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ABSTRACT

As a society, we face increasingly complex and intertwined environmental issues, such as extreme weather events, droughts, sea level rise, and unprecedented loss of biodiversity. The extent and ramifications of these issues remain largely unknown and clear-cut solutions are out of reach. We thus refer to them as environmental wicked problems (WPs). For decades, schools have been seen as the place where younger generations should learn about WPs and acquire a large variety of tools to face them. Instead, in this paper, we turn to emotions, and our aim is to explore how they come to matter in educational activities on WPs. To do this, we facilitate encounters between students and environmental WPs *via* process drama, thus opening up a space, a happenstance. There, students are not asked to resolve the environmental WPs, but are allowed to experience them, and thus (re)act and relate to situations, as well as human and non-human objects. Under the framing of Sara Ahmed's 'sociality of emotions', we study these happenstance encounters, the emotions that emerge and we then unpack what these emotions do, their work, both to the activity and to its participants.

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Introduction

> And you've met Sadness. She, well she…I'm not actually sure what she does. And I've checked, there's no place for her to go. Joy, in the movie 'Inside Out'.

During the first *Inside Out* movie, viewers enter the mind of an 11-year-old girl, Riley, during her family's relocation from Montana to California; and meet the five emotions (intuitively named Joy, Sadness, Anger, Fear and Disgust) that oversee her behaviors and moods. As the events unfold, Joy, who has been the leading emotion throughout Riley's happy childhood, learns to accept the other emotions as equal players in Riley's growingly articulated life. In particular, she understands the vital role played by Sadness, who is the only emotion that manages to save Riley from a depressive episode by allowing her to finally embrace her sorrowful feelings surrounding the relocation. *Inside out* thus shows young (and not so young) audiences that all emotions need to be accepted, felt and dealt with. In this paper, as we explore the role that

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emotions play as 11- and 12- year-old students encounter wicked problems, we incorporate this message in our educational practice.

Environmental and sustainability problems are well known as being complex and multifaced. They are not 'tame' as if there is a guarantee of a 'correct' solutions, but rather 'wicked' which Rittel and Webber (1973) pointed out for more 50 years ago. By definition, Wicked problems (WPs) are unsolvable, and their complexities are characterized by epistemic and axiological tensions and gaps (Murakami et al., 2017; Block et al. 2019; McCunea et al. 2021). As WPs are increasingly defining our present and will play an even more significant role in shaping our future, they have gained much attention in Environmental and Sustainability Education (ESE) research.

The concept of WP is often described as complex problem, design problem, grand challenge, real-world problem, and big problem (Lönngren 2019). It is far from evident, however, how education can support students to engage with WPs. One solution to educationally help students navigate the unsolvable and deal with the 'wickedness', is to make the problem the core of the educational practice. Cross (1982), for instance, argued that one way to practice and stay with the wickedness, is to focus on how a problem is framed. Similarly, ESE research has for a long period of time argued for pluralism and pluralistic approaches in education (Tryggvason, Öhman, and Van Poeck 2023). For example, Kronlid (2021) suggests a framework of four styles for dealing with wicked problems by drawing on Donahue and Ochoa Espejo (2016) work. The first two styles, *solving* and *dissolving*, guide students to find better solutions though new scientific facts or identify false premises to reframe the argument. The other two styles, *pressing* and *resolving*, assume there are no clear solutions. By pressing the problem, the educational aim is to deepen the understanding by exploring the unsolvable nature of the problem, and by resolving the aim is to find a way to reconcile with the problem and learn to coexist with it.

Research has also shown that wicked problems evoke emotions, such as desire for change, emotionally invested values, feeling confident and competent, and trust and faith in adults (Almers 2013). For example, Ojala et al. (2021) show how feelings of worry, anxiety, and 'ecological grief' are likely to be present in ESE and how we need to make a space for hope to avoid an 'eco-paralysis' (Usher, Durkin, and Bhullar 2019) which might prevent people from acting. Yet, this comes with a risk that the educational practice creates narratives on how to behave or act (Ideland and Malmberg 2015). To navigate the unsolvable, deal with the wickedness, and avoid pre-given narratives is to make space for emotions, all emotions, and allow them to affect ESE meaning making processes in educational practices. For example, Gelinder, Hjälmeskog, and Lidar (2020) show how emotions connected to taste were a deal-breaker when dealing with sustainable food consumption. Another example, pointed out by Hofverberg and Westerlund (2021), is that students did not want to engage in certain practice due to feelings of disgust connected to the teaching content and thus refuses to participate. As such, these examples show that emotions connected to taste and disgust need to be addressed if students are to be able to engage with the educational activities. A third example, argued by Lindgren Leavenworth and Manni (2021), is how literature, and specifically speculative climate-fiction (cli-fi), may be used as an educational space where it is possible to 're-think traditional knowledge, solutions and norms of doing and living' (738). Speculative cli-fi is full of emotions and future scenarios, but when presented through literature, it provides a safe space where students can broaden discussions in different forms. A fourth example, investigated by Manni, Sporre, and Ottander (2017), looks at how emotion and values affect meaning making processes. In particular, the article argues that students' personal emotion judgements were present at the beginning of the educational project, whereas students' value judgements were more present in its concluding phase. Based on their empirical findings, they argue that values are formed and expressed through personal experience. On a similar note, Rickinson and Lundholm (2008) show that emotions are experiences by students as a challenge in environmental education courses. The experience shapes what the students could learn. This empirical research shows that emotions are part of the meaning making processes, and provides a more nuanced

understanding of the diverse ways through which emotions are part of the ESE meaning making processes. Despite differences, the common focus of these papers is the outcome of meaning making processes, which is of course valuable in educational practices. However, when dealing with WPs, the outcome is somewhat blurred as the WP is unsolvable. Accordingly, rather than searching for closure or end-in-views, this paper focus on how middle school students practice to grip – not solve – WPs and how emotions come to matter in these educational practices. As a case for this educational practice, two groups of middle school students (11-12 years old) were given a space to practice encounters with WPs through a series of workshops in which students were positioned in a fictive scenario, connected to the WP at hand. Through process drama, students got to experience and discuss the complexities of the WP, which was introduced unsolved and left unsolvable. We refer to this open-ended space as a happenstance (Ahmed 2004) to state how the full range of emotions was allowed to happen and to influence the activity.

The aim of this article is to explore how emotions come to matter in the educational activity on WPs. The following two research questions were formulated:

1. Which emotions emerge in the happenstance as students encounter wicked problems via process drama
2. What is the emotional work at play? Namely, what do these emotions do?

The outline of the article is as follows: In the first section below, the theoretical stance of Ahmed (2004) is outlined, specifically, her model of 'sociality of emotions' and her takes on the idea of happenstance. Afterwards, the reader can find a thorough description of the process drama workshops, as well as how the empirical data was generated and analyzed. Next, we present the results. The article ends with a discussion on how young teens practice to (un) engage with wicked problems in middle school, and the consequences thereof.

Emotions in the happenstance

Emotions matter in meaning making processes, and we have provided examples from previous research. In everyday life, however, a common idea surrounding emotions is that we should not pay too much attention to them, as they are not trustworthy. Emotions can fool us, is a common expression, or one might say: 'you better sleep on it', to point out that decisions should not be made on the immediate emotional reaction. Yet, emotions affect us, and this becomes especially true in educational practices. For example, one can easily spot – in action – a person's joy in what they are doing, or their frustration. Another common idea in relation to emotions is that they belong to the individual. A person *is* angry or happy. Yet, emotions never occur in isolation – emotions are always a response to something that happens, internally or externally. To be able to address emotions in this study, and then explore what emotions do, we turn to Ahmed's *The cultural politics of emotions* (2004) and her model of 'sociality of emotions'. As a starting point for Ahmed, emotion is a form of action. Rather than asking what an emotion *is*, Ahmed pays attention to what an emotion *does*, its work, and how it operates in constructing bodies (Ahmed 2004, 4). Ahmed also argues that emotions are not just individual experiences but shaped by social norms, values, and expectations and are often used to reinforce existing power structures. She says:

> Emotions are not simply something I or we have. Rather, it is through emotions, or how we respond to objects and others, that surfaces or boundaries are made: the I or we are shaped by, and even take the shape of, contact with others. (Ahmed 2004, 10)

From this stance, emotions as seen as 'relational: they involve (re)actions or relations of 'towardness' or 'awayness' in relation to (…) objects' (Ahmed 2004, 8). For example, for Ahmed the openness to the pain of others is a move towards, a (re)action of sympathy, as 'I am moved

by what does not belong to me' (Ahmed 2004, 31); while disgust is a move in the opposite direction, a rejection of the other and their experience.

Furthermore, in this study, we make use of Ahmed's take on happenstance as an open-ended space where negative as well as positive emotions are allowed to happen and take space (Ahmed 2010). As students encountered various objects during the workshops, all (re)actions students had and all relations they established in the happenstance of the process drama were given space and were allowed to affect the activity. Similarly to the insolvability of WPs, which was left open, students were not encouraged to embrace positive emotions and discard negative ones. Sadness is not going anywhere, as Joy observes in our opening quote.

These (re)actions and relations "shape the 'surfaces' of individual and collective bodies" (Ahmed, 2004), which in our case consist of the roles and the elements that students encountered in the scenarios– such as birds, people, walls, supermarkets – as well as in their classrooms – peers and teachers. The emotions along the student(s)-scenario surface sit on the foreground of our analysis, together with the work these emotions do. In the background, the emotions shaping surfaces in the encounters within the classroom are also presented here, and their distinction is discussed in the text. Before we delve into the analysis of the emotions in the happenstance, the process drama workshops are described to provide a deeper understanding of the context.

Material and methods

Process drama workshops

To explore how emotions come about when students practice encounters with wicked problems, two case studies (Merriam 1985) were conducted in two schools that we will call Birch and Elm.

Each case study consists of three workshops that were conducted over the course of a few months in a collaboration between the first author and two middle school classes in the south of Sweden (11 to 12-year-old students). One of the schools, Birch, is a private institution where students are acquainted with art-based methods. Elm instead is a public school whose students are mainly accustomed to frontal lectures and solo-studying, and where a large portion of the student population does not master Swedish, the language of instruction. As the project rolled on, the collaboration in Birch involved a social science teacher and a group of roughly 20 6th graders. While in Elm the workshops were carried out together with a natural science teacher and a group of roughly 16 5th graders. The participants of the two institutions never met as a further guarantee of the anonymity of all those involved.

The workshops focused on different WPs (see Table 1). The first two topics (food and sea level rise) were selected in agreement with both teachers, as they considered these issues to be close to the students' own experience. The WP of the last workshops instead was selected in each school by the students themselves during group-wide meetings held on a separate occasion after the second workshop.

All workshops proceeded in a similar manner. First, the WP at hand was briefly introduced to the class *via* short presentations (~5/10 min) meant simply to awaken their interest. Then followed the process drama (~40/45 min), which could be summed up as a role play with tension at its core (Dunn 2016). In process drama, participants are placed in a scenario and are often assigned roles to play (sometimes they are free to decide the roles themselves). Scenario and roles are chosen in a way that creates various degrees of tension among the roles, or between the scenario and the roles (Lehtonen et al. 2018; Dunn 2016). For instance, in the sea level rise workshop, the scenario of the island threatened by sea level rise put all its inhabitants in a tense situation given the danger faced by their livelihoods, while possibly competing interests of the roles opened up for further tensions.

During the process drama, each group was expected to define how their role would position themselves with respect to the WP, from within the scenario, with the aim of then sharing their

Table 1. On the left-hand side the wicked problems each workshop focused on, in either Elm or Birch.

WP	Scenario	Roles
Food production workshop 1 Birch & Elm	Farmers pitched their produce to stores and consumers who then decided what to buy from whom	• Organic farmers • Conventional farmers • Local farmers • Stores • Consumers
Sea level rise workshop 2 Birch & Elm	Inhabitants of an island threatened by sea level rise deliberate on adaptation strategies	• Elderly • Children • Wildlife association protecting birds living along the coast (Elm) • Birds living along the coast (Birch) • Tourist industry
Meat consumption workshop 3 Birch	In a dystopic future, to fight global warming, all governments enforce the Lancet diet (Willet, Rockström, Loken, Springmann, et al., 2019) with rations. Two big consequences concern meat and sugar consumption, the former is reduced to nearly 0, and the latter is cut to a quarter for the average swede.	• Youth • Meat industries • Sugar-related industries • Culinary culture association
Deforestation workshop 3 Elm	In a dystopic future, to preserve biodiversity, the Swedish government prohibits all humans from accessing forests.	• Children • Sámi reindeer herders • Logging industry • Association protecting • the Swedish right of common (Naturvardsverket, 2011)

On the left-hand side the wicked problems each workshop focused on, in either Elm or Birch. In the mid column a description of the pertaining scenario, on the right-hand side a list of the roles assigned to students for each workshop.

thoughts with the other stakeholders. This, as expected, created further tension within and between the roles, because of their diverse viewpoints. The activity ended when all the roles presented their positions and asked each other a few clarifying questions. Importantly, they were never asked to converge on one 'right' position, neither within nor between roles. At times, even within groups they did not reach an agreement. WPs are unsolvable, and therefore in the activities we left them unsolved.

The analysis of the process drama happenstance

All the workshops, as well as the meeting to select the third topic, were audio recorded and all recordings were later transcribed and translated into English. All students whose voices got recorded had given their written consent before the activities began, as did their legal guardians. In fact, prior to the beginning of the workshop series, they were given printed forms containing information on the purpose and modus operandi of the activities, with special attention to the voice recording. They were reassured that the students could leave the activity at any moment without any consequence, and they were also provided with a list of contacts in case they had any queries. This project in all its portions followed research ethics guidelines by the Swedish Research Council (Vetenskapsrådet, 2017), and was vetted by the Swedish Ethical Review Authority (Etikprövningsmyndigheten).

The entire body of transcripts of the workshops, together with their 'sound' counterpart, constitute the main material analyzed in this paper. During the collaboration, the first author kept a research diary of what was happening in the classroom during the workshops, of the planning and debrief meetings with the teachers, as well as general impressions of both groups and schools; these notes provide a context for the analysis.

We carried out a thematic analysis (Terry et al. 2017) on our multimodal data (Mooney & Bhui, 2023), namely the transcripts, recordings, and observation notes, searching for emotions.

As our workshops made room for encounters in the happenstance (Ahmed, 2010), participants came in contact with various objects in the scenario, their peers within and without the same role, other roles, as well as objects beyond the assigned roles, and they (re)acted or related to them in various ways. Those (re)actions and relations, following Ahmed's model of 'sociality of emotions' (Ahmed, 2004), are the first focus of our analysis. Secondly, these emotions we trail are generative, at times they modify the course of the activity, or sustain it, they teach, they challenge. This 'emotional work' is our second focus.

We provide here examples of how we proceeded and combined the different kinds of data at our disposal. Reading through the transcripts, we encountered utterances (e.g. 'Poor hens!') or comments (e.g. 'It was nice to be 5 again.') that hinted at an emotion. Alternatively, we proceeded from instances that had captured the attention of author 1 during observations (e.g. wide-spread laughter, and the ensuing silence after a presentation, or a group member standing up) and had therefore been noted down in the research diary. Once we had this initial selection of moments that hinted at emotions, we went back to the original recordings and listened to the tones of voice accompanying those instances. For instance, 'Poor hens!' was exclaimed in a high-pitched tone, signaling shock and pain; while 'It was nice to be 5 again' was accompanied by a playful, happy giggle. The class-wide laughter was of a scornful nature, and the student standing up sounded very excited. Finally, we got ourselves acquainted with what had happened before to the person who uttered that comment to see what they were (re)acting or relating to. In the section below we provide descriptions of all the moments we have selected to showcase emotions.

To guarantee the anonymity of the participants, no names nor gender were recorded in the transcript at any point. To simplify the fruition of the quotes, we mark them with a capital letter; within each interaction the lettering indicating students starts anew with A, B, C, etc., while the teachers' replies are always marked with a T.

Results

Here, we present the results of the analysis, where we provide thick descriptions of the events to guide the reader through how we interpreted each occurring emotion. Sometimes we provide a summary of the dialogues, especially when the exchanges were long and repetitive, otherwise, we write verbatim what was uttered. When the tone of voice or body language played an important role in our understanding of the situation, we describe it thoroughly, based on the recordings or the observation diary.

As students encountered wicked problems through process drama, they encountered various experiences, viewpoints, and values. Whether it be a painful risk or a favorable outcome affecting their role or someone else from the scenario, students (re)acted and related to them. As previously mentioned, our main focus are the emotions happening in the encounters between students and the scenario, which we present alongside those happening among peers. We showcase here those various emotions to answer RQ1, then we describe the work those emotions did in those situations addressing RQ2.

The emotions are gathered under four headlines: happy, mixed, angry and painful. First, we present examples of such emotions happening across workshops and schools; then, we jointly discuss what those emotions did.

Happy emotions

In this first example we are in Elm, during the second workshop. The tourist industry, after discussing possible adaptation strategies to the rising sea levels, agrees that building a protective wall is preferable, and that their shared wealth and high number of employees will be key players in this endeavor. At this point, they argue excitedly about which material would be

preferable, which height more efficient, and which creative extra features they might add to the wall. One of the members even stands up and enthusiastically showcases their ideas to the group with large body movements and a raised voice, causing the teacher to intervene. The students saw a positive outcome for their role in this adaptation effort, and had an **excited** and **creative** (re)action to it.

Across the room from the tourist industry, other inhabitants of the islands are discussing: the children. This group shows a playful attitude towards the rising sea level, as one can see from this extract when they present their line of thought to the class:

> A So we are kids, which one will we think is the coolest? I think we are going to like it if they heighten the houses.
>
> B Yes.
>
> A So we can run around under the houses, and play.
>
> B Yes, and from the balconies go like 'Oooh!'
>
> A Yes, and then jump. A wall is also cool, but it won't be as fun. (…) We are 5 [years old], we are not going to worry about swimming to our friends, we are going to think it's cool. (…)

During their discussion, once they decide autonomously their age to be 5, as the group description only said 'children', they joke about swimming, jumping, and rowing on small boats. After their presentation, transcribed verbatim above, as the teacher questions the economic soundness of their plan, they respond that, as kids, they do not concern themselves with money. Furthermore, at the end of the activity a classmate from another group approaches them with the comment:

> C As kids maybe you just thought about having fun.
>
> B That's the point. It was nice to be 5 again. [giggles]

We can see that these students encountered the playfulness and carefreedom of the children living on the island and (re)acted **joyfully** to it.

Similarly positive feelings are visible in Birch, in the last workshop. Here, the meat industry, strongly affected by the imposed Lancet diet, is figuring out how they are going to resist.

> A First, we lower our prices, very low [protests from the group] Wait wait! This way, the other meat industries will go bankrupt. (…) then we take all our meat and increase our prices like crazy, and there is no one else to buy from, and we have the most expensive meat ever. (…) So, after we have increased the prices so much that people cannot buy meat anymore and say 'first, we couldn't eat the meat, now we cannot even buy it'.
>
> B The stores don't want to buy it anymore.
>
> A Exactly, then we cannot eat meat at all anymore, then people will be like 'we cannot take this anymore, we vote them out'. [excited reactions from the entire group]

As one student comes up with a daring plan to reverse the governmental imposition, the other members are at first contrary, protesting and questioning. However, once they figure that this scheme might turn things in their role's favor, they (re)act **excitedly** to this positive outcome and to the plan that might bring it about.

In all the above encounters, the lived experiences of the roles in the fictive scenarios sparked excited, joyful and playful (re)actions in the students, as their tone of voice, body language and words signaled. These happy emotions gave energy to the activity, for instance igniting students' discussions about the details of the wall they meant to build, their lives' new possibilities on an island covered by water, or the political turmoil and subsequent new opportunities an extreme price rise would provoke.

As previously mentioned, the participants are not only (re)acting and relating to objects from the process drama scenario, but also to their peers and teacher and overall classroom dynamic. At times, such interactions are cause for happy emotions. In the first instance, we are in Birch, during workshop 3, when the youth group is ready to present their reasoning to the class:

A We will win this one! So professional.

B The others are not as smart.

A We are so serious we can go to 'Lilla Aktuellt' [Swedish TV news for younger audiences] with this and be like: yeah!

[They present to the class]

T I have to say there were some really really good arguments.

A&B&C Yes! Yes! […]

T I mean it was a very good argument.

A So smart!

Their exclamations 'yeah!', 'Yes! Yes!' are uttered in a very **excited** tone. They talk about themselves as winners – a pure figure of speech since nobody won any prize from these activities – as being smart and professional, even ready for a TV-program. They (re)act **proudly** to their group discussion and their self-perceived valuable reasoning even before receiving the explicit recognition from the teacher.

Analogously in Elm during the sea level rise workshop, two members of the nature conservation association have been stridently disagreeing on what would be their best course of action. Student A just wants to select one of the most common solutions, while student B pushes the conversation towards new, inventive measures. This back and forth continues until student A, in a mocking tone, utters:

A How much you think for an exercise. It's a 5th grade exercise, not for university.

B Many thanks. [laughs]

Student A's comment is a reaction to the long arguments student B is putting on the table, and it is not really a compliment, but the receiving student takes it as recognition for their out-of-the-box thinking and (re)acts **appreciatively**.

These happy emotions are the result of interactions between students, and their teacher, where the activity becomes part of the school practice. They occur alongside the encounter with the scenario, not across its boundaries. In both cases showcased here, these happy emotions ignited energy in the students and their further discussions and questioning. The youth group continued debating the risks of an imposed Lancet diet within the group and raised concerns for further members of society such as adults; while the 'complimented' member of the nature conservation society pushed their argumentations with renewed drive.

Mixed emotions

A special discussion needs to be had around the following instance in Birch during workshop 1, where the same event ignited opposite (re)actions. Once all stores bought their produce mainly from the local farmers, the three farmers' groups (re)acted very differently, as one might expect. Happy, **thrilled** reactions came from the local farmers similarly to what we have seen in previous cases where a positive outcome was delineating for their roles; while the ecological and conventional farmers sulked during the activity, and later protested in **frustration** with the

teacher. At that point, they were not frustrated with their role, or the scenario, but with their classmates, who had not taken their arguments seriously enough.

Furthermore, in the case of the conventional farmers, we observe a chain of (re)actions. In fact, while pitching their products as 'both cheap and good', they were interrupted and silenced for the rest of the activity by widespread laughter. The expression 'both good and cheap' was read as a disingenuous claim by the class who (re)acted with **scorn**. No stores selected their produce, and no consumers lamented such absence. We would argue that it is the farmers and their conventional practices that were laughed at, not the students. The laughing students were not criticizing their peers' presentation style or their commitment to the activity, as we will illustrate happened in other cases, they were instead questioning the possibility for conventional produce to be 'good' as well as 'cheap'. As further confirmation, the teacher did not address the laughter as a behavioral issue that needed to be corrected – something they did when students misbehaved in other instances – but as a sincere reaction, organic to the process drama. In turn, the farmers (re)acted to the laughter with **shame**. We turn to Ahmed to reach this conclusion, since she argues that 'shame feels like an exposure […] but it also involves an attempt to hide' (Ahmed 2004, 103). Their claim was exposed as preposterous by their peers, and thus the group hides in silence for the rest of the activity. However, this (re)action from the conventional farmers reveals the **care** students have for each other's opinion because 'I may be shamed by somebody I am interested in, somebody whose view 'matters' to me' (Ahmed 2004, 105). In this sense shame is an ambivalent emotion because it 'both confirms and negates the love that sticks us together' (Ahmed 2004, 107), in this case the bond between classmates. Therefore, this articulated example can be seen as a bridge between the emotions happening on the student-scenario surface and those happening on the surfaces among peers.

Angry emotions

The openness to the lives of the scenario allowed not-so-positive experiences to reach the students, thus ensuing (re)actions. In the following instance we are in Birch, on the sinking island, and the tourist industry is **displeased** as they talk to the teacher who was passing by:

A This is really annoying, there are arguments against everything.

B We argue against everything.

(A&B repeat their arguments)

T So you are finding it difficult to keep the island as a tourist paradise while it is threatened by the water.

A&B Yes, precisely.

The wickedness of sea level rise, perceived here in the insolvability and impossibility to decide on one adaptation strategy, is negatively affecting the tourist industry, and students (re) act to this with **annoyance**. At the same time, across the room, the birds are also **frustrated**, but for a different reason, as they believe no one will help them in the face of a rising sea:

A: But how do birds do that?

B: No, but people maybe. [hopeful]

A: Do you think they would do it for us? [doubtful]

B: No, but yeah…

C: There are no people, it's us birds that need to do it. [upset]

Their tones shift from hopeful to doubtful, and then plainly upset, as they decide that nobody will help them adapt to sea level rise. Students (re)act both to the mistrust towards other inhabitants of the island, and to the helplessness of birds. Here one can see the frustration happening from within the encounters 'Do you think they would do it for *us*?' where the students discuss as birds, and (re)act negatively to their standing. At the end of the workshop, instead, while talking to the teacher, those same students say that 'It wasn't really fun to be birds', a role without agency 'birds cannot build', and a role that was harder to navigate 'I am not a bird. I know birds want food, what [else] do they want?'. The **irritation** here is therefore not happening within the encounter, but alongside it, within the school activity.

Peers' behavior can also cause frustrated reactions, like it happened in the mixed emotions example when the farmers in Birch felt cheated for not having been chosen by their classmates. In the following extract instead, in Elm, during the dystopian workshop on deforestation, one student believed some of their classmates had not taken the assignment seriously enough and at the end of each presentation this student took it upon themselves to question their arguments, with a tone that became increasingly confrontational.

> A I have many questions. What will you do with the trees? Why should you get to cut down all trees just because you want to? It says here [their group's statement] you want to protect the forest; you cannot hate the forest.
>
> B [member of the logging industry]: We must cut down, we don't have an alternative.
>
> A Can't you find a compromise? There are dense forests, couldn't you cut some of the trees, and not all? It would be difficult, yes, but you can cut down a few trees, find a compromise.
>
> …
>
> A What do you want? Apart from walking around? Can you give more details?
>
> C [member of the kids group]: Play.
>
> A You can do that in a playground too, what's the difference?
>
> C: Sleep in a tent.
>
> A You can do that in a garden. You should explain why the forest matters!

The **irritated** (re)actions of student A towards their classmates is not a (re)action to the scenario, or to what their peer said from within their role, student A is frustrated with their unserious way of handling the activity.

The irritated and annoyed (re)actions that we observed and reported were mostly directed towards peers and the activity, rather than towards the encounters with the scenario. It was a way for students to express that they felt wronged either because they were not chosen, they were assigned an unfair role, or they believed that their peers did not engage appropriately with the activity. These displays of anger allowed for disruption. For instance, when students-farmers voiced their frustration in Birch at the end of workshop 1, their emotions made the teacher openly question the feasibility of the overwhelming choice for local products. The ensuing conversation became an important clarifying moment for the entire class. In workshop 2 instead, the teacher listened, surprised, to why the birds' group did not enjoy their role. Their difficulty to relate to a non-human role sparked a conversation with the entire class on which viewpoints are easier to adopt, because closer to one's experience, like this student from the tourist industry said: 'I can relate to the tourist industry because I have been a tourist, I know what they might want.' Finally, with their pressing questioning in workshop 3 the student in Elm disrupted the flow of the activity, reminding their classmates of the complexity of the issue at hand and forcing them to sharpen their arguments 'on the spot'.

Painful emotions

By adopting the novel perspectives of their assigned roles, beyond happy and angry emotions, students showed sympathetic (from the Greek *feeling with*) (re)actions and relations to the concerns and discomfort experienced in the scenario. Here we are in Birch during workshop 2, the elders are discussing:

> A If you are very old, you don't want to move.
>
> B Think, you have lived your whole life in one place. (…)
>
> B We grew up on this island, I'd never want for someone to *eradicate* my home and move it a few hundred meters away, I *can't cope* with that, to leave your home! [forceful tone] I wouldn't want someone to *eradicate my flat*! It's something nobody wants. [emphasis added]

The emphasis is meant to show the strong wordings chosen by the student, who (re)acted to the pain of the elders with **compassion**. One can see how the hypothetical suffering, as they start by discussing it as something external 'If you are very old', becomes closer as they start employing 'I' and 'my' and strong words like 'eradicate'.

In the following passage, we are still in Birch, but in the dystopia of workshop 3. The group of young people we met before is here still discussing how their roles relate to the imposition:

> A We ask that the government thinks about kids, also. They are not doing it. Yeah! Kids should not have to think so much about how much they eat of this or that, just let them eat!
>
> B It could lead to eating disorders.
>
> A It is not good for mental health, I wrote that.
>
> C Yeah, but for real, when one is anorexic, they count how much…
>
> A Calories and such.
>
> C Yes!
>
> B Sugar, they count that.
>
> C Not just for kids, but for adults also, it's certainly leading to eating disorders too
>
> A&B Yeah, yeah!

As they are discussing what they are going to present to the class, 'I wrote that', one of them brings the conversation to another level 'but for real', and they all show concern for what the consequences of a strictly regulated diet could be. They relate to the potential harm this measure might inflict 'eating disorders', and **worry** about their role and beyond 'not just for kids, but for adults also'. Moreover, at a later moment during the workshop, student A asks 'Nobody is talking about bodybuilders, I feel sorry for bodybuilders, should we say that? Like seriously'. The hypothetical struggle of an unexpected – and so far, unmentioned – member of society reached the student who (re)acts to their pain 'seriously'.

The concerned (re)action to the pain of others can be seen also in the following extract where the 'other' is a non-human object who lies beyond the assigned roles. We are in Elm during workshop 1, the students are discussing conventional farming:

> A It is the same thing with animals, like hens. They grow over a few weeks in cramped spaces, and [then] they are killed. If they lived some extra weeks, they would die [anyway] because they would be too heavy, also they are in small, dirty surfaces.
>
> [5 seconds of silence]
>
> B Poor hens! Think about the chickens! [yelping]

The painful living conditions of hens, mentioned as a mere descriptive feature of conventional food production, spark a reaction in student B, as underlined by the thought-processing silent pause. Besides their words, we hear their **pain** and **shock** in the acute tone of voice and the volume of their utterance.

Students showed openness to encountering the more painful sides of the lived experiences from the scenario and (re)acted sympathizing with them, they 'felt together' the discomfort. This shared pain made them fiercer in their argumentations. We see it in the moves from 'you' to 'I' in the elderly on the sinking island, or with the comment 'but for real' when discussing dietary restrictions. Or we can track it in the student shocked by the 'poor hens' who later used their newly learned living conditions in their own argumentation against conventional farming.

Discussion

The aim of this paper was to explore how emotions come to matter in the educational activity on WPs. To this end, two research questions were formulated. The first research question asked which emotions emerge in the happenstance (Ahmed, 2010) that comes to be as students encounter wicked problems *via* process drama, and the second research questions asked what these emotions do, their work. In other words, we were interested in how young students (re) act and relate to various objects when encountering WPs. From our analysis we showcased happy, angry, and painful emotions, which were at times on their own, at times mangled together as we discussed in *Mixed emotions*. Under each overall headline, we have collected various shades of the same emotion, such as excitement and joyfulness under *happy*. Therefore, the happenstance of the process drama gave space for encounters, and students indeed (re) acted and related to objects they came in contact with as their assigned roles, but also to other imagined dwellers of the scenario, such as adults, hens, and bodybuilders. Their bodies as scenario-dwellers were shaped by these (re)actions and relations, as they became elders, kids, and farmers through these emotions.

This shows that the emotions are active in the meaning and value making processes about sustainability, as Manni, Sporre, and Ottander (2017) and Rickinson and Lundholm (2008) also conclude in their research. Thus, emotions could be argued to be part of the tensions and gaps of WP (Murakami et al. 2017; Block et al. 2019; McCunea, et al. 2021) and therefore valuable to consider in educational setting. While this is true, it does not necessarily follow how emotions come to matter and what emotions do. Manni, Sporre, and Ottander (2017) show in their empirical research that students' personal emotion judgements were present in the beginning of the educational project, while students' value judgements were more present in its concluding phase. This is not what we found in our case studies, rather personal emotions were present in all stages of the workshops, beginning and concluding. However, our case studies were not designed to reach closure, and this difference might have affected the outcome. Another characteristic of our case studies is that these activities were carried out in a school setting. So, we turn our attention to the question of what it means to encounter WPs in school.

Indeed, many of the emotions became visible when the students (re)acted and related to each other as peers, with frustration and appreciation outside the scenario within their classroom. Their bodies were thus shaped as students in a classroom by these responses. We have showcased a particular example where it was hard to track which emotions took place on the surface between students and scenario, and which ones between peers. Who gets laughed at, the role or the student? Who is shamed into silence? When they voice their frustration, to whom is it directed? It is hard to untangle, what we can see, however, is that emotions are practiced. The happenstance thus allowed for various emotions to exist, take space, but also shape the encounters. In fact, happy emotions kept the activity playful and collaborative, and fueled the enthusiasm in finding more creative ways to face the issues at hand. However, the so-called

negative emotions, like anger and sadness, were also generative, even shame, that momentarily froze an entire group, later turned into frustration. Through this frustration and annoyance students handled the difficulty surrounding the insolvability, or they disrupted the situation by keeping each other accountable and by questioning naïve narratives. The sadness students felt from the pain and discomfort of the scenario's objects sharpened their arguments, deepened their understanding, as well as broadened their care. In other words, certain emotions are not just a dealbreaker in the meaning making processes as both Gelinder, Hjälmeskog, and Lidar (2020) and Hofverberg and Westerlund (2021) research have shown, but they continuously fuel the meaning making processes.

One of the ways in which this emotional work can be modulated is the openness of the happenstance, which in this case was in the hands of the teachers. For instance, the enthusiasm of the tourist industry in Elm was quietened by the teacher who thus interrupted their happy emotions. In Birch, instead, as we have already reported, the teacher allowed events to unfold during the first workshop, and in that open happenstance we saw scorn, shame and frustration give rise to serious questioning and discussions. Similarly, in Elm, when the nature conservation association could not reach an agreement, the teacher first told them they were supposed to, but then turned to the researcher and asked what was to be done. The teacher was told that leaving the conflict unresolved was totally in line with WPs (and with the idea of staying with the wickedness (Cross 1982)), and the group was thus allowed to stay in the insolvability and the emotions that ensued. These teachers' strategies mirror the different styles of handling WPs which enabled a space for the students to practice and be with the emotions (Kronlid 2021; Donahue and Ochoa Espejo 2016; Lindgren Leavenworth and Manni 2021). The Elm teacher has as their goal that students are to solve, or dissolve the problem by agreeing on one adaptation strategy to sea level rise, which, through scientific facts or argumentation, better fits the needs of their role. The teacher in Birch instead, one could argue, wants to press the problem by letting the students act and react to each other in an open happenstance, where the students learn to live with the complexity of the problem. This is, however, not always easy to do due to the expectation of solving and finding answers in school. How this is carried out, experienced and handled by teachers and students, when the sustainability topic is a WP, is indeed a topic for further research.

To end this discussion, we would like to address that not all range of emotions appeared during the workshops. Referring to Ahmed's (2004) list, fear, hate, and disgust did not take place in any workshop. It goes without saying that we appreciate that students felt safe during the activities and did not experience hateful (re)actions towards any object, still we think it is of importance to discuss the absence of disgust. Returning to Ahmed's words, similarly to pain, disgust happens when objects come in close proximity to one another, but the reaction to that closeness is one of rejection, a movement away from one party towards the other instead of one of sympathy (Ahmed, 2004). The workshops created opportunities for that proximity during the encounters, and we have shown students' various reactions to that. Notwithstanding, there have been no instances when the lived experiences of the scenario provoked a rejection in the students who indeed never gave space to disgust. Even in the situations when a group of students were assigned the role of the 'evil guys' – like the meat and logging industries of the last workshops – where the possibility that students would reject the roles as wrong, uninteresting, or plain bad was there, the students encountered those viewpoints openly and related to their situations without shunning them. Another theorist that discusses disgust is Nussbaum (2010) in *Not for Profit*, she sees it as a risk for our societies at large and something school can counteract. In her list of measures, she advocates, amongst other things, for 'develop[ing] students' capacity to see the world from the viewpoint of other people' and 'for genuine concern for others, both near and distant' (Nussbaum 2010, 45). Both lessons sound very much in line with process drama and the encounters we have thus far described.

To conclude, process drama provides a space – a happenstance – for practicing wicked problems and for staying with their wickedness. A happenstance whose openness can be dampened or enhanced by the intervention of the teacher, but nonetheless a space where emotions are active players in the meaning making processes. They at times facilitate or disrupt, strengthen or question, and in this manner the work carried out by emotions indeed shapes how students encounter wicked problems.

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Authors' contributions

Valentina Pivotti: designed and carried out the workshops together with two anonymous teachers, and she oversaw the analysis. The interpretation of the results was instead carried out by both authors equally, as well as all writing stages of the paper. Both authors thus approve the final version to be published, and agree to be accountable for all aspects of the work.

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