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Elementary Teacher Candidates' Views of Children's Literature on Climate Change

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Abstract: In today's elementary classrooms, students face an uncertain future, standing to inherit a world characterized by environmental unsustainability. Therefore, elementary teachers must educate their students on anthropogenic climate change to increase the likelihood that future generations will mitigate its risks. This article documents the perspectives on children's literature depicting climate change held by 27 Teacher Candidates in a conservative, oil-producing region of a U.S. state. The results show a low likelihood of participants self-censoring the topic of climate change compared with other frequently censored topics (i.e., gender, sexuality, and race). However, they report accepting others' views on climate change even when those views contradict settled climate science. This implies a need for more directed preparation for elementary teachers to actively negotiate with their students to ensure they develop research-aligned perspectives on climate change.

Keywords: teacher education; anthropogenic climate change; censorship; children's literature

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1. Introduction

Scientific consensus has produced the following facts [1]: Climate change is occurring, it is human caused, and it is serious [2,3]. Greenhouse gas emissions contribute to climate change, and unless these emissions decrease, today's elementary school students will inherit an unlivable world as adults. To address this crisis, the 38 member countries of the Organisation for Economic Co-operation and Development (OECD) have articulated a variety of sustainable development goals for schools focused on mitigation, resilience, and finance [4].

Despite the worldwide scientific consensus on climate change, certain powerful figures deny the existence of this crisis [5,6]. For elementary generalist teachers in locations where policy makers are resistant to acknowledging the reality of climate change, children's literature that accurately represents the climate crisis can be a valuable teaching tool. However, preservice elementary teachers typically receive little guidance on how to select literature on this topic and incorporate it into curriculum [7,8].

The issues teachers face when selecting children's literature are magnified by the recent increase in book challenges and bans in the U.S. [9]. Books that are challenged and banned often depict gender and gender identity, sexuality and sexual identity, and race and racism; in comparison, few depict the climate crisis [9]. However, despite a lack of policies outright requiring teachers to censor books on the topic of climate change, little is known about whether Teacher Candidates choose to self-censor [10] out of fear or concern of retaliation from administrators, parents, colleagues, or community members.

A phenomenological study [11] was undertaken in spring 2024 to better understand how Teacher Candidates in a conservative southern U.S. state feel about including children's literature on climate change in their teaching. The overarching purpose of the study is to elucidate how Teacher Candidates can be better prepared to select books that accurately represent climate change, thereby supporting their students' learning. The research question driving this study is as follows: How do Teacher Candidates in a conservative U.S. state make sense of children's literature on climate change?

2. Theoretical Framework

This study is conceptually driven by the notion that all learning is situated within sociocultural contexts [12]. This view holds that all individuals, including Teacher Candidates, are "both subjects and objects of their own behavior" [12] (p. 26) as they mediate their worlds through tools such as language. Thus, within contexts such as schools, individuals may choose to self-censor particular ideas to shape their worlds to fit their own goals and purposes. Ref. [10] defines self-censorship as "an act of intentionally and voluntarily withholding information from others in the absence of formal obstacles" (p. 37). In cases where policies curtailing individuals' actions exist, a person's decision not to discuss particular topics is the product of censorship because they are doing so out of compliance with a mandate. However, many circumstances have been documented when individuals self-censor; that is, they have accurate information that they believe others do not have, but they choose not to communicate it to others despite the absence of policies prohibiting them from doing so.

Within sociocultural frameworks for learning, self-censorship is viewed as hindering the progress of any group by minimizing each person's ability to obtain new knowledge from peers. Further, self-censorship is a sign of an unhealthy society in which knowledge is withheld from youth, leaving each generation to rediscover what was already known [13]. Self-censorship can occur at the macro level as a mechanism to maintain a preferred national story (i.e., having content standards that misrepresent historical events such as slavery), or it can work on a micro level (i.e., an individual teacher sidestepping a child's question about slavery). Teachers' tendency to self-censor topics is well documented. For example, Ref. [14] have documented that when reading children's literature, teachers are likely to self-censor the fact that gender and sexuality diversity exists by minimizing opportunities for discussion.

Perspectives on self-censorship suggest that regardless of what content knowledge or pedagogical knowledge a teacher may hold, that teacher will not be able to effectively teach students about climate change if they are actively self-censoring the topic. Since supporting student learning is the fundamental goal of teaching, and self-censorship runs contrary to this goal, scholars have long considered why it may occur. Ref. [15] propose the following reasons, which they note can overlap: (A) promotion of a singular narrative out of desire for nationalistic unity; (B) concerns over politically charged content; (C) concerns over engaging with unpleasant topics; and (D) concerns over selecting materials.

Self-censorship is not just pertinent but central to the current study because although schools purchase many of the texts used in classrooms, teachers still make many decisions about the texts they will use [16]. This study considers the possibility that Teacher Candidates in a conservative U.S. state may not select children's literature that depicts climate change even though there are no specific policies that prevent them from doing so. This theory suggests that they may self-censor this topic due to a desire for unity, a desire to avoid appearing politically motivated, a desire not to scare young children with details about the climate crisis, or a lack of knowledge of which children's literature to choose.

3. Review of Literature

With sociocultural theories of learning and framings of self-censorship in mind, this review examines what is known about children's literature in elementary classrooms.

3.1. Children's Literature: Book Challenges and Bans

Recently, there has been an exponential increase in book challenges. Challenged children's literature most often explores topics such as race, racism, gender, gender expression, and sexual orientation [9]. These same topics are centered in recent legislation focused on controlling the representations of race, racism, and LGBTQ identities in K-12 classrooms [17]. Though they are increasing in frequency, and they are increasingly driven by coordinated community groups rather than individual parents, book challenges and bans are not a new phenomenon [18]. Ref. [19] has documented that for decades, teachers

whose book choices have sparked unexpected backlash experience bewilderment, confusion, and frustration. To support literacy teachers, the National Council for Teachers of English [20,21] has long argued for the protection of children's right to read. Similarly, the American Educational Research Association has issued statements on the importance of scholarly and academic freedom [22].

According to [9] children's literature depicting climate change is challenged and banned far less often than literature depicting gender and gender identity, sexuality and sexual identity, and race and racism. However, in the U.S., where curricula are determined at the state and local level, state boards of education have refused to include resources that address the climate crisis in ways consistent with established science. For example, in Texas, various science textbooks have not been adopted due to their accuracy in depicting climate change [23]. These events serve as publicly visible moments when climate change content is prohibited from classrooms. What remains unknown is whether, in settings where climate change is contested, the possibility of such a challenge leads teachers to self-censor when selecting children's literature.

3.2. Children's Literature: Preservice Teacher Preparation

Many teacher education programs include courses on children's literature, and in these classes, Teacher Candidates learn about text selection. However, in an analysis of syllabi from children's literature courses for preservice teachers, Ref. [8] did not identify any content related to climate change in these courses. Instead, in reviews of the uses of children's literature in reading methods courses (i.e., [24]), teacher educators' focus is typically on incorporating multicultural literature and culturally responsive teaching practices (e.g., [25–27]). While these topics are undoubtedly important to address, the lack of preparation to teach about climate change leaves Teacher Candidates feeling confused and unprepared [28]. One exception is [7] who studied elementary generalist Teacher Candidates' responses to children's literature depicting energy production. Lammert found that Teacher Candidates rated a picture book depicting the negative environmental impact of fossil fuel production to be enjoyable for children and a highly credible source of information. These Teacher Candidates suggested they would utilize this text and others like it in reading instruction if they had more knowledge of these books [7].

In sum, much research has focused on the question of how teachers are prepared to select children's literature depicting race, sexuality, and gender topics [24,29]. These topics are often challenged and banned [9]. At the same time, climate change has been widely censored in books that occupy the format of textbooks [23], but less often in the form of children's literature. It is possible that out of a lack of knowledge of policy, or a conflation of these events, inexperienced preservice teachers may inadvertently self-censor children's literature on climate change. This possibility is explored in the current study.

3.3. Climate Change: Preservice Teacher Preparation

Many scholars have emphasized the necessity of integrating climate change education into teacher preparation [30]. There has been growing recognition of the importance of fostering environmental literacy and promoting a sense of personal responsibility towards the environment among preservice teachers [31]. However, few concrete models exist for how teacher education programs might do so [32] particularly for elementary generalists who teach all subjects. What is clear thus far is that effectively preparing preservice teachers to teach about climate change must include opportunities in both coursework and field experiences to engage with this topic [33,34].

Determining the precise percentage of teachers in the U.S. who are adequately prepared to teach about climate change presents challenges because approaches to teacher education vary across states and institutions. However, studies have highlighted significant gaps in preservice teacher education regarding climate change instruction [28,35]. In a survey of a national sample of K-12 teachers in the U.S., Ref. [28] found that only 3% reported that their preservice teacher education program taught them how to teach about

climate change at all, and ref. [28] did not ask whether the use of children's literature as a tool for teaching about climate change was included in this preparation. As a result of the lack of preparation, preservice teachers report a lack of confidence in their ability to effectively address climate change in the classroom [36]. The problem is not limited to the U.S. In a survey of teachers in the UK, Ref. [37] found that 75% of teachers felt they had inadequate preparation to teach about climate change. These findings suggest that while efforts are being made to integrate climate change education into preservice teacher education, the vast majority of Teacher Candidates are likely to leave preservice programs with doubts about their ability to teach about this topic. Further, the lack of directed attention in research to the question of whether preservice elementary generalist teachers are taught to incorporate children's literature on climate change suggests a clear knowledge gap that the current study aims to address.

4. Materials and Methods

Since the purpose of this study was to understand the views on children's literature about climate change held by Teacher Candidates (n = 27) in Texas, a conservative-leaning U.S. state, phenomenology was the overarching methodology used. Methodologists have taken various approaches to phenomenological research. According to [38] the researcher's fundamental goal in phenomenology is to determine from the participants "What contexts or situations have typically influenced or affected [their] experiences of the phenomenon?" (p. 81). Phenomenology emerges from philosophical traditions that privilege human experience as a knowledge source [39]. As such, conducting phenomenology requires researchers to collect participants' reflections on a particular experience, often through writing and dialog, to enable a rich portrait of the phenomena to emerge [11].

4.1. Bracketing and Positionality

Despite criticisms of the notion that one can ever truly set aside ones' personal views, most methodologists (i.e., [38–40]) consider bracketing a necessary part of phenomenological research [41]. The process of bracketing begins by researchers examining their existing perspectives (i.e., reduction), then actively suspending their preconceptions of the phenomena (i.e., bracketing). Below, I share a condensed version of the reduction and bracketing process.

4.1.1. Researcher Identity

I am a White woman scholar at a public research university in the U.S. South. I am a former elementary and middle school teacher and reading interventionist. Professionally, I have a PhD in Curriculum and Instruction with an emphasis on Language and Literacy and I completed two years of postdoctoral training in science education. I hold the role of Co-Chair in an organization focused on Climate Justice in English Language Arts as part of a national educational organization, and I am engaged with my local chapter of Citizens Climate Lobby/Citizens Climate Education. These activities and aspects of my identity have informed my perspectives on climate change. Through reduction and bracketing, I identified potential tensions in my perspectives on climate change and children's literature, including the possibility that my own commitment to climate justice increases my likelihood to align with Teacher Candidates who hold similar perspectives to my own.

4.1.2. Participants and Context

Participants in this study were undergraduate students enrolled in two sections of a Children's Literature course offered in a Department of Teacher Education in spring 2024. These students were enrolled in a program to earn state certification to teach all subjects to students in early childhood through sixth grade, which is typically ages 4–5 years through ages 11–12 years. The class was a 3-credit, 15-week long face-to-face university course that focused on values for children's literature, genres, pedagogical practices related to children's literature, and authors and illustrators.

The location where this study took place is considered one of the most conservative urban areas within the U.S. The teacher education program is in the U.S. state of Texas, and the study took place in spring 2024. In the 2020 presidential election, the city's voters overwhelmingly endorsed Republican candidate Donald Trump, with 61.7% of the vote compared to 36.5% of the vote for Democratic candidate Joseph Biden [42]. The city is also situated in a region that is a major oil producer, as well as a producer of natural gas and wind energy.

The study was approved by an Institutional Review Board and all participants provided active informed consent. Recruitment occurred at the onset of their enrollment in the teacher education program when Teacher Candidates were asked whether they would allow their course materials to be used for research purposes. To avoid coercion, the course instructor, who was also the researcher, had no knowledge of which students had provided consent to participate in the research until the conclusion of the course. Participants were 26 women and 1 man. Except for one participant who was in her thirties, all were in the 19–24-year-old age range. Twenty identified as white, five identified as Latinx and one identified as Black/African American.

4.2. Data Collection

Data collection relied primarily on reflective writing, a technique which often brings about new insights for both the participants and the researcher [43]. Phenomenological journaling [44] provides a window into participants' thinking that is not shaped by a verbal social interaction. As [45] has pointed out, "some individuals are comfortable expressing their feelings, ideas, and insights in writing, and these can be powerful data that reveal how they are understanding the phenomena under investigation" (p. 161). This is particularly important when attempting to determine participants' comfort with various topics and likelihood to self-censor, and especially given the skepticism many methodologists have towards the reliability of accounts provided through phenomenological interviews (see [46] for a discussion of this issue). Phenomenological journaling as a data collection method has grown in popularity in response to these considerations. For example, in their study of preservice nurses' experiences of simulation-based coursework, Ref. [47] utilized reflection journals as a space for participants to express their emotions and thoughts regarding their experiences without external influence. Participants in this study completed two phenomenological journaling tasks.

4.2.1. Phenomenological Journaling Task One

In the first task, participants began by completing the Six Americas Super Short SurveY (SASSY) measure developed by the Yale Program on Climate Change Communication [48]. This survey groups respondents into one of six categories based on their perspective of the severity of the climate crisis: alarmed, concerned, cautious, disengaged, doubtful, and dismissive. This measure was based on the original 36-item survey [49], and the validation of this instrument is documented elsewhere (see [48]). Teacher Candidates took the survey and responded in writing to the following two questions: (A) How will your "America" inform the way you read children's books on climate change? and (B) How do you feel toward individuals who fall in the other "Americas?" Teacher Candidates were given approximately ten minutes to complete the 4-question survey and write a response. Except for one participant who typed as an accommodation for a writing disability, all Teacher Candidates wrote their responses by hand in a personal notebook that was later collected, photographed, and transcribed. Writing by hand, rather than typing, supported participants' reflective thinking and processing of prior experiences [50]. Due to absences from class, 22 of 27 eligible participants completed this task.

4.2.2. Phenomenological Journaling Task Two

In the second task, participants were given a list of frequently censored topics in children's literature and asked to rate their likeliness to self-censor each topic. These topics

were based on a previous survey of Teacher Candidates' views of children's literature [29]. In designing the original survey, ref. [29] focused on those topics that were most commonly given as reasons for challenging and/or banning books [9]. These were sexuality and sexual orientation, gender and gender identity, race and racism, religion, poverty, bullying, violence, nationality and citizenship, vulgar language, and non-standard language. The topic of climate change was added to this list and participants were given the following instructions:

> *Make an array showing your perspectives on each topic. On one side, list any that you would self-censor, and on the other, list topics you would not self-censor. If your likelihood to self-censor depends on contextual factors, list those topics in the middle of the array. Looking at the array, respond to the following question: What do you think is behind the rise in book challenges and bans?*

As in the first task, participants were given approximately ten minutes of uninterrupted individual writing time and were not asked to share their responses with other participants. Responses were collected through photos of notebook pages that were later transcribed. Twenty-five of 27 eligible participants completed this task, with one of these participants only partly responding to the question. Overall, each of the 27 participants completed at least one task.

4.3. Data Analysis

To analyze the data, I relied on procedures from [38] and [11] as well as theories of self-censorship to provide a lens through which to view Teacher Candidates' responses. First, descriptive statistics were calculated for Teacher Candidates' results on SASSY [48]. I also examined a national sample collected within a six-month window of the timeframe when the Teacher Candidates were also administered SASSY [51], although inferential statistics were not conducted due to the small sample size. Descriptive statistics were also calculated for the component of Phenomenological Journaling Task Two in which Teacher Candidates indicated which topics they would self-censor, which they would not, and which depended on the context.

Then, I examined the remaining qualitative data for significant statements, emerging themes, and grounded categories [40,52]. At this stage, my goal was paradigmatic corroboration between data sources. Ref. [52] has argued that "paradigmatic corroboration occurs when the quantitative results of a data set do not simply harmonize or complement the qualitative analysis but corroborate it" (p. 26). Thus, I focused on examining responses to two particular items. These items were (A) the item asking respondents how they felt towards individuals in the other Americas, which was part of Phenomenological Journaling Task One, and (B) the open-ended question: What do you think is behind the rise in book challenges and bans? which was part of Phenomenological Journaling Task Two. This thematic coding yielded three grounded categories in response to item A and four grounded categories in response to item B.

4.4. Methodological Rigor

Validity and credibility were assessed through adherence to phenomenological methods [11,38]. These include articulation of the central phenomenon (i.e., Teacher Candidates' sense-making around children's literature portraying climate change) and description of philosophical connections (i.e., how theories of self-censorship influenced the analysis process). To ensure trustworthiness of findings, I used informal member checking via email to seek clarification of participant perspectives during my analysis process. Because this study involved 26 Teacher Candidates who are all experiencing the same phenomenological context, a conservative area of the U.S. South, I was also able to employ methodological triangulation [39] by hearing from different participants within the same teacher education program. Finally, reduction and bracketing were the main ways in which I established rigor and trust [11].

5. Results

First, the results from the SASSY [48] survey are presented in Table 1. Results from a national sample obtained in fall 2023 are also provided [51].

Table 1. SASSY results.

Six Americas Category	Current Study Raw Score	Current Study Means	National Sample Means *
Alarmed (Highest Level)	3	13.6%	28%
Concerned	10	45.4%	29%
Cautious	4	18.1%	15%
Disengaged	4	18.1%	6%
Doubtful			11%
Dismissive (Lowest Level)	1	4.5%	11%
Total	n = 22		n = 1033

* From [51].

Results indicate that the largest group of Teacher Candidates were those who are "Concerned" (45.4%). On the national survey, most respondents also fell into the "Concerned" category (29%). The second and third largest categories were those who are "Cautious" and "Disengaged" (18.1% and 18.1%). Nationally, the second and third largest categories are "Alarmed" (28%) and "Cautious" (15%). Only 13.6% of the current study sample was "Alarmed" despite this category making up 28% of the national sample. However, no Teacher Candidates in the current sample fell in the "Doubtful" category, and only one (4.5%) fell in the "Dismissive" category.

5.1. Teacher Candidates' Views of the Individuals in Other Americas

When asked to explain how they felt towards people who fell in other SASSY categories, Teacher Candidates' responses fell into three categories: (A) those who felt ambivalent towards others' views, n = 17; 77.2%; (B) those who felt that others cared too little about climate change, n = 6; 27.2%; and (C) those who felt that others cared too much about climate change, n = 3; 13.6%. There were no overlapping categories as these ideas are mutually exclusive.

5.1.1. Ambivalence Towards Other Perspectives

The most common response was ambivalence (n = 17; 77.2%). These responses stated ideas such as, "I feel that they have their reasons, but what can they do? They are free to engage or believe in whatever they want" (Teacher Candidate #9, a "Disengaged" respondent). Some responses went further by admitting that the Teacher Candidates themselves did not have a sense of urgency in learning more. For example, Teacher Candidate #6, a "Disengaged" respondent explained,

> *I don't have much feelings about the other Americas. They can be worried if they choose. If I am being honest, I don't know much about global warming and climate change, and I don't feel a need that I need to know.*

These responses suggested that Teacher Candidates were unconcerned with others' views and lacked a sense that they personally needed more information. None of the three Teacher Candidates who were "Alarmed" gave responses that fell into the category of "ambivalence", but seven of the Teacher Candidates who were "Concerned" gave responses suggesting an ambivalent stance towards individuals in the other categories. For example, Teacher Candidate #20, a "Concerned" respondent, wrote, "I feel no way because everyone has their own opinion, and you can't change people's minds". Responses such as this indicated that, even as teachers who have the responsibility to educate others, respondents felt little belief that this is possible when it comes to climate change.

5.1.2. Believing Others Care Too Little about Climate Change

The second most common response type (n = 6; 27.2%) was statements suggesting individuals in the other Americas categories needed to care more and learn more about climate change. All three of the Teacher Candidates in the "Alarmed" category fell into this response pattern. One "Alarmed" participant, Teacher Candidate #17, explained,

> *I try not to stress about how other people feel (because I'm too good at it and it becomes time consuming) BUT. . . I do wish more people were concerned. Everyone can do their part and change could be made. I'm not aggressive, but hearing people say they don't care makes me want to argue*. (Teacher Candidate #17)

The responses of this type suggested that others could be persuaded to care more about climate change if they had more information. For instance, Teacher Candidate #2, who was "Concerned", explained, "I think that the people who are dismissive or doubtful have not seen and heard enough evidence to persuade them to believe that it is happening". Similarly, Teacher Candidate #18 explained, "I believe that the people in disengaged, doubtful, and dismissive are not fully aware of the reality of our world and what is occurring". Responses such as this suggested that these Teacher Candidates believed that others could learn to care more about climate change if they were made more aware of the climate crisis.

5.1.3. Believing Others Care Too Much about Climate Change

The least common response type (n = 3; 13.6%) was responses suggesting people in the other Americas categories care too much about climate change. One Teacher Candidate wrote, "If people get too worried, I don't understand why it is so important" (Teacher Candidate #15, a "Disengaged" respondent). Two other Teacher Candidates, both of whom fell in the "Concerned" category, also made statements that fell in this category. One explained, "I think everyone needs more knowledge and strategies to combat it, but I don't think it needs to be a huge concern or be thought about constantly. A healthy balance!" (Teacher Candidate #11) while the other stated that, "I think some people take it too far and can come off as having a superiority complex. . . however, those who try to deny it are far worse as they usually try to bring religion or politics into it" (Teacher Candidate #19). While each of the responses that suggested people care too much about climate change suggest slightly different rationales for this stance, just three Teacher Candidates responded in this way.

Next, the percentages of Teacher Candidates who report their willingness or unwillingness to self-censor particular topics is reported in Table 2.

Table 2. Percentages of Teacher Candidates who Self-Report Willingness or Unwillingness to Self-Censor by Topic.

Topic	Climate Change		Sexuality and Sexual Orientation		Gender and Gender Identity		Race and Racism	
	Raw Number	Percent	Raw Number	Percent	Raw Number	Percent	Raw Number	Percent
TC would not self-censor	13	52%	3	12%	2	8%	18	72%
It depends on the context	11	44%	2	8%	6	24%	7	28%
TC would always self-censor	1	4%	20	80%	17	68%	0	0%
Total	n = 25							

Only one Teacher Candidate (2%) stated that they would definitely self-censor the topic of climate change. In comparison, most Teacher Candidates (80% and 68%, respectively) stated that they would self-censor the topics of sexuality and sexual orientation and gender

and gender identity. No Teacher Candidates (0%) reported a willingness to self-censor the topic of race and racism.

Climate change was the topic on which the greatest number of Teacher Candidates indicated that their willingness to self-censor depended on the context. Eleven (44% of Teacher Candidates) listed climate change in the middle of their arrays indicating that they may or may not self-censor that topic. In comparison, seven Teacher Candidates (28%) reported that their willingness to self-censor the topic of race and racism depended on the context, six (24% said their willingness to self-censor gender and gender identity depended on the context, and two (8%) reported that their willingness to self-censor the topic of sexuality and sexual orientation depended on the context.

Teacher Candidates were most resolute in their unwillingness to self-censor the topic of race and racism, with 18 (72%) reporting that they would not self-censor this topic. Thirteen Teacher Candidates (52%) indicated that they were unwilling to self-censor the topic of climate change. Just three and two Teacher Candidates (12% and 8%, respectively) indicated unwillingness to self-censor sexual orientation and gender and gender identity.

5.2. Teacher Candidates' Views of the Reasons Underlying Book Challenges and Bans

Twenty of the twenty-six Teacher Candidates responded to the item that asked what they viewed as the underlying reasons for the increase in book challenges and book bans. Teacher Candidates' views fell into four categories: (A) the view that societal change was occurring, n = 9, 45%; (B) the importance of affirming and including diverse perspectives, n = 8, 40%; (C) concerns over developmental appropriateness of certain topics at different grade levels, n = 6, 30%; and (D) the view that teachers/schools have overstepped their roles, n = 5, 25%. These categories are not mutually exclusive. Eight Teacher Candidate's answers included two of these categories while the remaining twelve answers only included one.

5.2.1. Book Challenges and Bans Due to Societal Changes

The nine responses that suggested societal changes have led to the increase in book challenges and bans focused what Teacher Candidate described as the "spiteful political climate of America" (Teacher Candidate #9). These respondents were spread across the SASSY [48] categories of "Cautious", "Concerned", "Disengaged", and "Alarmed". One participant explained that she would self-censor topics that "can be seen as disrespectful or unnecessary" however, "the increase in book bans likely comes from societal polarization efforts to control narratives in education" (Teacher Candidate #22). One described the situation by stating "There have been a lot of political uprisings, and people are unwilling to listen to reason or other people. There are a lot of things being forced on teachers from all sides whether to include or not include" (Teacher Candidate #15). Overall, these responses point to an increase in sensitivity from individuals across society that has led to less tolerance of certain children's literature topics.

5.2.2. Book Challenges and Bans Due to Inclusion of Diverse Perspectives

Eight responses suggested that the resistance to certain books was a result of children's literature being more diverse and inclusive. Of these, only one of the respondents was "Disengaged" on the topic of climate change while the others were either "Concerned" or "Alarmed". Arguing in favor of keeping books in classrooms, Teacher Candidate #11 wrote, "I believe all of these topics need to be mentioned in teaching and at school. They are the truth and cause of issues real people face. Students need to be knowledgeable of them so we don't make the same mistakes in the future". This Teacher Candidate went on to explain that being presented with the truth was the underlying cause of book challenges and bans. As Teacher Candidate #8 put it, "some people don't want every child to feel seen and heard, but as a future teacher it is important". Overall, these responses suggested book challenges and bans were a response to diverse representation and the Teacher Candidates

suggested that this response was intended to prevent students from learning about the true lived experiences of others.

5.2.3. Book Challenges and Bans Due to Developmentally Inappropriate Content

Six Teacher Candidates suggested that schools' missteps with providing students with developmentally inappropriate content are the cause of book challenges and bans. Teacher Candidate #18 stated that she would self-censor to avoid "causing nightmares" for her students. Teacher Candidate #14 and Teacher Candidate #26 used this item to clarify that their willingness to self-censor would depend on the grade level they would teach. Similarly, Teacher Candidate #27 reported,

> *For me I think depending on the age of my students I wouldn't sensor much. I definitely wouldn't do a read aloud with cussing just because I would feel uncomfortable saying those words out loud in a classroom setting. Depending on the type of violence, I wouldn't want them to read about it.*

In addition, Teacher Candidate #14 stated that she "would never want to cross a line with beliefs and values... in upper elementary" since the students are becoming more aware about the world. Regardless of whether the Teacher Candidates mentioned teaching older students or younger students, developmental appropriateness was stated as a consideration in responses that fell into this category.

5.2.4. Book Challenges and Bans Due to School and Teachers Overstepping Their Roles

Finally, five TCs brought up the idea that it is not the role of school to educate students about particular topics (i.e., gender) and described school overstepping these boundaries as the root of book challenges and bans. Of these, one was "Concerned" while the others were either "Disengaged" or "Dismissive". Teacher Candidate #5, a "Dismissive" respondent when it comes to the topic of climate change explained, "The students can learn about whatever they want at home, but school is a place where these topics can become difficult. Parents may have concerns... I don't feel these topics would be in my wheelhouse". Similarly, Teacher Candidate #24, a "Disengaged" respondent, explained that the topics on the list "would not be relevant to lessons that [she] would teach [her] students", suggesting that she viewed the role of school as more narrowly focused on imparting traditional content knowledge. Interestingly, when reacting to her status as "Disengaged", she wrote, "I am not disengaged but underinformed", suggesting she felt that she should have been informed more by teachers, perhaps in school settings, on climate change. Overall, these responses suggested the view that teachers should only teach accepted content that could not be contested.

6. Discussion

This phenomenological study, which occurred in spring 2024 in the U.S. state of Texas, addressed the question: How do Teacher Candidates in a conservative U.S. state make sense of children's literature on climate change? While topics such as race, gender, and sexual orientation are those most often to result in children's literature challenges and bans [9] there have been instances of climate change content being banned from textbooks [23]. Given the monumental challenges faced by early-career teachers, it is not difficult to imagine elementary generalist teachers self-censoring children's literature on climate change topics due to confusion or fear related to these policies. Further, it is impossible to fully predict what topics may lead to retaliation. As [19] put it, "controversy, like lightning, never has the courtesy to tell where it will strike" (p. 24). While Teacher Candidates' reservations may be valid, given the urgency of the climate crisis [2,3] combined with persistent misinformation on this topic [5] it is essential for anthropogenic climate change to be taught in elementary classrooms.

Overall, findings suggest that elementary Teacher Candidates report a low likelihood to self-censor [10] the topic of climate change in the children's literature they share with students. Just one Teacher Candidate stated that they would always do so; however,

many Teacher Candidates said that their likeliness to self-censor depends on the context in which they are teaching. Teacher Candidates found this topic to be the one they were least able to definitively say they were planning to self-censor or not self-censor as compared to other topics that commonly lead to book bans and challenges. Furthermore, when explaining their views on why book banning is increasing, Teacher Candidates brought up the importance of developmental appropriateness, importance of representation, the role of school, and societal shifts. Thus, when Teacher Candidates report that their likelihood to self-censor depends, these factors are likely to be the considerations on which their choices depend. Overall, this indicates that the inclusion of children's literature on climate change is an important space for teacher educators to address [7] In the sections that follow, the implications of these findings for initial teacher education are expanded upon.

6.1. Implications for Preservice Teacher Educators

A key finding for preservice teacher educators is that Teacher Candidates are largely accepting of one another's views on climate change. Even in a very conservative city in an oil-producing state, only three Teacher Candidates remarked on the downfalls of being over-concerned with climate change. The vast majority reported accepting others' views on the topic regardless of where they fell on the SASSY [48] measure. On one hand, this can be viewed as Teacher Candidates behaving with exceptional acceptance towards others. If Teacher Candidates in this setting are so open to others' views, then teacher educators across global contexts have little to fear in the way of backlash by bringing up the topic of climate change. This finding should embolden teacher educators to take action and center climate change in teacher education programs. As they do so, it is important that teacher educators make space for learning but avoid appearing to have a "superiority complex" on this topic.

On the other hand, Teacher Candidates' outright acceptance of others' perspectives raises the question of when they, as teachers, would intervene when students simply do not understand basic climate science. Given that the role of a teacher is to help students build their knowledge by actively negotiating with their ideas [53], Teacher Candidates' passivity towards educating others about climate change is problematic. This implies a need for additional learning about how to appropriately and respectfully challenge others' perspectives.

Further, Teacher Candidates held the view that book challenges are occurring due to the politization of teaching, societal changes, and in response to diverse representations. Teacher Candidates who state that their willingness to self-censor climate change is context-dependent may do so under circumstances where they fear that by mentioning it, they are politicizing teaching. Climate change can be viewed as topic that has become politicized by those who wish to deny its occurrence [6,54]. However, climate science is a science, and should not be distorted as a controversial topic [54]. Climate science is soundly within the content schools must teach. If this topic is presented as settled science, Teacher Candidates may be willing to address climate change rather than viewing it as a politicized issue.

Finally, some Teacher Candidates stated that they believed books were being challenged and banned due to schools teaching developmentally inappropriate content and/or content that is not the role of school to teach. Some studies have shown that young children can experience negative emotions such as anxiety when reading about climate change [55]. However, the potential for discussions of climate change to cause distress should not preclude including the topic in the curriculum.

6.2. Limitations

This phenomenological study [11,40] relied on a sample of Teacher Candidates at one university in the U.S. Southwest, and due to sample size, inferential statistics could not be applied. However, a driving function of phenomenological research is the generation of new theory which can later be tested at scale. Additional research with different samples of teachers, both preservice and in-service, is likely to yield new insights. Second, a known

issue in any research that involves self-reporting and human interactions at the point of data collection is response bias. Teacher Candidates may have felt a sense of social desirability bias [56] towards their instructor who occasionally mentioned her commitment to climate justice within other conversations that took place during the course. For this reason, interviews were not used; however, additional research that includes individual or focus-group interviews could provide valuable contributions to the literature.

7. Conclusions

The reality of climate change is undeniable, and addressing climate change will require reconfiguring all human-dominated systems, including schools [32,33]. In this study, elementary Teacher Candidates' perceptions of children's literature depicting climate change were examined for the purpose of understanding how they view these texts as tools for student learning. Findings suggest that very few Teacher Candidates are "Dismissive" or "Doubtful" about climate change even in a conservative oil-producing US state; instead, most Teacher Candidates were "Concerned". However, in their qualitative statements, many Teacher Candidates were ambivalent about whether it was possible to educate others about climate change, suggesting a low likelihood that as teachers they will center this topic in the curriculum. Additional longitudinal research that tracks the views and practices of teachers over time is needed. Further, Teacher Candidates reported little willingness to self-censor this topic compared to other frequently contested topics [9] such as gender and gender identity or sexuality and sexual identity. Combined, these results paint a hopeful picture for the future of elementary education should teacher educators be prepared to grasp it. In sum, this study suggests the importance of including children's books on climate change in all facets of elementary teachers' initial preparation. When it comes to our collective future there can be no greater goal.

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