people’s beliefs in the possibilities of influencing the political system are also affected by their experiences of trying to influence adults in school and other institutional settings (Bandura 1997). The students learn about democratic participation by experiencing it (Sund 2022). Through a WSA to SD, the institution can lead by example by including the students in working towards SD throughout the whole school and teach the students a participatory way of life (Wals and Mathie 2022).

Democratic student participation and influence are seen as essential in ESD for building action competence, and a WSA aims to promote student participation (Chen and Liu 2020; Fischer 2012; Gough 2005; UNESCO 2020). Nevertheless, Reid et al. (2008) were concerned that although schools talk about democracy, it is only practised to a small degree in education. Consequently, Torsdottir et al. (2023) have developed an instrument to investigate how students perceive their possibilities of participating within a WSA to SD. Their study revealed that the students experienced few possibilities for participation. This aligns with previous research showing that schools focusing on ESD do not necessarily achieve high levels of student participation (Boeve-de Pauw et al. 2015; Breiting and Mayer 2015; Henderson and Tilbury 2004). Still, the results from Torsdottir et al. (2023) showed that although participation was limited, four pathways of participation within a WSA were statistically derived from the students’ answers: (1) school and leadership, (2) teaching and learning, (3) community connections and (4) student council (Figure 2).

Breiting (2018) argued that the feeling of ownership is essential to help students develop knowledge, commitment and agency. Student participation and participatory decision-making can help students to see that they can make a change in society and affect their civic engagement and pro-environmental behaviour (Breiting and Mayer 2015; Goldman, Pe’er, and Yavetz 2017; Parra et al. 2020; Reis 2020; Robertson 2015; Uitto, Boeve-de Pauw, and Saloranta 2015). Denying students the possibility to participate can compromise the outcome of ESD (Cincera and Kovacikova 2014). Hence, we argue for a WSA to SD, one that includes Torsdottir et al.’s (2023) pathways of participation. This aligns with earlier work by Henderson and Tilbury (2004) who pointed out the importance of democratic student participation and influence as an essential element of ESD. Moreover, it aligns with other work that shows that it might also be developing action competence among learners (Cincera and Krajhanzl 2013; Olsson, Gercke, and Boeve-de Pauw 2022; Schnack 2008).

Figure 2. Pathways to participation within a WSA to SD as perceived by students (Torsdottir et al. 2023).
The role of student participation for action competence

Student leadership is considered one of the requirements for developing action competence related to sustainability issues (Sinakou et al. 2019). Children must practise decision-making in everyday life (Chawla and Cushing 2007). Opportunities to participate in decision-making allow children and youth to practise controlling their lives and environments. By letting students experience managing their school or helping in community projects, they can feel that they make meaningful contributions to others (Chawla and Cushing 2007). Furthermore, ESD seeks to enable students to refrain from reproducing the social order uncritically, but rather to develop the competencies they need to make their own decisions (Jickling and Wals 2008). Consequently, Sinakou et al. (2019) argued that students should be allowed to make decisions about their learning and tackle problems around sustainable development.

Sass et al. (2020) argued that confidence in one’s own influence is essential when trying to make a change. If someone does not think they can perform a task or that the task will lead to the desired change, they have little reason to act when difficulties arise (Almers 2013; Bandura 2000; Goldman et al. 2020; Ovais 2023; Sass et al. 2020). Olsson, Gericke, and Boeve-de Pauw (2022) performed a longitudinal study examining the effect of students’ experiences of ESD teaching on their self-perceived action competence for sustainability. The findings show how experiences of ESD teaching affected students’ action competence. Even though the experience of ESD teaching specifically was shown to impact the action competence component of confidence in one’s own influence, the students did not significantly develop this component through the longitudinal project (Olsson, Gericke, and Boeve-de Pauw 2022). Students participating in their learning processes is one of the essential factors of pluralistic ESD teaching (Öhman and Östman 2019). Olsson, Gericke, and Boeve-de Pauw (2022) argued that the lack of improvement in students’ confidence in one’s own influence might be the result of having experienced little participation in sustainability decision-making at their schools. Thus, gaining experience of participating in and influencing various aspects of school life might help students to develop their action competence.

Democratic decision-making in schools is one of several organisational characteristics that may help students develop action competence (Verhelst et al. 2022). Cincera and Krajhanzl (2013) found that how students perceive their participation in decision-making at school was the key factor in the success of the ECO-school programmes and students’ action competence. Cincera and Krajhanzl (2013) argued that participation in decision-making in school might create more opportunities for students to develop their action competence. Hence, they stated that schools should be making environments of participation.

According to Hart (2008), participation might be the most crucial factor for learning in environmental education, where participation can be seen as taking part in or influencing something. Taking part and influencing something are interrelated essential aspects of democracy (Schnack 2008). Moreover, Schnack (2008) argued that having influence has the most significant learning potential, as it can give a feeling of ownership and give students experiences of conflict handling, fairness and responsibility. In this way, schools will not only teach students about democracy, but can also be an arena for learning and practising democracy (Schnack 2008). Even though the studies above have investigated the importance of student participation and action competence in SD, there is still little knowledge about how students’ participation affects their action competence for sustainability. Moreover, studies that elaborate further on the relationship between student participation and action competence have been requested in previous research (Olsson, Gericke, and Boeve-de Pauw 2022). Although several studies have looked at the advantages of student participation in ESD programmes, these have focused on the teaching and learning pathway of participation in ESD, not considering the possible advantages of other pathways of participation within a WSA to SD (Cincera and Krajhanzl 2013; Olsson, Gericke, and Boeve-de Pauw 2022). This study aims to contribute to a deeper understanding of the
relationship between student participation and action competence by exploring the relationship using WSA participation as a lens.

**Research aims and questions**

Many factors influence sustainable behaviour and people's action competence (Chen and Liu 2020; Goldman et al. 2020; Kollmuss and Agyeman 2002; Olsson, Gericke, and Boeve-de Pauw 2022; Varela-Losada et al. 2016). Even though the literature suggests that student participation is one of the essential factors in students' development of action competence, little research has investigated this statistically. Moreover, whole-school approaches emphasise participation and democratic action (Shallcross and Robinson 2008). No research has, to our knowledge, investigated the possible advantages of student participation throughout the whole school. This paper will help fill this knowledge gap by using a questionnaire that gauges student participation in a WSA to SD (Torsdottir et al. 2023) and a questionnaire that assesses students' self-perceived action competence for sustainability (Olsson et al. 2020). While many aspects are essential for a successful WSA to SD, this paper aims to better understand the relationship between student participation in a school that employs a WSA and the development of the students' self-perceived action competence. In this context, student participation refers to students participating in decision-making and influencing what happens. Therefore, this study could contribute important knowledge to the ESD research field of the relation of students' WSA participation and their action competence for sustainability. The specific research question is:

> What is the relation between students’ experiences of WSA participation and their self-perceived action competence for sustainability?

**Method**

**Context of the study – ESD in Practice**

This study is based on a questionnaire conducted in three upper-secondary schools in Norway. All schools in the study have been part of the project ‘ESD in Practice’ since 2017. This is a collaboration between the teacher education at the Norwegian University of Life Sciences (NMBU), a county municipality and four upper-secondary schools working together to develop a WSA to SD. The schools were chosen as a convenience sample, and although all schools take part in ESD in Practice, we would not regard them as ESD champions. While the current study does not seek to measure the effect of the programme itself, we can assume that the schools in the sample have a certain disposition towards ESD.

The schools involved with ESD in Practice have received financing for a coordinator in a 20% position at each school. This coordinator serves as a link between the university and the teachers at the schools. School coordinators and principals meet with the county municipality and NMBU representatives to discuss the project and the future direction. The schools have not explicitly focused on increasing student participation through ESD in Practice in the past, but in early 2022 they expressed a desire to begin doing so. Nevertheless, at the time of the data collection, there was not a specific focus on student participation as part of ESD in Practice.

The project ESD in Practice has arranged several study trips, seminars and webinars on ESD, some for the coordinators and school leaders, others for all teachers. The schools have considerable autonomy in the project, so it is mainly up to each school to decide how to participate in the project and work with ESD. Some examples of activities are workshops for teachers on interdisciplinary working and how they can work towards their vision for a WSA to SD and creating a canteen with more sustainable food to be used as a place to gather as well as a teaching arena. Schools have arranged interdisciplinary weeks where the students choose a
product to follow from the cradle to the grave from a sustainability perspective, ending in an attempt to improve something about the product by contacting the manufacturers. Students have explored how the school can reduce their electricity needs through solar technology. Clothing exchange days have been arranged at several of the schools, and students at one of the schools have collected fruit and berries in the local area that otherwise would not have been used and made jam and juice. Two of the schools have created a study programme with a focus on interdisciplinary and exploratory ESD. For a more thorough explanation of the overall project, see Torsdottir et al. (2023).

Among the schools in the project, the largest combines vocational and general study programmes and has approximately 1,400 students. The second largest school prioritises general study programmes and has about 700 students. The smallest school prioritises vocational study programmes and has about 530 students. All students were supposed to have the opportunity to participate in the study with their class. However, due to the Covid-19 pandemic, most classes could not prioritise participating in the study, and only a few students from one of the schools participated. In the final sample, the participants included 902 students between 15 and 24 years old ($M = 16.8$ years, $SD = 1.3$). Most students (74.3%, $n = 670$) were from the largest school. The smallest school had the second largest number of participants (22.3%, $n = 201$); in the second largest school, only a few students participated (3.4%, $n = 31$). Almost half of the participants were first-year students (46.6%, $n = 420$), followed by second-year students (31.3%, $n = 282$) and third-year students (22.2%, $n = 200$). More than half of the participants were female (58.6%, $n = 529$), followed by male participants (39.1%, $n = 353$), while a small number of participants did not disclose their gender (2.2%, $n = 20$).

The study was registered with and performed as per the ethical standards of the Norwegian Social Science Data Services (NSD).

The measures

We used two scales in the quantitative approach of this study. Torsdottir et al. (2023) developed the student WSA participation questionnaire items based on the WSA Flower Model (Wals and Mathie 2022). However, as this model is not from a student perspective, Torsdottir et al. (2023) conducted an exploratory factor analysis (EFA) on the pilot data to find a model showing student WSA participation from a student perspective. This model was later validated with a confirmatory factor analysis (CFA) using data from another (main) data collection (Torsdottir et al. 2023). The items built four factors tapping into students’ subjective experiences about having the possibility to participate in different aspects of school life. The factors are: (1) school and leadership, (2) teaching and learning, (3) community connections and (4) student council (Figure 2). Although various modes of participation in the model overlap, demonstrating that different aspects of a school influence each other, they have different characteristics that lead to four different pathways of participation. The school and leadership pathway concerns how student participation is encouraged in school decision-making processes and how the school promotes sustainable development. The teaching and learning pathway is about how students participate in influencing the content, methods and assessment in ESD. The community connections pathway concerns how students participate in influencing the teaching and learning processes and the content while collaborating with external partners on local problems. The student council pathway concerns how students experience opportunities to influence the school through their representatives. This means that all students, not only the student representatives, responded to the questions about how they experience their opportunities to influence through the student council. For a more thorough description of the creation and validation of the student participation questionnaire, see Torsdottir et al. (2023).
We informed the students that we sought all kinds of participation, from overarching issues such as school management to smaller opportunities during the teaching process. The questionnaire included questions about community connections. Recognising that not all students might have worked with the community, we included the ‘not relevant’ response option. Similarly, students unsure how the student council worked could respond ‘do not know’. These two responses were treated as missing data. The students had to answer the questions on the remaining factors as they experienced the items.

The second scale used in the study was the self-perceived action competence for sustainability (SPACS) scale, developed by Olsson et al. (2020). This scale was developed to catch the three factors in the definition of action competence by Sass et al. (2020). Four items are connected to each factor, that is, 12 items in total (see Olsson et al. 2020). The three factors are: (1) knowledge of action possibilities (KAP), (2) confidence in one’s own influence (COI) and (3) willingness to act (WTA) (Figure 3). The participants answered the questions on both scales on a five-point Likert scale ranging from completely disagree to completely agree.

**Data collection and analysis**

We collected the questionnaire data in this study from October to December 2021. The participants completed the questionnaires using an online survey in class during school hours. A teacher or the class representative presented the questionnaire to the class. They had received instructions for how to present the questionnaire, thus ensuring the reliability of the data collection process by giving all students the same information before filling out the questionnaire. All students were informed about the purpose of the study and that participation was voluntary.

We first imported the dataset to IBM SPSS Statistics version 27, where we performed the data preparation and analysed it using descriptive statistics. Then, a CFA for our two theoretical models was performed in Mplus 8. Lastly, we performed a structural equation modelling (SEM) analysis to investigate the relationship between the four latent factors in the student participation model and the three latent factors in the self-perceived action competence for sustainability model. We performed the CFAs and SEM analysis using a robust maximum likelihood (MLR) estimator and handled missing data using full information maximum likelihood (FIML) methodology (Graham 2009). To evaluate the CFA models, we looked at the chi-square values and four goodness-of-fit indices with the cut-off values of model fit indices recommended by Hu and Bentler (1999), that is (RMSEA) < 0.06, CFI and TLI > 0.95 and SRMR < 0.08.

![Figure 3. Model of self-perceived action competence for sustainability and its three Sub-constructs (Olsson et al. 2020).](image-url)
The data in the current study came from the same dataset as used in the main data collection in the validation study of the student WSA participation questionnaire (see Torsdottir et al. 2023). However, this study also contains data about students’ self-perceived action competence, which we collected during the same data collection.

Results

Descriptive statistics

We calculated the percentage distribution of participants’ answers on a Likert scale for each item to see how they responded. The students used the whole scale. The means and standard deviation for each factor are shown in Table 1.

Confirmatory factor analysis

Although the chi-square was significant χ² (183, N=902) = 586.516, p<0.001, this analysis has quite a large sample. Thus, the other four goodness-of-fit estimates should be inspected for testing the model (Kline 2016). The CFA model for whole school student influence for sustainable development had a good model of fit: RMSEA = 0.049 [0.045, 0.054], SRMR = 0.040, CFI = 0.955, and TLI = 0.948. As shown in Table 2, all standardised loadings in the latent factors were higher than or equal to 0.5. The CFA for the self-perceived action competence also had a good model of fit: χ² (51, N=902) = 190.514, p<0.001, RMSEA = 0.055 [0.047, 0.064], SRMR = 0.034, CFI = 0.965, and TLI = 0.955. All standardised loadings in the latent factors were higher than or equal to 0.6 (see Table 3).

Table 4 shows the correlations between the factors of the same construct and factors of different constructs. As expected, the correlation matrix indicates that the factors are related but distinct enough to measure various constructs. Because no correlations exceeded 0.80, the discriminant validity of the different factors can be assumed (Rönkkö and Cho 2022).

Structural equation model

We used an SEM analysis to test for an effect of the four latent factors in the whole school student influence for sustainable development on the three factors of action competence for sustainability. The model had an acceptable level of fit with χ² (474, N=902) = 1238.240, p<.001., RMSEA = 0.042 [0.039, 0.045], SRMR = 0.043, CFI = 0.949, and TLI = 0.943. The standardised regression coefficients in Figure 4 show statistically significant paths from teaching and learning to KAP and COI, and from student council to all three action competence constructs. The model shows a small but positive effect of teaching and learning on two action competence factors. This effect implies that an increase of one standard deviation in participation in teaching and

<table>
<thead>
<tr>
<th>Factor</th>
<th>Number of items</th>
<th>Missing</th>
<th>Cronbach’s α</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching and learning in ESD</td>
<td>6</td>
<td>0 %</td>
<td>0.948</td>
<td>2.95</td>
<td>0.83</td>
</tr>
<tr>
<td>School and leadership</td>
<td>8</td>
<td>0 %</td>
<td>0.905</td>
<td>2.87</td>
<td>0.80</td>
</tr>
<tr>
<td>Community connections</td>
<td>3</td>
<td>15–17 %</td>
<td>0.884</td>
<td>2.74</td>
<td>1.01</td>
</tr>
<tr>
<td>Student council</td>
<td>4</td>
<td>19–34 %</td>
<td>0.894</td>
<td>3.59</td>
<td>0.88</td>
</tr>
<tr>
<td>Knowledge of action possibilities</td>
<td>4</td>
<td>0 %</td>
<td>0.848</td>
<td>3.48</td>
<td>0.79</td>
</tr>
<tr>
<td>Confidence in one’s own influence</td>
<td>4</td>
<td>0 %</td>
<td>0.887</td>
<td>3.37</td>
<td>0.85</td>
</tr>
<tr>
<td>Willingness to act</td>
<td>4</td>
<td>0 %</td>
<td>0.927</td>
<td>3.46</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Note: N=902, Cronbach’s α was 0.93 for the whole student WSA participation scale and 0.94 for the whole SPACS-Q. Missing data for each category represents the item with the lowest to the highest level of missing responses.
learning in ESD results in an increase of 20% and 19% of a standard deviation in students’ self-perceived knowledge of action possibilities and their confidence in one’s own influence. The student council factor has a medium positive effect on the students’ self-perceived action competence. Here, the results indicate that an increase of one standard deviation on the student council factor results in an increase of 37%, 40% and 43% of a standard deviation in the respective action competence factors.
Discussion

This study provides new insight into the ESD research field by investigating the relation between student WSA participation and students' self-perceived action competence. In summary, this study's findings indicate that student participation in schools using a WSA positively affects students' self-perceived action competence. However, this was only true for some of the participation pathways that connect with the key components of a WSA. While the pathway of participation through the teaching and learning and the student council pathway do affect the students’ action competence, the same was not found for the school and leadership and the community connection pathways.

The teaching and learning pathway to participation and students’ self-perceived action competence for sustainability

Our SEM model showed that there is a small but positive relation between the teaching and learning pathway to participation and the action competence factors, knowledge of action possibilities and confidence in one's own influence. This result implies that letting students influence the teaching and learning in ESD can help them develop their knowledge of action possibilities and their confidence in one's own influence. Although this study cannot say anything definitive about the causality of this relation, it does support previous literature, suggesting that if we want to help students develop knowledge, commitment and agency, then the feeling of ownership in the teaching is crucial (Breiting 2018). Thus, our results support that student
participation can help develop students’ action competence, which is one of the aims of democratic, participatory approaches to ESD (Sass et al. 2020; Schnack 2008; Sinakou et al. 2019).

The teaching and learning pathway of participation had no significant relation with the students’ willingness to act. This is discouraging as previous studies have shown that intentions to act strongly predict acting (Bamberg and Möser 2007; Goldman, Pe’er, and Yavetz 2017). However, previous research has also shown that students’ willingness to act is difficult to change in ESD programmes (Goldman et al. 2018). The results show that the students in this study did not experience a high level of participation in how teaching and learning should take shape, which might have affected the lack of significant results. Previous studies have demonstrated that schools that integrate ESD experience greater difficulty when attempting to incorporate pluralistic teaching elements, such as student participation, compared to the holistic aspects of ESD (Boeve-de Pauw et al. 2015; Olsson, Gericke, and Boeve-de Pauw 2022).

Another reason for the lack of significant relationships between the teaching and learning pathway and the students’ willingness to act might be that the items in this teaching and learning factor were about, for example, the topics and methods in ESD, and not necessarily about taking action (Torsdottir et al. 2023). Taking action towards sustainability is believed to be important for developing action competence (Chen and Liu 2020; Varela-Losada et al. 2016). Jensen and Schnack (1997) argued that the word ‘competence’ is about being able and willing to do something to be qualified to be a participant. The word ‘action’ differs from behaviour, habits and activities in that actions have been considered and are targeted towards something. They are intentional. In their definition of action, Jensen and Schnack (1997) stated that it must both include an activity targeted at solving a problem and students’ involvement in deciding what to do. While taking action can be a part of ESD teaching and learning, it is not necessarily always so. Influencing something happening inside the classroom might quickly become an activity instead of an action.

**The student council pathway to participation and students’ self-perceived action competence for sustainability**

The student council pathway of participation significantly had a positive relation with all action competence factors. These results show that students’ experience of participating and influencing their school through the student council helps to develop their self-perceived action competence for sustainability. These results occur even though the questions about the student council were answered by all students, not only the student representatives. The results support Torsdottir et al. (2023), who argued that allowing students to participate in different aspects of school life is essential. By letting students choose what they want to work on and influence their school, they can feel ownership and integrate action for the common good into their identity (Chawla and Cushing 2007). This is supported by Goldman, Pe’er, and Yavetz (2017), who found that a feeling of ownership and empowerment are important factors for sustainable behaviour. During this work, they can become models of success for each other (Chawla and Cushing 2007) as well as influence their families and friends (Žukauskienė et al. 2021).

Participation through the student council had the strongest relation with self-perceived action competence in this study. This implies that students’ experiences of influencing their school through the student council are more important for their development of action competence than participation in the other aspects of school life investigated. There might be several reasons for this. One reason might be the action-taking aspect of participation. Action-oriented pedagogy can enhance students’ ability to participate, determine cause and effect, and envision possible solutions (Chen and Liu 2020). Previous studies have highlighted the importance of student democracy as a driving force for bringing about changes in school (Bjønness and Sinnes 2019). Thus, the work conducted by the student council might be directed more towards solving problems, making the aspect of action-taking more apparent in this form of student participation.
A second reason that the student council had the strongest relation might be due to the collective nature of influence through a student council. Life is not lived in a state of individual autonomy. There are many goals and possible outcomes that people cannot reach alone, so they work together to achieve what they want (Bandura 2000). Letting the students have collective influence might also avoid teaching them over simplistic and individualistic approaches, helping them to develop a critical understanding of a bigger picture (Jensen and Schnack 1997). If students experience that they can influence their educational settings, they are more likely to believe that the political system is responsive and possible to influence (Bandura 1997). Thus, to learn that achieving something in a group with a collective effort is possible, young people should be provided with opportunities to practise working towards social or environmental development with others (Bandura 1997).

No relation between the school and leadership or community connections pathways to participation and students’ self-perceived action competence for sustainability?

While the current study resulted in significant results for the teaching and learning and the student council pathways of participation on the students’ action competence, no significant results were found for the community connection or school and leadership pathways. The lack of positive results might be interpreted as showing that participation through these factors is not as important for students’ development of action competence. It might also, however, be caused by the implementation of the WSA in the participating schools. Several previous studies have shown little difference in knowledge, attitude and behaviour towards sustainability between students in schools with and without ESD-related programmes (Olsson, Gericke, and Chang Rundgren 2016). However, it is important to consider that the lack of student outcomes might be due to problems in the implementation strategies of the programmes (Cincera and Maskova 2011). One of the implementation strategies of a WSA to SD is the active use of student participation.

Cincera et al. (2019) looked at students’ and teachers’ perceptions of what implementation strategies made ECO-school programmes successful. They found an emancipatory approach where students perceived that they had possibilities of participation and ownership were seen as essential for the programme’s success. However, the students in the current study experienced limited participation, with the student council being the only factor with an average score higher than three (see Table 1). Developing the competence to participate well and make one’s own decisions requires practice. However, previous studies have shown that it is challenging to develop student participation in ESD (Boeve-de Pauw et al. 2015). Creating a reliable and trustworthy school structure that encourages student participation demands time and practice (Fielding 2001; Flutter and Rudduck 2004; Sund 2022). The data collection of the current study also took place during the Covid-19 pandemic, which influenced both the students’ possibilities for working in the local community and affected their possibilities of participating at school (see Torsdottir et al. 2023). That students had few opportunities to work with community connections and experienced limited student participation may be an important reason for the lack of significant results for these two factors.

It is also important to recognise that student participation should not only be done for the sake of participation. Participation can become tokenistic if it never leads to meaningful results (Fielding 2001; Jones and Bubb 2021). Interviews with students from the schools in ESD in Practice show that although they do get to influence to a certain degree within most aspects of school, it is usually less than they want and about issues that are not the most important for them (Torsdottir et al. 2023). Suppose this is true for the students in the current study. In that case, it might have discouraged further participation and even negatively affected the relationship between student WSA participation and the students’ self-perceived action competence for sustainability.
Another reason that our study did not obtain significant results for the community connection and school and leadership factors might be the individualistic nature of the questions in all factors compared to the student council. While the student council is collectivistic in nature, the questions in the other factors were more individualistic in that they contained questions about whether ‘I’ get to influence. The magnitude of sustainability issues calls for individual action as well as collective civic engagement, and people’s belief in their shared collective power is a key component of achieving desired results (Bandura 2000; Levy and Zint 2013). While many might feel that one person cannot make a difference, one might find that there is strength in numbers.

**Limitations and implications**

There are some limitations in this study. First, we conducted the data collection during the Covid-19 pandemic. Consequently, not all schools that were supposed to participate had the opportunity to do so. Also, within the participating schools, only some classes that were supposed to participate had the opportunity. As a result, the participants were not evenly distributed between the schools, with only 3.4% of the participants originating from one of the schools, while almost two-thirds were from another. Consequently, it is imperative to exercise caution when attempting to generalize the results to a broader population. The Covid-19 pandemic also influenced how the students were able to participate in school. The lockdowns and the insecurities many people felt during the pandemic might also have affected the students’ self-perceived action competence. Thus, repeating the study in a more typical year would be interesting.

Another limitation of this study is that the design does not allow for the conclusions of causality. While we aimed to investigate the impact of student participation on students self-perceived action competence to understand how schools can make a difference, a bidirectional relationship may exist. If students perceive that they have an influence and that their opinions and efforts to make a change matter, it might help them develop action competence. On the other hand, students who already have a high level of self-perceived action competence might recognize and pursue more school participation opportunities. This can then develop into a positive spiral, where both students’ participation in school and students’ self-perceived action competence will increase. Thus, performing the research as a comparative study with pre- and post-tests to see if there is a causality of the relation between student participation and students’ self-perceived action competence would also be interesting.

All schools in the current study participated in the ESD in Practice programme. Thus, we might assume some degree of homogeneity in these schools, making it impossible to see how the WSA implementation affected the data. While the schools have reported that they, at the time of the data collection, did not have a specific focus on student participation, they have had a focus on ESD, which might have positively skewed the results on the SPACS-Q. While the current study did not intend to measure the effect of the programme ESD in practice, future studies could include schools that are not part of a specific ESD programme or include a large variety of schools. By doing this, they could investigate if students’ WSA participation and students’ self-perceived action competence is different in schools not taking part in ESD programmes or schools implementing aspects of a WSA to different degrees. Also, student participation is only one of the determinants of a successful WSA. As we saw in the introduction, action competence is influenced by many internal and external factors. Other aspects of a WSA, like practical sustainability experiences encountered daily, might influence the students’ learning outcomes even without active participation. Therefore, the relation of student WSA participation, in combination with other potentially significant variables, with students’ self-perceived action competence warrants further exploration. Longitudinal studies could also contribute important
knowledge, as developing action competence takes time (Olsson, Gericke, and Boeve-de Pauw 2022). Thus, although such studies are challenging, they are important for understanding how students can develop their action competence.

Although questionnaires are an effective way to gather information from many participants and collect data on aspects that are not observable, like self-perceived action competence for sustainability, they also have limitations (Kormos and Gifford 2014). One limitation when using self-reported data is that it is difficult to know whether their perceived possibilities of participation are based on actual experiences and opportunities and how much their participation competence, motivation and self-efficacy have affected their opportunities to participate at their school. Although Kormos and Gifford (2014) argued that questionnaires play a crucial role in research on ESD despite the limitations, future studies could include other data collection methods, like observation data and interviews. Using a mixed methodology can provide a deeper insight into the statistical data and what is happening at schools.

There was no significant relation between teaching and learning in ESD and the students’ willingness to act. Action and practising to act are essential for action competence (Sinakou et al. 2019). However, although ESD focuses increasingly on action-oriented pedagogies and outcomes, traditional curricula often emphasise abstract knowledge and cognitive learning (UNESCO 2019). Through participatory approaches, students can experience opportunities on several fronts, including exercising their democratic rights and participating in decision-making and actions that promote justice, equality and well-being for all (Reid et al. 2008). Thus, it might not always be enough to participate in decision-making in school. Partaking in participatory action-oriented approaches in the students’ local communities can help students to be engaged in defining what sustainability means to them in their local contexts (Fischer 2012). Consequently, future research should consider exploring the relationship between action-oriented approaches in school, where students get to influence their local environments and their action competence.

Conclusions

An essential outcome of ESD is the development of action competence for sustainability among learners. This study found a positive relationship between student participation and students’ self-perceived action competence for sustainability within the context of three schools. No statistically significant results were found for the community connection or school and leadership pathways to participation. However, the students’ participation in the teaching and learning of ESD and participation through the student council each had a positive relation with students’ self-perceived action competence.

While the study offers valuable insights into the relationship between student participation and action competence, the methodology and the fact that the participants only came from a few schools limit our ability to determine causality and generalisability. Further research should include pre-post-tests and a more diverse sample to validate our findings across different contexts. Still, the results suggest that giving the students possibilities to participate in teaching and learning and through a well-functioning student council representing the student body may help students develop their action competence for sustainability. Participation through the student council has the strongest relation with the students’ self-perceived action competence. This might be because of the collective nature of a student council or because the influence through the student council, to a large degree, happens through actions with intentions to solve concrete problems. The current study provides important insight for the ESD research field on students’ perceptions of student WSA participation and its relation with their action competence for sustainability.
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