

**Not My Problem Anymore: A Study of Students' Attitudes, Pedagogy Critiques and Fatalism in Climate Change and Sustainability Education (CCSE)**

Nethra Srimal

Supervised by Dr. Nicola Walshe

Centre for Climate Change and Sustainability Education, University College London

**Author Note**

This work was supported by a scholarship from the Laidlaw Foundation, awarded through the Laidlaw Research and Leadership Programme at University College London.

I am deeply grateful to Dr. Nicola Walshe and Dr. Joy Perry for their generous supervision and feedback throughout this process. Many thanks to fellow Laidlaw scholar Terish Pathak for his support and encouragement.



## Review of Literature

The urgency of anthropogenic climate change positions education as a central mechanism in preparing youth for a climate-driven future. Foundational research, however, suggests that climate change and sustainability education—CCSE—has historically struggled to fulfill this role; it indicates that didactic, transmission-based approaches have been “largely ineffectual in affecting students’ attitudes and behavior,” and calls instead for a highly participatory, creative, almost transdisciplinary form of CCSE which provides young people with both a voice and a hand in redressing climate change (Rousell & Cutter-Mackenzie-Knowles, 2020, p. 191). This critique of knowledge-centric pedagogy frames the subsequent literature, which has sought to define what effective CCSE entails, how its outcomes should be conceptualized and measured, and for whom current provisions are effective.

Within this reorientation, a frequently referenced definition holds that effective CCSE is “that which possesses the capacity to develop agents of change” (Morrissey-Gleeson & Morrissey, 2024, p. 2292). A systematic review identifies three cumulative foundations: a holistic understanding of the climate crisis and of human involvement within it; an affective sense of connection to human and nonhuman life, sufficient to motivate care; and the empowerment of students with critical capabilities to interrogate and transform unsustainable sociocultural systems (Morrissey-Gleeson & Morrissey, 2024). This vision of CCSE is political and asks schools to critique the confines within which they operate, so it sits rather uneasily alongside the Reform orientation of recent work in England, which pursues change through curricular development, teacher education, and existing structures (Department for Education, 2023).

Action competence, developed in the Danish critical-democratic tradition, is an educational ideal oriented toward students’ capacity to act on societal problems rather than

simply understand them, central to this vision of action enablement (Jensen & Schnack, 2006). It is defined using a competence of people, so disaggregating it into three sub-constructs—knowledge of action possibilities, willingness to act, and confidence in one’s own influence—allows deficits to be located within components rather than diagnosed as a general absence of engagement in analysis (Sass et al., 2020).

Both provision and the instruments used to assess it remain primarily science based. A survey of over 2,400 students aged 11–14 in England found that most expressed concern about a climate-altered future, while almost all expressed that their learning remained concentrated in geography and to a lesser degree, in science. While 76% agreed on the importance of learning about climate change and sustainability, only 46% enjoyed doing so, and just 29% felt able to influence how their school was responding, with a mere 17% aspiring to a climate-related career (Walshe et al., 2025; Walshe et al., 2024). Where climate literacy has been measured, it has largely been through closed, definition-recognition instruments that privilege a “narrow, predominantly science-based understanding of climate literacy” at the expense of holistic conceptualizations which attend to affective dimensions as well as justice and equity (Walshe et al., 2026, p. 316).

International literature on education for sustainable development supplies the interdisciplinary ambition with conceptual vocabulary. Long-term research has identified a global consensus around transversal sustainability competencies, including critical and systems thinking, in addition to action competence, which can be applicable across disciplines and pedagogical traditions rather than attributed to any single discipline (Sposab & Rieckmann, 2024). However, these frameworks remain relatively silent on how competencies intersect with the interests and imagined futures of students, as interdisciplinary thinking is mostly

operationalized in the abstract and is less present in the disciplines that students specialize in (Arntzen et al., 2026).

Longitudinal evidence suggests these competencies are unevenly taught. CCSE grounded in holism and pluralism significantly developed students' knowledge of possibilities and willingness to act but failed to develop confidence in their own influence; the authors attribute the stagnant component of action competence to limited participation in authentic sustainability actions (Olsson et al., 2022). When compared with the control group, age-related development was removed as a cause, because gains appeared only in the taught group; this finding asserts the inference that the period of waning engagement in adolescence is more attributable to the curriculum than the student.

Focus groups with 11–18-year-olds conducted across a range of English secondary schools found that young people's language about climate change was dominated by science-based content knowledge, whilst their emotions were increasingly and overwhelmingly negative; emotions centered on the fear of the future and of frustrated youth action rooted both in climate impact and neglect from those in power (Rushton et al., 2023). The authors read these as rational responses to education that conveys the magnitude of the crisis without appropriately equipping students to act and calls for the pairing of constructive hope with action competence through educational frameworks. The distinction is pivotal, as hope grounded in trust in collective action supports engagement, whilst hope grounded in denial of the threat's seriousness doesn't (Ojala, 2015).

In toto, this growing body of work converges on a shared idea: that the transmission of scientific knowledge is a necessary but not all-encompassing foundation for climate change education, citing the need for interdisciplinary curricula. Yet the literature documents a persistent

chasm between this vision and its execution, marked by narrow curricular models and limited student agency. The sources reviewed diverge on whether the deficit in understanding lies in students' interpretations or in curricular framing, the politicization of CCSE, or whether emotional engagement is cultivatable or should be managed: and whether the waning of engagement across adolescence is a natural developmental arc, or a reflection of the teaching itself.

These literatures point toward the gap this study takes as its starting point; the evidence establishes that students find existing science-based provision relatively unengaging and narrowly framed; what it hasn't yet been able to access—given its reliance on closed and short-response instruments—is how that provision is experienced from the inside or what students themselves attribute the disengagement to.

The recurring features of the evidence—fear of frustrated action, stagnant confidence in one's own influence, worry that coexists with disengagement—are treated in literature mostly as discrete findings. This report takes them instead as symptoms of a single process: a finite window in which climate concern, relatively unmet by opportunities to act at a scale commensurate with the problem, resolves into pragmatism. On this hypothesis, as adolescents move toward their professional paths, sustainability is re-scaled from a collective possibility to a private calculus of practicality, and the conviction that things must deteriorate before they improve potentially originates in the felt insignificance of small-scale, individualized action that comprises much of existing CCSE. The day-to-day “green” behaviors that dominate both survey instruments and pedagogical approaches are a far cry from the capacity to engage with systems-level issues that persist in a climate-altered world: this suggests that the closing window reflects curricular failure rather than inevitable maturation (Olsson et al., 2022). What remains

underexamined is whether curricula can capitalize on that window by connecting sustainability to the subjects that students are already drawn to: the cross-curricular connectivity these literatures demand in different vocabularies but have not yet operationalized through students' interests.

The present study first asks how these dispositions exist in students' accounts: if micro-action skepticism, deterioration narratives, and fatalism form a patterned terrain rather than a scatter of discrete attitudes. Second, it orients focus groups away from day-to-day behaviors and toward participants' wider interests, prospects, and worldviews, questioning if the action competence deficits of science-based provision can be redressed by helping students think cross-disciplinarily and link sustainability to their paths. The premise carries its own dissonance: students are not uniformly eager for interdisciplinary CCSE, and fueling passion without participatory outlets may simply deepen the frustration it seeks to resolve (Walshe et al., 2025).

## **Methodology**

Data was generated through five focus groups conducted across three sites: two secondary schools and a group of undergraduates at University College London. Each group comprised four to seven participants aged 16–19, recruited on a voluntary basis, and ran for approximately 45 minutes. General discussion questions framed the conversation, available in Table A 2. Participating schools and undergraduate students were identified via convenience sampling, with existing professional connections forming the basis of recruitment. No attempt was made to sample for variation in region, intake, or provision; both schools were nonselective and state funded. Within each site, participation was voluntary and self-selecting: students were made aware of the study through an assembly announcement and recruited via a sign-up sheet. Discussion facilitation was shared among the author, the project supervisor, and a colleague.

Sessions were captured on an audio recorder, transcribed verbatim in Microsoft Word, and anonymized at the point of transcription.

Transcripts were analyzed using an inductive-deductive coding framework and coded for in NVivo 15 using nine deductive parent categories with subsequent child codes; Integration Advocacy, Systems Orientation, Micro-Action Skepticism, Pedagogy Critiques, Disciplinary Siloing, Fatalism, Interest-Linkage Pathway, Curricular Attribution, and Action Competence comprised the parent categories. Coding was undertaken by the author alone, and transcripts were solely accessed by the research team. A codebook is available for reference in Table A 1. Coding frequency and hierarchy are provided in Figure A 1 and

Figure A 2, respectively. Ethical approval was granted by the UCL Centre for Climate Change and Sustainability Education. Consent was obtained from all participants, who were informed of their right to withdraw, the anonymity of their participation, and provided compensation for their time; all participants were over 16, and parental consent was accordingly not required.

## **Findings**

Students characterized the current CCSE format as a “knowledge dump,” in which “they just take info, and dump it on you.” Most objected to its relatively impersonal nature, with criticism surrounding how “nothing was presented...as something that would be personal...or affect you.” Across groups, high instances of pedagogy fatigue, with content being “quite repetitive,” and covering “pretty much the same thing,” year on year, were reported: a distinction Walshe et al. (2025) find demotivating. Participants described sessions as “pretty depressing,” because the teachers were “throwing loads of really scary statistics at us about how screwed we are.”; while mitigation was offered, the caveat that “it's not looking great for us” outweighed it.

Rushton et al. (2023) anticipate this, arguing that a knowledge-gain focus can slide from anxiety into apathy. Students' objections throughout leaned more towards the style of content delivery as opposed to the content itself.

Many participants traced their own interest to sources beyond the classroom, locating it in creative outlets: art meant “always reusing things, finding ways to upcycle things,” and gardening was where “the sustainability comes through,” concluding they weren’t “sure if it came from...formal studies. It was more just [their] interests and hobbies.” However, not all such pathways bypassed the curriculum: some students did note subject-based links, like computer science “briefly touching the ethical side of the environment,” or architecture where “the big focus” surrounds sustainability. Environmental inclinations seemed to arise from activity undertaken outside curricular instruction, which was the personally relevant learning Shepardson et al. (2011) found absent from teaching. In most cases, the connection established was a by-product of curricular content; though where it generated authentic inclination was through a solutions framing, with a student seeing the field of geography as “an opportunity,” citing fascination with “the whole problem and how to solve it.”

Students attributed their own disengagement to provision, noting that instruction stops at description. A student noted that they were “taught the problems...not actually taught ways that problem can be solved or possible pathways [they] can choose.” Another put the closure more starkly: “You’re kind of told what’s happening, and that’s where the conversation ends.” They attribute the resulting apathy to curricular design, which is consistent with Olsson’s reading that disengagement is a result of teaching, not development, complicating the interpretation of adolescent disaffection as a ‘stage’ to be ‘outgrown.’ (Olsson et al., 2022)



Almost all participants emphasized the futility of individual action through systems-level reasoning instead of apathy. One looked “at the big picture and think[s] as long as we’re not holding these big firms accountable, it means nothing what individuals do.” Another faulted education for the same imbalance, noting its “real focus on individual impact” while neglecting that “BP’s dumping oil into the Gulf of Mexico.” Others objected to being responsible at all, since they “have[not] polluted and done...the largest damage in the first place.” They also expressed a degree of skepticism surrounding the scale of their actions, noting that they’re in “the right mindset...but a lot of the time it’s just so difficult to [be sustainable]” when pointing out the cost-effectiveness of unsustainable practices in contrast to their sustainable counterparts. Eaton and Day (2020) describe this as petro-pedagogy, in which individual conservation is emphasized in ways that leave the structural growth of fossil fuel consumption unchallenged, and Morrissey-Gleeson and Morrissey (2024) extend this, noting that over-emphasis on individual action deepens feelings of powerlessness. Existing critiques locate the failure of individualized framing in what it does to students’ sense of efficacy, but the focus groups’ accounts attend more toward the inaccessibility of sustainable behaviors.

Most participants advocated curricular integration in terms close to that of the literature, arguing that sustainability “just needs to be integrated more, especially over a range of subjects, not just geography and biology,” and that “making [sustainability]...embedded, opening space for discussion and giving...tangible solutions,” will increase CCSE productivity. Both echo Walshe et al. (2026)’s contention that a narrow location in geography and science is insufficient. The justification offered was career-facing, noting integration would promote “[specialization] in that one thing in the future,” as a student proposed energy systems be taught in physics so that “when I take that qualification... I can specialize in that field.” This reiterates the Department for

Education (2023)’s green career framing, and is consistent with Walshe et al. (2025)’s finding that CCSE reveals green pathways across subjects.

The deficit of science-based provision can be identified as a sort of confinement to siloed subjects and individual behaviors; thus, the proposed remedy is a distribution of CCSE across the curriculum, alongside systems-level and political content. These accounts point to a tension worth pursuing: students formed cross-disciplinary connections themselves, but existing curricular architecture rarely invited them to.

Students rarely separated worry from resignation and self-exemption, conveying urgency and paralysis simultaneously: “the time is winding down. The clock is ticking. I don’t know how to say it.” Others reached temporal foreclosure directly, noting “it’s too far gone, so which is a shame,” while several located the barrier in the scale of their influence: “I can’t do anything because I’m too small and insignificant.” Most participants also expected deterioration to precede change, noting that conditions would “[affect] most people and then [they’ll] decide to make that big change,” since “people don’t really tend to do anything about [climate change] unless it affects them.” There were some dissonant accounts, with one student describing a substantial middle group who “want to do something, but...think it’s too much effort to,” which provides insight into unactioned responsibility; where most accounts noted rescaling requiring a plausible recipient, i.e. a peer entering the field, or a future self with greater resources, that position identified none.

One participant put it directly: “if it won’t be catastrophic in my lifetime, then I’ll leave it for the next one.” Where Rousell and Cutter-Mackenzie-Knowles (2020) report children fearing the world will end within their lifetimes, the lifetime in this finding functions as an obligation-centered boundary. Existing literature treats temporal foreclosure as a byproduct of the hope

deficit, while current distance literature documents perceive remoteness in time; neither directly evidences the reasoning that a problem may devolved to a successor generation because it will not be personally catastrophic.

Participants favored the relocation of agency instead of outright abandoning it, either to themselves later in life, or onto others. The temporal relocation was tied to material capacity: “as you grow up, you have more opportunities to [be sustainable]. Like if you have your own house and more money, then it’s not as much of an issue.” Within this perspective, behavioral constraints become circumstantial, and the influence component of action competence materializes in anticipated independence. One student noted responsibility was attributed to generational deflection, a prevailing attitude being “you should go into this field of work to fix it because I want to go into finance. I’m already at uni, so it’s not my problem anymore.” The issue is affirmed, but responsibility is reallocated to peers at the precipice of career choice. Moreover, self-exemption is time-dependent, marking a point after which the relevant decision is treated as settled. Existing accounts of climate disengagement document denial, distancing and diffusion of responsibility, but this pattern affirms responsibility while reassigning it, so what is classified as avoidance can better be characterized as rescaling. The case that society will then need professionals who “have parts of society under their control and then they integrate that into” their practice, rather than it being “their whole job,” is aligned to what curricular literature recommends.

Students have repositioned their agency onto a future self with more money and more freedom or onto peers committed to the discipline of sustainability, rejecting abandonment. Both are reasoned positions, which implies that additional information alone is unlikely to shift them.

The pedagogical task requires showing where present influence can reach, and what circumstances a student is betting on when choosing to defer their action.

## **Conclusion**

This report explores how students in English sixth form and undergraduate settings understood their experiences of CCSE, the subsequent science-based provisional deficits they identified, and eventually the fatalistic reasoning that underscored their action competence.

Participants consistently described pedagogy as the fact-heavy and repetitive. Learning materials were confined to science and geography and presented an active solutions deficit. Where students could account for the origins of their interest in sustainability, extracurricular endeavors and the media dominated their perspective; where curricular subjects managed to make connections, these were described as brief and underdeveloped. Their critiques, which demonstrated independent agency, were consistently attributional and directed at pedagogical form, as the gap reflected what they had—or hadn't--been taught. Students converted on solutions, hope, and relevance as the main deficits of science-based CCSE; they subsequently proposed a remedy of cross-curricular integration, alongside systems-level and political content. Their fatalism delayed their responsibility or relocated their agency, but it did not reflect abandonment.

Much of this is in line existing scholarship. These accounts align with Shepardson's view of environmental education as fact-oriented at the expense of personally relevant learning, Walshe's perspective that content reiteration doesn't adequately motivate adolescents, Rushton's warning that a knowledge-gain focus slides towards apathy, and Walshe's case for interdisciplinary integration; the findings also support Olsson's attribution of disengagement to education instead of development.

Existing distance literature establishes the perception of climate change as remote, so pedagogy critiques treat the resulting foreclosure as a product of the hope deficit (Morrissey-Gleeson & Morrissey, 2024; Rushton et al., 2023). This study notes instead the fact that students reasoned from the temporal distance what they owed, treating the boundary of their own lifetime as a boundary of obligation. This is built upon by what the report terms ‘pragmatic rescaling,’ where responsibility is both affirmed and reassigned outwardly, with the point of career choice marking a threshold after which the matter is settled.

For curriculum designers and instructors, the implication moves beyond a call for ‘more’ CCSE: since students presented their reasoning as argument rather than temperament, provision can be redesigned to engage this debate directly. These results are based on a small number of focus groups within a limited range of English institutional settings, so further work could ask whether the forms of reasoning as described in the report are widely shared, and whether the deferred agency is eventually reclaimed. The tractable question remains what conditions create interdisciplinary integration that fosters responsibility and does not exacerbate self-exemption. Most students are not indifferent but caught between the devil and the deep sea: finding their own way to care in a system that shares mostly the problems without giving them the tools to work toward a solution. The task for educators is therefore to build the participatory and cross-curricular structures in which deferred agency can be exercised in the present, so that the point of career choice is no longer a threshold, but an opening.

## Works Cited

- Arntzen, M., Scheie, E., & Haug, B. (2026). Interdisciplinary Environmental and Sustainability Education: barriers to implementation and practical ways to overcome them. *Environmental Education Research*, 32(7), 2070–2092. <https://doi.org/10.1080/13504622.2025.2594637>
- Department for Education. (2023). *Sustainability and climate change: a strategy for the education and children's services systems*. United Kingdom Retrieved from <https://www.gov.uk/government/publications/sustainability-and-climate-change-strategy/sustainability-and-climate-change-a-strategy-for-the-education-and-childrens-services-systems#scope-and-purpose>
- Jensen, B. B., & Schnack, K. (2006). The action competence approach in environmental education. *Environmental Education Research*, 12(3-4), 471–486. <https://doi.org/10.1080/13504620600943053>
- Morrissey-Gleeson, E., & Morrissey, J. (2024). Towards a fit-for-purpose climate change education: a systematic literature review identifying core principles and potential barriers. *Environmental Education Research*, 31(11), 2292–2345. <https://doi.org/https://doi.org/10.1080/13504622.2024.2416549>
- Ojala, M. (2015). Hope in the Face of Climate Change: Associations With Environmental Engagement and Student Perceptions of Teachers' Emotion Communication Style and Future Orientation. *The Journal of Environmental Education*, 46(3), 133–148. <https://doi.org/10.1080/00958964.2015.1021662>
- Olsson, D., Gericke, N., & Boeve-de Pauw, J. (2022). The effectiveness of education for sustainable development revisited – a longitudinal study on secondary students' action competence for sustainability. *Environmental Education Research*, 28(3), 405–429. <https://doi.org/10.1080/13504622.2022.2033170>
- Rousell, D., & Cutter-Mackenzie-Knowles, A. (2020). A systematic review of climate change education: giving children and young people a 'voice' and a 'hand' in redressing climate change. *Children's Geographies*, 18(2), 191–208. <https://doi.org/https://doi.org/10.1080/14733285.2019.1614532>
- Rushton, E. A. C., Sharp, S., Kitson, A., & Walshe, N. (2023). Reflecting on Climate Change Education Priorities in Secondary Schools in England: Moving beyond Learning about Climate Change to the Emotions of Living with Climate Change. *Sustainability*, 15(8), 6497. <https://doi.org/10.3390/s15086497>
- Sass, W., Boeve-de Pauw, J., Olsson, D., Gericke, N., De Maeyer, S., & Van Petegem, P. (2020). Redefining action competence: The case of sustainable development. *The Journal of Environmental Education*, 51, 292–305. <https://doi.org/10.1080/00958964.2020.1765132>
- Shepardson, D. P., Niyogi, D., Choi, S., & Charusombat, U. (2011). Students' conceptions about the greenhouse effect, global warming, and climate change. *Climatic Change*, 104(3), 481–507. <https://doi.org/10.1007/s10584-009-9786-9>
- Sposab, K., & Rieckmann, M. (2024). Development of Sustainability Competencies in Secondary School Education: A Scoping Literature Review. *Sustainability*, 16(23), 10228. <https://doi.org/10.3390/s162310228>
- Walshe, N., Perry, J., & Healy, G. (2025). Student perspectives on climate change and sustainability education in England: experiences and expectations. *UCL Open Environment*, 7(1). <https://doi.org/https://doi.org/10.14324/111.444/ucloe.3341>

- Walshe, N., Sheldrake, R., Healy, G., Edwards, R., Wale, W., & Hargreaves, E. (2024). *Climate Change and Sustainability Education: A survey of students in England*.
- Walshe, N., Wale, W., & Rushton, E. A. C. (2026). Is climate literacy an effective proxy for climate change education? Evidence from young people's conceptualisations of climate change in England. *Children's Geographies*, 24(3), 316–332.  
<https://doi.org/10.1080/14733285.2026.2659320>

## Appendix

Figure A 1: Coding Frequency

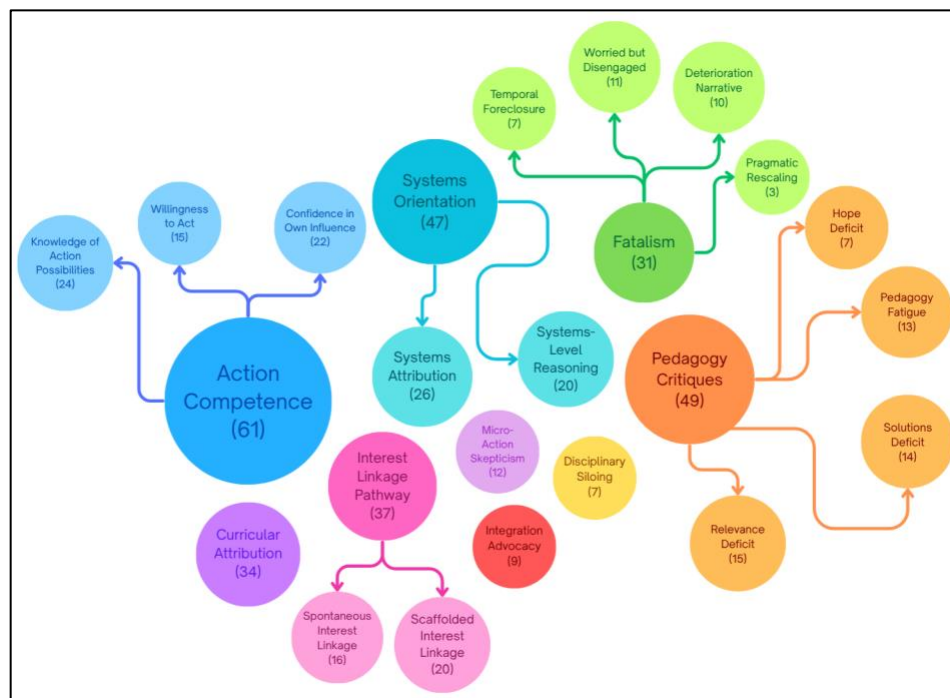


Figure A 2: Coding Hierarchy





Table A 1

| Code                         | Definition                                                                                                                      | Inclusion Criteria                                                                                                                                     | Exclusion Criteria                                                                                                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P: Fatalism                  | Concern about sustainability coexisting with resignation about own capacity to affect it                                        | Agency Axis: Worried but Disengaged, Pragmatic Rescaling) versus Temporal Axis: Deterioration Narrative, Temporal Foreclosure)                         | “Lack of knowledge” framing → Curricular Attribution/Action Competence (A)                                                                                                                                       |
| Worried but Disengaged       | Care/concern coexisting with lack of significance in one's own action; "I care but what can I do"                               | Expresses worry about the future but generates feelings of self-exemption or apathy                                                                    | Responsibility located in a named system actor → Systems Attribution<br>Powerlessness explicitly attributed to pedagogy → Hope Deficit<br>Low self-efficacy stated as a competence state → Action Competence (B) |
| Deterioration Narrative      | Conditions must worsen before improvement becomes possible; crisis as a prerequisite for change                                 | “Nothing will happen until something really bad forces it”                                                                                             | Pure "too late" or deadline framing with no improvement after crisis → Temporal Foreclosure                                                                                                                      |
| Temporal Foreclosure         | Time-based inevitability/deadline framing                                                                                       | “It's already too late”                                                                                                                                | Improvement through crisis → Deterioration Narrative                                                                                                                                                             |
| Pragmatic Rescaling          | Personal relevance benefit/one's own role deprioritized/self-exemption                                                          | “I'll care if there's something in it for me/my future” or feelings of self-exemption                                                                  | Participant advocating self-relevance as the gap → Integration Advocacy<br>A link made between interest/sustainability → Interest Linkage Pathway                                                                |
| SA: Micro-Action Skepticism  | Dismissal of individualized green behaviors as insignificant relative to scale of issue                                         | Individual green acts framed as trivial, pointless, redundant, or insignificant                                                                        | Locating change capacity in systems without dismissing individual actions → Systems Attribution<br>General resignation not tied to micro-actions → Fatalism                                                      |
| P: Systems Orientation       | Locating problem/solutions at level of interconnection, rather than discrete individual behaviors                               | Attributes sustainability crisis/climate change to greater forces in play (corporations, governments)                                                  | Makes connections between sustainability and personal interests → Interest-Linkage Pathway                                                                                                                       |
| Systems-Level Reasoning      | Evidence of/struggle with thinking in terms of interconnected causes, feedback, leverage points, rather than discrete behaviors | Reasoning that connects causes, effects, or leverage points (systems-thinking)<br>Visible effort to think in interconnected terms (even if incomplete) | Simply naming who is responsible, without reasoning about interconnection → Systems Attribution.                                                                                                                 |
| Systems Attribution          | Locating responsibility and change-capacity in governments, corporations, or structures rather than individuals                 | “It's the corporations/governments who should act.”                                                                                                    | Reasoning about feedback/leverage → Systems-Level Reasoning.                                                                                                                                                     |
| P: Interest-Linkage Pathway  | Connections between participants' existing interests/subjects/hobbies and sustainability                                        | Rating the eliciting facilitator turn; anything downstream of a linkage-supplying prompt is scaffolded (L0-L1: generative, L2-L3: facilitated)         | Introduces systems-oriented pathways excluding personal interest → Systems Orientation                                                                                                                           |
| Spontaneous Interest Linkage | Participant introduces a link the facilitator did not cue                                                                       | Unbidden connection between personal interest/subject and sustainability                                                                               | Any connection made after a leading or linkage-supplying prompt → Scaffolded Interest Linkage                                                                                                                    |

|                                   |                                                                                                                              |                                                                                                 |                                                                                                                                                        |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scaffolded Interest Linkage       | Connection made only after facilitator prompting or seeding of the link                                                      | Uptake (nongenerative) following a prompt that named or seeded the interest–sustainability link | Connection introduced before the facilitator prompted it → Spontaneous Interest Linkage                                                                |
| SA: Integration Advocacy          | Participants themselves proposing that sustainability be integrated with subjects, pathways, or personal reasons             | Prescriptive calls to embed sustainability in the curriculum                                    | The participant's own disengaged 'what's in it for me' stance → Pragmatic Rescaling<br>An interest-based link → Interest-Linkage Pathway               |
| SA: Disciplinary Siloing          | Framing sustainability as belonging exclusively to science/geography                                                         | Subject-ownership framing that fences sustainability into particular disciplines                | Complaint that teaching is disconnected from one's life/interests → Relevance Deficit<br>Advocacy for cross-subject integration → Integration Advocacy |
| SA: Curricular Attribution        | Crediting or blaming school provision for their sense of capability; accounts of what school did or didn't teach them to do. | Capability (or its lack) explained by reference to schooling                                    | Specific 'taught the problem, not the solution' talk → Solutions Deficit<br>Affective boredom/repetition → Pedagogy Fatigue                            |
| P: Pedagogy Critiques             | Critiques of how sustainability is taught                                                                                    | The affective fatigue itself and the perceived shortfalls that produce it                       | Specific "I would do..." or "you can fix it by" → Integration Advocacy                                                                                 |
| Pedagogy Fatigue                  | Boredom/cynicism/repetition complaints                                                                                       | Affective fatigue driven by repetitive teaching/content                                         | Complaints about GAPS in teaching → Deficits                                                                                                           |
| Relevance Deficit                 | Complaint that sustainability is taught abstractly, disconnected from students' lives, interests, futures                    | Critique that teaching fails to connect to what students care about                             | A link actually made → Interest-Linkage Pathway<br>The student's own 'I'll care if it's relevant' stance → Pragmatic Rescaling                         |
| Hope Deficit                      | Despair/powerlessness-based education is unproductive                                                                        | Despair or powerlessness explicitly attributed to how the material was taught                   | The student's own dispositional fatalism → Fatalism (child codes)                                                                                      |
| Solutions Deficit                 | Complaint that teaching covers the issue, but not what can be done about it                                                  | Attribution to teaching for failing to supply action possibilities                              | The student's own knowledge state of what is possible → Action Competence (A)<br>Broad capability attribution → Curricular Attribution                 |
| P: Action Competence              | Capacity to engage with sustainability issues                                                                                | Demonstrates (or doesn't) knowledge, confidence, and willingness to engage sustainably          | "I'll care if its relevant to me" or "I can't care I have other more pressing things" → Pragmatic Rescaling                                            |
| Willingness to Act                | Expressed readiness/intent to act on sustainability                                                                          | Statements of intention or willingness to act                                                   | Mere knowledge of options, or confidence, without expressed willingness → Action Competence (A) or (B)                                                 |
| Knowledge of Action Possibilities | Awareness/lack of awareness of what actions are possible                                                                     | Knowing/not knowing what one could do                                                           | Teaching's failure to supply this knowledge → Solutions Deficit (double-coded sometimes)                                                               |
| Confidence in Own Influence       | Belief/disbelief that one's own action can make a difference (self-efficacy)                                                 | Expressed sense that one's action matters, or that it doesn't                                   | Caring-but-powerless disengagement framed as a stance → Worried but Disengaged                                                                         |

Table A 2

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li><b>i. Opening questions</b> <ul style="list-style-type: none"> <li>1. What comes to mind when you think of ‘climate change and sustainability education’?</li> </ul> </li> <li><b>ii. Main questions</b> <ul style="list-style-type: none"> <li><b>A. Experiences of climate change and sustainability education</b> <ul style="list-style-type: none"> <li>2. How did climate change or sustainability feature in your school/college education?</li> <li>3. Which subjects or activities included these topics?</li> </ul> </li> <li><b>B. Perceived quality and impact</b> <ul style="list-style-type: none"> <li>4. What was your most memorable or useful learning experience in this area?</li> <li>5. Were there aspects that felt unclear, limited, or unhelpful?</li> </ul> </li> <li><b>C. Gaps and improvements</b> <ul style="list-style-type: none"> <li>6. Where do you think climate change or sustainability education was missing or insufficient?</li> <li>7. If you could redesign this aspect of education, what would you alter or add?</li> </ul> </li> <li><b>D. Feelings and action competence</b> <ul style="list-style-type: none"> <li>8. Did learning about climate change affect how you feel about the future?</li> <li>9. When you left school/college, did you feel well prepared to engage with climate issues?</li> </ul> </li> <li><b>E. Forward-thinking</b> <ul style="list-style-type: none"> <li>10. What are the biggest challenges for improving climate/sustainability education?</li> <li>11. What are the biggest opportunities?</li> <li>12. If advising government, what is the first change you would recommend?</li> </ul> </li> </ul> </li> </ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|