The Risk and Potentiality of Engaging with Sustainability Problems in Education—A Pragmatist Teaching Approach

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This article engages in the discussion about education's role in relation to sustainability problems, a debate characterised by a tension between two legitimate concerns: a concern about the instrumentalisation of education, and a concern for the urgent need of widespread engagement and mobilisation for coping with the consequences of severe socio-ecological problems. The authors argue for an approach that takes both concerns seriously. Drawing on transactional didactic theory—underpinned by a pragmatist perspective on the interplay of continuity and change through the phases of habit, crisis and creativity—they illustrate that engagement with real-world societal problems does not inevitably result in the instrumentalisation of education. It can, on the contrary, open up a space for newness, creativity, freedom and pluralism. Yet, realising this unique educative potential does not happen automatically. It requires specific didactical work, specific forms of teaching. Through a practical example, the authors illustrate how teachers can stage problematic situations and inquiries in such a way that sustainability problems are brought to the table, turned into a common matter of concern and made free by giving the students possibilities to renew the world. Thus, they turn the question whether or not to engage with real-world problems into the question how to do so.

INTRODUCTION

In the context of sustainability challenges, there is an ongoing debate about the role of education in relation to societal transformation. This debate is characterised by a tension between a radical pedagogical perspective, emphasising the risks involved in reducing education to an instrument for a predetermined societal change (e.g. Biesta, 2006; Masschelein and Simons, 2013; Säfström, 2011; Todd, 2011), and a radical emphasis on the urgent need for a transition towards a more sustainable world (Block *et al.*, 2018).

This can be seen as a tension between two legitimate concerns. On the one hand, a concern about the 'instrumentalisation' of education that renders students, schools and universities into objects of desires and goals determined by others instead of recognising them as persons and institutions in their own right (Säfström and Östman, this issue). On the other hand, we have a concern for the urgent need of widespread engagement and mobilisation for coping with the consequences of severe socio-ecological problems.

The aim of this article is to further explore this tension and to suggest an approach that takes these two legitimate concerns seriously—an approach where students, schools and universities can engage with urgent and far-reaching sustainability challenges without being reduced to instruments for externally determined demands. In what follows, we will first go deeper into this tension and the underlying concerns. Subsequently, we discuss how transactional pragmatism provides us with valuable conceptual building blocks that enable us to think beyond an either/or approach to these two legitimate concerns. We continue by elaborating on the didactical work that is needed to put this transactional approach into practice.

THE NEED FOR ENGAGEMENT VERSUS THE RISK OF INSTRUMENTALISATION

Engagement for a More Sustainable World

The pursuit of sustainable development is the subject of growing global attention. This is reflected in the United Nations' adoption of the Sustainable Development Goals (SDGs) that aim to 'take the bold and transformative steps which are urgently needed to shift the world on to a sustainable and resilient path' (UN A/RES/70/1). To realise this, a lot of hopes are pinned on learning and education which are broadly regarded as key to developing and maintaining a sustainable world. The transition towards a more sustainable society is often described as a matter of 'learning by doing' and 'doing by learning' (Van Poeck *et al*., 2020). In several global policy initiatives, schools and universities are attributed a leading role in devising solutions for sustainability problems. The United Nations proclaimed a 'Decade of Education for Sustainable Development' (ESD) from 2005 to 2014 emphasising that 'education is an indispensable element for achieving sustainable development'. As a follow-up, the 'Global Action Programme' on ESD has been launched with the aim 'to generate and scale up action in all levels and areas of education and learning to accelerate progress towards sustainable development'. Also, the SDGs highlight the importance of education. Besides the ambition to realise quality education for all (SDG 4) and to ensure that everybody acquires the knowledge and skills needed to promote sustainability (target 4.7), education is also considered a vital catalyst for realising the 16 other SDGs (UNESCO, 2014). Worldwide, these international policy initiatives trickle down into curricula, learning objectives, syllabuses, textbooks, classrooms practices, etc. Sustainable development has become a substantial part of the subject matter of many school subjects

and has resulted in cross-curricular projects from kindergarten to higher education.

The rise of sustainability education is not only the result of policy initiatives. Also, within schools and universities, among teachers, there is a broad consensus that this issue that largely affects our planet and the life of its inhabitants requires substantial attention in education (Tomas *et al*., 2017). The way in which this is put into practice varies across a diversity of fact-based, normative and pluralistic approaches (Öhman and Östman, 2019), including a multitude of the so-called 'problem-based' educational practices dealing with 'real-world' issues (Iversen and Jónsdóttir, 2019; Larsson and Holmberg, 2018; UNESCO, 2018). Furthermore, students are also concerned about socio-ecological problems such as climate change (Ojala, 2013; 2016; 2019). Through 'school strikes for climate' they not only call on decision-makers to take urgent and far-reaching measures, but also explicitly question the usefulness and sense of education as long as their concern for the climate crisis is not taken seriously. We strike *now*, teenage activist Greta Thunberg (2019) argues, because 'there is simply not enough time to wait for us to grow up and become the ones in charge'.

Instrumentalisation of Education

The relation between education and societal transformation has long since been the subject of a lively discussion in educational scholarship (e.g. Arendt, 1961; Dewey, 1916; Freire, 1972; Illich, 1971). Today, besides an increasing number of studies that aim to grasp, describe and prescribe how education can effectively contribute to tackling societal problems, there is a vibrant field of scholarship engaged in nuanced criticism of the tendency to translate social and political problems into issues that need 'educational solutions' (Biesta, 2006; Säfström, 2011; Simons and Masschelein, 2006, p. 395; Todd and Säfström, 2008). Arguments raised are, for instance, that such an instrumentalisation of education threatens the democratic potential of education (Säfström, 2019; Simons and Masschelein, 2010) as well as certain values that are highly cherished in relation to education in democratic societies such as freedom (Biesta and Säfström, 2011), pluralism (Todd, 2010; 2011) and opportunities for young people to initiate newness (Biesta, 2012). In order to shield these, Masschelein and Simons (2013) make a plea to preserve the school as 'free time'—one of the meanings of the ancient Greek word *scholè*—for study and practice and to gather young people around 'a common thing' (p. 10). In 'In defence of the school', they argue for establishing a time and space that is 'non-productive' (p. 28) and that is in a sense detached from the household, labour market, society and government. The demands of these spaces outside the school are then suspended, placed between brackets. Approaching the school as a place to remedy societal problems is in sharp contrast to the idea of education as free time for study and practice. Holding students responsible for existing social problems and for the realisation of the political dream of another, better society, the authors argue, is an expression of an irresponsible society where the old generation passes the burden that it is no longer able or willing to

bear to the young generation. Doing so, instead of taking responsibility for political change, it suspends the free time of the young generation in the name of addressing exceptional, urgent societal challenges. It is striking and painful to now witness the young generation sacrificing its own free time in the name of urgency while, at the same time, not depriving the old generation of the illusion that they can pass the burden: 'People always tell me that they are so hopeful that young people are going to save the world, but they are not', Thunberg argues, as there is no time to wait for them.

The discourse of 'education as a cure', as Todd (2016, p. 843) calls it, has also been challenged in the environmental and sustainability education (ESE) literature (e.g. Ferreira, 2009; Van Poeck and Vandenabeele, 2012; Wals, 2010). Jickling (1994), for instance, argued in his influential article 'Why I Don't Want my Children to be Educated for Sustainable Development' that 'education is concerned with enabling people to think for themselves' and that 'education for sustainable development … or education "for" anything else is inconsistent with that criterion'. The 'education' part of ESE, it is argued, needs to be something more than an instrument that services ethical or political goals established from outside its practices (Todd, 2016). Hence, also in this field the idea of education as a 'problem solver' (Van Poeck and Lysgaard, 2016) has been criticised for threatening values such as freedom (Lundegård and Wickman, 2012), pluralism (Öhman, 2006; Öhman and Östman, 2008; Van Poeck *et al.*, 2016) and opportunities for newness and creativity (Caiman and Lundegård, 2014; Garrison *et al.*, 2015).

A Matter of Either/or?

Being faced with the tension described above, the response to it should in our view not be sought in an either/or approach. It is not a matter of *either* choosing for engagement with sustainability problems and, thus, falling into the instrumentalisation of education, *or* choosing to prioritise democratic education, freedom, pluralism and opportunities for newness and creativity and, thus, banning the quest for solutions for sustainability problems from educational practice. If we consider both above elaborated concerns to be legitimate, the question that arises is rather if/how we can think and practice an approach to education where students, schools and universities can engage with urgent and far-reaching sustainability challenges without being reduced to instruments for externally determined demands.

What we aim to offer in the remainder of this article is a didactic perspective[1] on how educators can teach in a way that simultaneously takes both concerns into consideration and, thus, act in accordance with a twofold pedagogic responsibility. This responsibility has been strikingly captured by Masschelein and Simons (2013) in the metaphor of the teacher that brings something to the table and lets it go, makes it free. Referring to the work of Arendt (1961), they call on teachers to act 'out of love for the world ("this is important to us, the old generation") and out of love for children ("it is up to you, the new generation, to shape a new world")' (p. 87). By taking responsibility for the world, they argue, a teacher also takes

responsibility for the students. From this perspective, we believe, both options within the above problematized either/or approach would be irresponsible. Banning one's concern for sustainability problems from the classroom can in our view be regarded as failing to bring something to the table and, thus, to take responsibility for the world. 'Bringing nothing to the table', Masschelein and Simons (2013, pp. 86–87) argue, means giving students the message that 'I don't know what is important, I cannot and will not tell you, so figure it out for yourselves'. Hence, by refusing to take responsibility for the world one simultaneously fails to take responsibility for the students. The younger generation is left to their fate and deprived of the opportunity to renew the world. 'Indeed', the authors continue, 'how can they renew the world—how can they experience "newness"—if no one actually introduces them to the old world and brings the old world to life? But this also means that the teacher must let go of and make free whatever she brings to the table'. Making it free means bringing things to the table for study and practice, so that the students can give their own meaning to it. This is very different from laying something on the table accompanied by the message 'this is important, so you have to handle it this way' (Ibid., p. 87). Designing education instrumentally with the intention to teach students how they are to act in the future would deprive them of their own opportunity to renew the world (Lilja, 2018). The two aspects of this pedagogic responsibility, bringing something to the table and making it free, are thus inseparable. From a didactic perspective, what matters then are both the questions what to put on the table and how to make it free.

SUSTAINABILITY PROBLEMS AS A TRIGGER FOR INQUIRY AND NEWNESS: CONCEPTUAL BUILDING BLOCKS

Pragmatist theory offers fruitful conceptual resources to avoid the above highlighted pitfalls of an either/or approach. Paradoxically, we will show, it can be *precisely* the authentic engagement with the so-called 'real-world' sustainability problems and the quest for how to resolve them that can open up a space for newness, creativity, freedom and pluralism in educational practice. Drawing on a pragmatist theory of social change and linking that to a pragmatist theory of learning, we will highlight the unique educative potential of engaging with authentic sustainability problems in education.

Habit–crisis–creativity

Today, socio-ecological problems such as climate change severely disturb our customary ways of acting. They challenge many of our individual habits, but also create an impasse for a wide range of collective customs. The examples are countless. Extreme weather conditions make the growing of traditional regional crops ineffective. Harvests fail. The heatwave that hit Europe last summer disrupted numerous routines: changes in regular working hours, the closing down of childcare facilities, the cancellation of sport activities, etc. Increasing water shortages have not only led to the rationing of tap water in, for example, Cape Town, but also induced more and more conflicts and expelled people from their homes. Concerned young people

call on us to stop flying, stop eating meat, etc. Pragmatism offers us an interesting lens to approach such problems as crucial drivers for creativity and for finding new ways to inhabit the world. It does so, as Shilling (2008) argues, through its processual approach to the phases of *habit*, *crisis* and *creativity* that mark human action. Most of the time, people live their lives according to habituated beliefs and behaviours. Acknowledging that such habits dominate our everyday preoccupations, from a pragmatist perspective the default mode of human experience is non-reflective rather than reflective. We first start to think actively when we encounter problems, when facing situations in which we can no longer use our earlier acquired knowledge, skills and values to proceed as usual. Crises occur as the result of a significant mismatch between our habits and the social and physical surroundings in which we live. In situations where our habits are disturbed, we start to reflect. Hence, crisis can foster creativity (Joas, 1996). It can be a prelude to 'new beginnings'. Being robbed of their usual ways of acting, people are encouraged to rediscover the horizon of possibilities that exists within every situation in their search for reestablishing an effective, workable relationship with the world around them (Shilling, 2008). Crises that make habitual ways of acting untenable can thus pave the way for creative responses that hold the potential to shape the environment anew and for finding more sustainable ways to inhabit the world.

In the context of the discussion about education's role in relation to societal transformation, pragmatist sociological work on the interplay of reproduction (or habitual continuity) and change,[2] emphasising the crucial role of crises, is highly relevant and inspirational. It highlights the value of offering students opportunities to experience processes of habits–crisis–creativity (HCC-processes) because engaging with real-world sustainability problems can open up unique educative spaces in which newness, creativity, freedom and pluralism can emerge. It is precisely the *crisis* that makes this possible. Problems for which no-one has a solution[3] (yet) and which thus emerge as authentic, collective 'matters of concern' (Latour, 2004) prompt us to join with others in searching for *novel* ways to overcome these obstacles. The outcomes of creative actions forged in response to crises, as Dewey (1958, p. 246) argues, constitute 'the *unforeseeable* results of an adventure'. Dealing with such authentic problems in education thus can open up a space for renewing the world instead of for well-planned and effectively managed pathways towards predefined learning outcomes.

TRAJECTORIES OF LEARNING THROUGH THE PROCESS OF HABIT–CRISIS–CREATIVTY

Pragmatism's focus on how habit, crisis and creativity mark human action has also inspired a transactional[4] theory of learning (Östman *et al*., 2019a). Drawing on the work of Dewey (1938) it understands trajectories of learning as being incited by a 'problematic situation' in which our habitual ways of acting are disturbed and which requires 'inquiry' in order to enable us to proceed. Through experimentation one tries to solve the problem, which results, if successful, in new knowledge, skills, values, etc. This theory can

be used to understand the learning that takes place, for instance, in a very common classroom context where a student does not promptly succeed in solving a math exercise (i.e. s/he cannot habitually continue with the work) and needs to consult fellow students or the teacher (i.e. start an inquiry) in order to find a way out of the problematic situation. Yet, what is of interest here is to apply the theory to educative practices where the problematic situation is not just a disturbance that prevents a student to proceed habitually but an authentic, *collective* matter of concern that presents us with a crisis we can only overcome with creative, novel responses that none of those involved know in advance (see above). In the first example, newness emerges in the sense that the student will acquire new knowledge or skills[5] that are, however, not new for the teacher. In the second case, what is at stake is to find novel ways out of the problematic situation that are new for everyone, students and teachers alike. As such, these educationally located problematic situations become opportunities to creatively renew the world[6] by facing a crisis that prompts us to engage in an open-ended collective change. Such an integration of the above described HCC process in the learning trajectory, as we will show in the next section, requires didactical work.

In terms of the twofold pedagogical responsibility described above, what is put on the table, here, are real-world societal problems and the quest for how to resolve them. As argued, making free what is brought to the table requires that it is addressed as a resource for study and practice. In Dewey's (1938) words, we could say now 'taken up for inquiry'. Education based on inquiry, he argues, requires careful observation, reflective review and the approach of ideas *as ideas*, as hypotheses instead of as final truths. Treating ideas as truths takes away any reason for scrupulous examination (inquiry). Hypotheses, however, must be continuously tested and revised. Inquiry thus leads to judgement based on a wide range of information as well as to the 'production of new ideas' (p. 79). For an inquiry to foster newness and creativity, however, freedom and pluralism are crucial. Pluralism and dissonance, for Dewey (1916), are not only inevitable but also productive educational resources. Education is inherently a social activity which involves contact, communication and deliberation. The 'more numerous and more varied points of contact', he argues, the 'greater diversity of stimuli to which an individual has to respond' (p. 87). More variation in action can thus be liberated which remains suppressed in practices that shut out divergence and conflict. Therefore, he argues, 'a democratic society must, in consistency with its ideal, allow for intellectual freedom' (Ibid. p. 305), a mental attitude that requires a leeway for exploration, experimentation, application, etc. In inquiries characterised by intellectual freedom, knowledge, experiences and skills are not treated as something static that could be taught as a finished product. Rather than as a dictation, education takes shape as a co-operative enterprise. This does not mean, however, that established knowledge, methods and rules of conduct cannot have any directive value. 'We may reject knowledge of the past as the *end* of education', Dewey (1938, p.23) argues, 'and thereby only emphasize its

importance as a *means*', i.e. as an object for inquiry and a means for renewing the world.

A PRAGMATIST DIDACTIC APPROACH TO TEACHING THROUGH ENGAGEMENT WITH SUSTAINABILITY PROBLEMS

Didactical Work

Authentic engagement with (searching for solutions to) sustainability problems can open up a space for newness, creativity, freedom and pluralism in education. As such, it entails a unique educative potentiality: it offers students the opportunity to have a first-hand experience of renewing the world, of being a subject of change by being a part of HCC processes. But in order to make this happen, didactical *work* needs to be done. What actually happens in the classroom, after all, largely depends on teachers' preparatory work as well as on how they act in their teaching. In the following paragraphs we elaborate on this necessary didactical work, both regarding *what* to put on the table and *how* to make it free. Before we can make this more concrete, however, it is important to connect the above described learning trajectory to a theory of *teaching*. Our transactional teaching theory (Östman *et al.*, 2019b) distinguishes two types of didactical actions for teachers to support students' journey through the trajectory of disturbance, problematic situation and inquiry. The first type is oriented towards setting the scene for teaching and learning. The aim is to create a selective attentiveness necessary for putting relevant objects or phenomena in the world in focus for the activity. Thus, the teacher makes the students pay attention to a specific environment. Dewey (1938) distinguishes between 'surrounding' and 'environment' by emphasising that only some aspects of the (social and physical) surrounding conditions are attended to in action, i.e. become an environment. Teachers can help students to focus on those objects/phenomena that can be fruitful for the inquiry process as well as for creating disturbances. Thus, teachers' actions to set the scene are a form of 'pointing out', as the students' attention is directed, formed and shared (Rytzler, 2017). The scene-setting is an invitation to students to create relations to certain phenomena in the world. The second type of teaching action is concerned with making students do something with the objects/phenomena that are attended to, i.e. to coordinate the staged environment in relation to a purpose in order to achieve a certain outcome.[7]

In the remainder of this article, we will describe how teachers can employ these two types of actions to give shape to their twofold pedagogical responsibility of putting something on the table and letting go of it. Or, in other words, of offering students opportunities to renew the world with the help of what the 'old world' has to offer. This, as we argued above, should allow us to engage with real-world sustainability problems without falling into the problem of instrumentalising education. To avoid instrumentalism, introducing students to the old world should not be seen as a form of preparation that qualifies or socialises them for a future role (Simons and Masschelein, 2010; Lawy and Biesta, 2006). We need to think of the double pedagogical responsibility as functioning *here and now* in the

teaching, through bringing in authentic collective problems and thus integrating the HCC process as part of students' learning trajectory. In doing so, however, the challenge is to avoid another form of educational instrumentalism, i.e. turning educational settings into sites for solving societal problems. Through instrumental approaches, schools and universities fail to realise the unique educative potentiality implied in engagement with sustainability problems, i.e., to offer students first-hand experiences of being a *subject* of change. Instead, they are reduced to an *object* of change, an object of desires and goals determined by others.

The unique educative potential of being part of HCC processes can take shape in many different ways. Students can be offered multifaceted experiences of being able to renew the world, for example to come up with new data, to come up with new ideas about how to solve a problem, to come up with new ways to turn these ideas into practice. We will illustrate some of these diverse ways that can come into existence when integrating an authentic HCC process into the learning trajectory through thoughtful teaching. The focus is on crucial instances in teachers' didactical design (both in preparing the teaching and in the actual teaching) of a fruitful learning trajectory for the students: the staging of problematic situations, and the staging of an inquiry through collecting data, developing hypotheses and conducting experiments. In all these instances, the teaching involves both bringing something to the table and making it free, that is, creating opportunities to learn from the old world as a means for renewing the world.

Staging Problematic Situations

Bringing real-world sustainability problems into the classroom involves didactic choices regarding *what* to lay on the table. In selecting the topic and content of teaching, the two aspects of the teacher's pedagogical responsibility are entangled. By selecting a topic, the teacher takes responsibility for the world by inviting the students to pay attention to something that we should—according to her/him—be concerned about. This could be, for instance, plastic waste. The plastics that have permeated our modern societies come with benefits for consumers but also with a huge downside: plastic waste ends up in the marine environment, causing tremendous problems (Jambeck *et al*., 2015). In a business-as-usual scenario, the oceans will contain 1 tonne of plastic for every 3 tonnes of fish by 2025, and even more plastic than fish by 2050 (Ellen MacArthur Foundation, 2016). Microplastics, generated by the degradation of plastic objects, accumulate in seas and oceans. Government agencies, businesses, research institutes, grassroots movements, etc. are making great efforts to tackle these challenges through legislation and innovations in product design, chemical design, recycling technologies, business models, consumer practices, etc. So far, they have not succeeded in resolving the problem. Passing this burden to the students by asking them to do so would be both irresponsible and naive. Hence, recognising the educative value of such authentic sustainability problems, the challenge for a teacher is how to turn these matters of concern into educational—or, better, educative—content. This requires what we will call

'didactic carving' in order to stage problematic situations that are 'in reach' of the students.

In order to make HCC processes educative, it is important to ensure that students don't become overwhelmed by and remain stuck in the crisis. Therefore, we cannot ask them to solve the many problems related to plastic waste that neither specialised scientists nor powerful political actors have so far been unable to solve. What we can do, however, is to carve out of this massive matter of concern those topics that are, on the one hand, graspable for the students and, on the other hand, challenging and motivating enough in order to be an *authentic* problem. Authentic problems are problems for which neither the students nor the teacher knows the solution and which thus require an authentic inquiry—and not a pseudo-inquiry that systematically guides students towards the 'right' solution. As such, the problem turns the teacher into an 'ignorant schoolmaster' (Rancière, 1991) as it creates conditions in which nobody has the expertise to solve it. A 'graspable' problem, then, is to be understood in terms of potentiality. We do not (yet) have the solutions, but at least it is possible for the students to get a *sense* of what fruitful next steps on the pathway toward solutions could be. Carving out of the plastic waste problem the sub-challenge of how to reduce the consumption of single-use plastics, for instance, stages a much more graspable topic for secondary school students to address than, say, the challenge to design new chemical compounds with increased recycling potential. Furthermore, when carving out a teaching topic it is important to stage problems that are in reach for the students in the sense that they can experience the ability to access and change them. Thus, the teaching topics we carve out need to be somehow related to students' lived life, for example, problems in some practices at school, in the family or in society.

Staging Inquiries

Starting from the carved-out topic of how to reduce consumption of single-use plastics in the students' households, the school or the local community, we will now exemplify two different ways of dealing with authentic sustainability problems in the actual teaching practice. The first one is bringing the problem into the classroom with the purpose that students come up with *ideas* on how to solve the problem. The other way expands this by including collaboration with actors outside education in order to move from ideas for solving a problem to being part of trying to put *solutions into practice*. These examples involve several aspects of the didactical work through which teachers stage inquiries: supporting students to collect data, develop hypothetical solutions and conduct problem-solving experiments while, throughout, creating opportunities to learn from the old world as a means for renewing the world.

How can a teacher design an inquiry into the problem of how to reduce single-use plastics where renewing the world takes the form of developing new ideas for solutions? A starting point in the didactical work could be to design data collection in such a way that it allows students to experience newness. The teacher might ask the students to monitor for a period

of time all the plastics they consume, to register the amount, the purpose of using it, where it comes from, what type of plastics, etc. Executing this task requires a specific focus of attention; the students need to focus on plastics and not, say, paper. In order to facilitate this attentiveness, the teacher needs to bring in existing knowledge, for example how to identify different types of plastic. The students are also supposed to *do* something with the attended object, for example calculate the weight. Also, here the 'old world' (e.g. knowledge of weight measurements) enters the scene. To guide what the students do with the objects brought to their attention, the teacher can offer a protocol designed to facilitate genuine investigations that will generate *new* data. What these will be can then not be known in advance, not even by a very knowledgeable teacher, because it is an *authentic* inquiry in a specific context that has not been investigated before. The aim of a protocol is to allow the students to bring comparable data to the table, thereby turning the individual task into a common matter of concern. The newly generated data may be surprising and can subsequently open up novel inquiries, inspire students to formulate new questions or problems.[8] For example: Could we organise our consumption without single-use plastics? In this inquiry process, the teacher can instruct the students to search for available alternatives to plastics, to explore advantages and disadvantages of each alternative by conducting ecological impact assessments and/or to interview users, etc. A next step then could be to use this new knowledge in order to design an action plan with measures that could be taken to reduce the consumption of single-use plastics. Here, again, the teacher makes the students attentive to certain things in order to do something, thereby enabling them to use old knowledge, existing experiences, etc. to create something new.[9] This is an example of how inquiry, as Dewey (1938) argues, can lead to judgement based on careful observation and reflective review of a wide range of information.

Let's now move on to how a teacher can design inquiries that expand the one described above by moving beyond ideas for solving a problem to experimenting with putting solutions into practice with the involvement of actors outside education. If we return to our example, extending the educational setting can be done in different ways. The teacher could ask the students, for instance, to engage with the challenge of avoiding single-use plastics in their own household for a certain period and to report and reflect on their experiences. Or, in the context of the so-called 'whole school approach', to take initiatives to ban single-use plastics from the school campus. Or to reduce the sale of single-use plastic and increase the offer of available alternatives in local shops. By making this extension of the educational setting, the students are given a unique possibility to get first-hand experiences of the complicated process of turning *ideas* into concrete new *actions*. One way of staging such an inquiry is to ask the students to interview shop owners in the local community to test if and how their ideas for reducing the sale of single-use plastics could be put into practice. Through the interviews the students might become aware of a plurality of sometimes irreconcilable concerns that come together in the problematic situation they are addressing: a concern not only for the environmental damage caused by

plastic waste, but also for compliance with food safety regulations, for income loss that might be caused if one no longer offers what the customers desire, for causing other socio-ecological problems such as food waste by banning plastic packaging that extends the conservation period of fruits and vegetables, etc. Thus, the inquiry brings in the possibility for students to test and develop their ideas for problem solving. As Dewey (1938) emphasises, in such an inquiry ideas are treated as hypotheses that must be continuously tested and revised. The didactic work done by the teacher includes, here too, both setting a scene (e.g. focussing students' attention on shop owners' concerns) and making the students—e.g. with the help of a protocol (see above)—to do something with the objects/phenomena that are attended to. The latter, for instance, could be to further explore the diverse concerns raised about the topic (by studying already available information about it, i.e. introducing the students into the 'old world') and, based on this, formulating revised solutions and starting up cooperation with the shop owners. Such experiments with turning hypothetical solutions into concrete actions offer the students a unique experience of being a subject of change together with others.

CONCLUSION

In this article, we engaged in the discussion about education's role in relation to sustainability problems that is characterised by a tension between two legitimate concerns: a concern about the instrumentalisation of education, and a concern for the urgent need of widespread engagement and mobilisation for coping with the consequences of severe socio-ecological problems. Dealing with this tension, we argued, is not a matter of either engaging with sustainability problems, thereby falling into the instrumentalisation of education, or banning the quest for solutions for sustainability problems from educational practice in order to prioritise democratic education, freedom, pluralism and opportunities for newness and creativity. We have illustrated how engaging with authentic sustainability problems in schools or universities can offer a *unique educative potentiality* for the students to experience diverse forms of being able to renew the world by being part of HCC processes. As such, engagement with real-world societal problems does not *inevitably* result in the instrumentalisation of education but can, on the contrary, open up a space for newness, creativity, freedom and pluralism. Yet, the latter does not happen automatically; it requires specific didactical work. Thus, we turned the question whether or not to engage with real-world problems into the, in our view, more relevant question *how* to do so. The transactional teaching theory—connected to a theory of learning and underpinned by a pragmatist perspective on the interplay of continuity and change through the phases of habit, crisis and creativity—allowed us to elaborate how teachers can put into practice their twofold pedagogical responsibility of bringing something to the table and making it free. This can be done by staging problematic situations and staging inquiries in such a way that sustainability problems are brought to the table, turned into a common matter of concern and made free by giving the students possibilities

to renew the world. A consistent focus on the double responsibility of the teacher is a prerequisite for education to have something to offer in view of sustainability without falling into instrumentalisation. Out of love for the young generation and their freedom, 'free time' and chance to renew the world; but also, out of love for the world. After all, offering educative spaces, i.e. spaces where judgement and action are preceded by inquiry (careful observation and reflection), is perhaps what is most needed in the face of severe crises such as the current sustainability crisis.

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ACKNOWLEDGEMENTS

NOTES

1. We use the term 'didactic' here in line with the Continental, Northern European tradition of 'Didaktik' of which the reflexive pedagogic ideas differ considerably from the more narrow and instrumental use of the term in Anglo-Saxon contexts focusing on methods, instruction and their effects on learning outcomes.
2. Drawing on the work of the Chicago School of Sociology as well as multiple topical examples of empirical research, Shilling (2008) interestingly highlights transactional pragmatism's potential to overcome important limitations of traditional sociological research paradigms that either start from the primacy of the environment in which action occurs (and, thus, fail to grasp the way in which the actions of individuals can actively shape social systems) or from the primacy of the self-directing individual (thus struggling to incorporate a comprehensive sense of the wider social and cultural factors affecting action).
3. Some might be convinced of having a solution, but if this were the case, there would no longer be a problem. Thus, as long as, for example, proposed solutions are not sufficiently agreed-upon, supported, operationalised, etc. to be put in practice, they are at best only partial solutions for the problem at hand.
4. This theory is inspired by Dewey's work on education. Although it was first through his collaboration with Bentley that he consistently used 'transaction' as a central notion in his writings (Dewey & Bentley, 1949), the transactional perspective can—in retrospect—already be recognised in his earlier writings on education. This anti-dualist philosophy understands education as a process in which the self and the world change reciprocally and simultaneously. Thus, transactional pragmatism 'sees together' what other philosophies such as rationalism or empiricism 'see apart': mind and matter, subject and object, self and world (Ryan, 2011). See also Östman and Öhman, forthcoming.
5. And thus, renew the self.
6. As individual participants will, through such an HCC process, also acquire new knowledge, skills, values, etc. the renewal of the self and the renewal of the world go hand in hand.

7. Obviously, purpose and outcomes should here not be understood in an instrumental way but, on the contrary, in relation to offering opportunities to renew the world.
8. It is important to recognise here that these questions or problems are not necessarily fully graspable for the students in detail and depth from the start. During an inquiry, a parallel process is occurring: while developing answers (solutions), the initial question (problem) becomes gradually clearer.
9. Renewing the world, here, should be understood contextually. Although many if not all the measures in the students' action plan might already exist in one way or another, bringing them together through a joint inquiry does add newness in this concrete local context.

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