Nature through Virtual Reality as a Stress-Reduction Tool: A Systematic Review

Gentile, Ambra; Ficarra, Salvatore; Thomas, Ewan; Bianco, Antonino; Nordstrom, Anna

The current systematic review aims to assess the acute stress-reduction effects of virtual reality (VR) natural environments. The study followed the Preferred Reporting Items for Systematic Reviews and Meta- Analyses (PRISMA) statement, while the inclusion criteria were established through population, intervention, comparison, outcome, and study design (PICOS). The studies were included if (a) based on a nonclinical population; (b) compared the exposure to virtual nature through 360° images, biophilic elements, VR prerecorded videos, or immersive environments, excluding augmented reality; (c) objective (physiological parameters) or subjective (e.g., self-report questionnaires) measures were reported; (d) the reported measures contained quantitative outcomes; and (e) the records were published between 2010 and 2023. Four hundred nine studies were initially retrieved, 19 of which were finally included for synthesis. The eligible studies comprised a total of 1,168 participants. The quality assessment of the studies revealed a score of 10.1/15, indicating that studies were of overall "moderate quality." Heterogeneity among the type of natural environment, type of stress induction, and type of comparator (nonnatural environment) was retrieved. Differences were also present regarding either the physiological or psychological variables analyzed. The exposure to natural environments through VR seemingly reduces objective and subjective stress levels. The presence of (a) natural sounds, (b) natural lighting, and (c) water elements seem to be key elements that help VR users reducing stress.

Keywords: Virtual Reality, Stress-reduction tools, Natural Environments

INTRODUCTION

Formal schooling reflects the surrounding society and its hopes to provide knowledge, skills, attitudes and values to coming generations. Such affordances are particularly salient in subject education with ambitions to contribute to political education, where we hope that pupils, in various ways, will participate in strengthening democracy. Although democratic education can be seen as a cross-curricula assignment, in this article, we will focus on the role of social science or equivalent subjects that teach contemporary social, economic and political

© 2023 American Psychological Association

content. In current Western societies, the ambition to prepare pupils for life in a democracy is increasingly relevant. Western societies are becoming more polarized in terms of political views, where citizens have been described as living in echo chambers (Baumann and Obirek 2015), predominantly relying on (and often receiving) information that confirms their own world views and political ideas (Taber 2011). The fear is that this situation might lead to democratic erosion and social unrest (Carothers and O'Donohue 2019). Naturally, this situation is not the same in every Western liberal democracy; each country struggles with its own specific challenges, and the stakes and effects have different degrees of gravity (cf. Carothers and O'Donohue 2019). Nonetheless, every society has to find ways to address democratic challenges, and, in many cases, formal education has been seen as a natural arena to address them. As such, schools have been described as a unique arena for discussions of different perspectives; even segregated school systems are more pluralistic and offer more perspectives than one pupil's experience in home settings (Parker 2008; Hess 2009). Furthermore, compulsory school systems make it possible to reach the vast majority of adolescents.

Assigning such a task to formal schools and subjects such as social science education1 gives birth to a principal question for policy-makers as well as implementers: What kind of teaching toolkit should we construct in order to advance pupils' ability to inquire and discuss political issues? In the broad field of social studies, two major approaches can be identified. First, the progressive position that pupils need to practice democratic conversations through deliberative and agonistic discussions (Englund 2006; McAvoy and Hess 2013; Tryggvason 2018) and second, the disciplinary approach where societal issues are inquired and understood through social scientific knowledge and procedures. The essential idea of the first approach is that students should be given the opportunity to learn about, engage in, and discuss social issues through deliberations with their peers using the teacher as a facilitator and moderator of discussions. The goal is a temporary consensus or for students to accept and discuss conflicting ideas positively depending on deliberative or agonistic perspectives on discussions. The merits, disfavors, and efficiency of these approaches have been, predominantly theoretically, explored and discussed by researchers (Samuelsson and Bøyum 2015; Koutsouris et al. 2022). One central issue is if the methods increase knowledge or not, and the results are ambiguous (Bogaards and Deutsch 2015; Persson et al. 2020). At the same time, it is well known that deliberative teaching approaches are difficult to realize and manage in the classroom, even for highly skilled and experienced teachers (Johnson and Johnson 1993; Levinson 2003; Parker 2022). Furthermore, teachers and curriculum makers alike have shared a reluctance to deal with issues that can be controversial or sensitive2 in school, resulting in avoidance due to fears of reactions from parents and the surrounding society and fueling polarization in schools through teaching (Ho et al. 2014; Pollak et al. 2018). Additionally, pressure upon teachers in the form of high-stakes

testing seems to make conversations on controversial issues rare in the broad field of social studies education (Misco et al. 2011).

Importantly, both deliberative and agonistic perspectives underline the importance of knowledge in engaging with different topics, but not necessarily disciplinary aspects. By contrast, the second approach focuses on the role of knowledge and the use of concepts, methods and theories from academic disciplines (Journell et al. 2015; Sandahl 2015). Re- searchers have argued that this kind of emphasis allows students to inquire about social issues as well as to discuss and understand values related to these issues (Barton 2011, 2017; Sandahl 2015, 2019). This approach clearly coincides with Young and Muller's (2013) idea of powerful knowledge and its potential to use epistemic ideas from academic disciplines to take students beyond their own experiences and give pupils access to the best knowl- edge available to empower them to learn, to understand the world and to act consciously as political beings. For a decade or so, the idea of powerful knowledge has become an important pivot to discussing content-related issues in subject education. The aim of this article is to critically examine and discuss the role of powerful knowledge in relation to the societal desire to allow political education to play a role in strengthening democracy. We conduct this from a Swedish perspective. Although Sweden is seen as a high performer in democracy and social cohesion, Sweden has increasingly become occupied with high- lighted risks, threats and worries in the political debate, especially in issues pertinent to the GAL-TAN scale, such as immigration (Koivunen et al. 2021; Oskarson and Demker 2015; Sandahl et al. 2022). However, many of the arguments in this article are also relevant to countries with graver political polarization than Sweden.

BACKGROUND AND INSTITUTIONAL SETTINGS: POLITICAL EDUCATION IN SWEDEN

A democratic society is dependent upon knowledgeable, participating and engaged citizens, and schools have a specific assignment to contribute to such a citizenry. In Sweden, this task has been present in the public school system at least since 1919, when the parliament decided upon universal suffrage. Prior to this, history and Christianity education had a major role in socializing young people into Swedes, but with universal suffrage came other ideals, and citizenship education became an important element of mass education. However, nationalistic and patriarchal ideas still dominantly prevailed, and the first substantial effort to create a more democratic citizenship education came in the wake of World War II when prominent school politicians wanted schools to 'inoculate' youth against totalitarian ideas (Hartman 2012). In their efforts to reform Swedish schools into a comprehensive system, a new subject—social science education, or

'samhällskunskap'— was introduced in order to give pupils fundamental knowledge about politics, economics and social issues as well as consider the role of values in such issues.

Since the early 1960s, social science has been the principal school subject to deal with political education, and it rests on the established assumption of a dual responsibility in developing young people's knowledge and abilities and instilling shared values of democracy among students (Gutmann and Ben-Porath 2014). In terms of content, it is based on disciplinary knowledge from political science, sociology, economics and law in what can be described as intrinsic goals of the subjects (i.e., powerful knowledge derived from the disciplines). These goals are supplemented by extrinsic goals, such as democratic values and ideas that society desires students to encompass (Sandahl et al. 2022). These extrinsic goals also include inviting students to discuss and deliberate on political, economic and social issues, even though this is vaguely formulated in the syllabus (Sandahl 2014). In the latest reform, the citizenship educational goals have been emphasized as cross- curricular rather than related to a specific school subject (SNAE 2011). However, the role of social science as the principal subject for political education has prevailed—at least among teachers and how they perceive their main assignment as social science teachers (Lindmark 2013; Larsson and Larsson 2021; Öberg and Bäckström 2021).

Curricula have a tendency to come and go, but since the 1960s, there has been a tradition of a social science subject rooted in disciplinary knowledge. However, this core has been supplemented with an ambition to incorporate young people's own ideas and experiences about societal issues to strengthen democratic and public participation in society. Even though the present syllabi heavily rely on disciplinary knowledge, this aspiration is present implicitly (Sandahl 2014). However, the syllabi do not elaborate on how students' experiences and ideas should be understood or treated in the classroom.

A possible conceptualization is to describe this element as an 'everyday life-world' (Schutz and Luckmann 1973; Habermas 1987). For Schutz and Luckmann (1973), the life- world is the social construction of reality where we as humans try to make meaning of the world around us, individually and together with others. In a social science educational setting, the life-world can be understood as students' attempts to interpret and engage in social issues by making meaning of them within their own everyday context. Thus, the life-world is characterized by pupils' experiences, beliefs and feelings, coloured by identities, media narratives and even myths and conspiracy theories. In many cases, these everyday understandings have been described as problematic for educators and something to overcome through teaching disciplinary understandings (Lundholm 2018). However, even though the life-world might produce understandings that are in stark contrast to disciplinary knowledge, the life-world is where meaning-making occurs and where we construct our social reality (Blennow 2019; Sandahl 2019;

Johansson and Sandahl 2023). Consequently, it is too important for educators to ignore.

TAKING STUDENTS BEYOND THEIR OWN EXPERIENCES: POWERFUL KNOWLEDGE IN SOCIAL

Science Education

Everyday knowledge about political, social and economic issues has its limitations. It might be important for identity building and making meaning of the surrounding society but can also be polarizing as individuals form their own in often closed communities of understanding. Here, disciplinary knowledge has been suggested as a way to mutually inquire about societal issues and to reach conclusions on different perspectives on norms and values in connection to such issues (Barton 2011, 2017; Sandahl 2015).

One way of framing the disciplinary approach has been made in an English-speaking educational context. Here, Michael Young and Muller (2013) and Young (2013) have suggested that all curricula should be based on the best knowledge available in societies— knowledge produced and evolved by specialists at the university departments. Young and Muller (2013) label this knowledge as 'powerful disciplinary knowledge' since it can explain the world in better ways than everyday knowledge and experiences can. David Lambert (Lambert 2017, p. 24) has specified this powerful disciplinary knowledge and describes it as follows:

- Discipline-based (in domains that are not arbitrary or transient);
- Evidence-based;
- Abstract and theoretical (conceptual);
- Part of a system of thought;
- Dynamic, evolving, changing but reliable;
- Testable, yet open to challenge;
- Sometimes counter-intuitive;
- Exists outside the direct experience of the teacher and the learner.

Lambert's (and Young and Muller's) argument is that university disciplines have specialized knowledge that is based on evidence rather than experience. Its strength lies not in content per se but in procedural knowledge on how to obtain knowledge in specific systematic thought. They do not argue that this knowledge is unquestionable (specifically in the humanities and social sciences) but that it is the most reliable knowledge we have. They argue that this knowledge can be counter-intuitive to the perceptions pupils have in their everyday lives, and finally, powerful knowledge is something that needs to be learned and practiced since it

does not come naturally from our experiences (Young 2015). Furthermore, Young (2008) argues that powerful knowledge is a basic democratic right and is particularly important for disadvantaged students (cf. Beck 2017), an important aspect in relation to citizenship education.

Powerful knowledge emerged from social realist discussions within the sociology of education and was not necessarily a concept intended for discussing subject teaching in schools. Rather, its roots go back to Bernstein's (1970) discussions about knowledge structures and their social implications (see Muller 2022 for a more thorough discussion). Nonetheless, the concept has since then been a key idea in both Anglo-American and continental discussions on how it can help to improve subject-specific education such as social science education.

Second-Order Concepts as Powerful Disciplinary Thinking in Social Science Education

So, what does powerful knowledge mean for social science education? One com- plicating factor is that social science education, in most cases, is an interdisciplinary or multidisciplinary school subject with connections to several university disciplines; as such, it is contradictory to the notion of an 'epistemic community' (Young 2013). However, we would argue that political science, sociology and economics all share social scientific approaches in terms of methods and theories. Previously, Sandahl (2015) has conceptu- alized some key aspects of what it means to think like a social scientist and what kind of procedural knowledge social science education should aim to develop in the classroom. These are labelled as 'second-order thinking concepts' (Sandahl 2015; cf. Barton 2017).

Second-order thinking concepts derive from an Anglo-American research tradition in educational psychology where knowledge is discussed as 'lower order thinking' and 'higher order thinking' in its demand on the learner in terms of cognition (Anderson et al. 2000; Newmann 1990). First-order concepts, or lower-order thinking, refers to the knowledge that can be memorized and repeated, such as the number of members of the European Parliament or the media outlets in a specific country. This does not mean that this kind of knowledge is simple or easy; learning concepts such as inflation, globalization or, for that matter, polarization might be challenging for pupils. However, these kinds of concepts and facts are substantial in their nature and possible to memorize. Second-order concepts, on the other hand, are procedural; hence, they are examples of how social scientists generate knowledge and how they organize, analyze, contextualize and critically review societal issues. This kind of knowledge cannot be memorized but needs to be practiced in order for students to be skillful (Newmann 1990; Sandahl 2015; Barton 2017). This shift from schools' traditional view of knowledge (as facts) has become an important factor in

educational reform and curricula-making in subjects such as history and geography (Lee 2005; Seixas and Morton 2013; Lambert 2017). Importantly, this shift does not consider facts and conceptual understanding as unimportant. On the contrary, in order for students to organize, analyze, contextualize and critically examine, substantial knowledge is crucial. Analyzing and reviewing political turmoil in the US election without contextual knowledge of the political system is a meaningless task. However, second-order concepts put emphasis on knowledge as something more complex and is in line with the notion of 'powerful knowledge', at least in theory. As such, powerful knowledge has been criticized for its disregard for forms of knowledge and the specific interaction of different kinds of knowledge that together form the powerful in powerful knowledge (White 2018; Carlgren 2020). Here, we will focus on second-order concepts rather than first-order concepts, but again, these two forms have to be integrated to become powerful in the classroom.

Social science education has been described as a subject where inquiry into social issues is important and where the role of skills or abilities becomes a crucial part of teaching in order to allow students to advance their quality of inquiry (Barton 2011, 2017). In previous research, Sandahl (2015) has suggested six second-order concepts related to the abilities to organize, analyze, contextualize and critically review where the disciplinary work of social scientists is seen as a role model. The first thinking concept is the ability to use casual thinking when inquiring about social issues. In social sciences, this can be described as cause and consequence (rather than cause–effect as in natural sciences). In order to analyze a societal phenomenon, students need to practice their ability to distinguish different causes and their weight in the specific context and differentiate consequences for individuals, groups and society at large. When social scientists use cause and consequence, they try to make sense of complex webs of short- and long-term causes in order to understand the issue at hand. For example, when trying to understand why populist parties are on the rise in Europe, there is not a single reason behind this development. Instead, several reasons can be categorized and discussed in relation to each other, and at the same time, their significance for the development can be scrutinized. This thinking also includes the concepts of agency/structure to understand how individuals act within given social structures and how these are interdependent. By practicing these abilities in class, students can advance their way of understanding societal issues through a disciplinary lens and take them beyond their everyday thinking (that often is characterized by understanding triggering causes as the only cause).

The second thinking concept is the ability to use evidence to infer conclusions. While our everyday thinking does not require evidence for our arguments, the disciplinary effort within the social sciences is always based on evidence derived from different sources of information. Thus, using evidence includes source and information criticism, where students practice their ability to

determine the value of different sources and learn how to ask questions in relation to the material (Wineburg and McGrew 2017). Here, using different methods and review processes in teaching can help students develop a more skillful way to build their inferences on evidence the same way researchers tend to. This also includes scrutinizing their own confirmation biases in understanding information.

The third thinking concept is abstraction, which includes models as well as theories. Models are often used to simplify and explain complex societal phenomena. In economics, models are common to explain pricing mechanisms and economic cycles (Jägerskog 2021), but they are usual in most social sciences. Students need to practice their use of these models to explain and analyze social issues but also understand their limitations, as models are not necessarily correct. The concept of abstraction also includes using theory as an instrument to make an elaborate analysis of economic, political and social issues. Democ- racy theory, class theory or theories on social and political trust are all examples of theories from the social sciences that can help students achieve a more complex and organized understanding of contemporary societies. These theories can, in turn, be descriptive or explanatory and students need to understand how they can be used in analytic work by using them themselves.

The fourth thinking concept is using comparison as an instrument to compare and contrast different issues, such as political and economic systems in nation-states or cultural and social phenomena. One important aspect is to practice the ability to identify appropriate categories and points of comparison. Furthermore, it involves the process of developing an understanding that differences and similarities can be found in any kind of comparison, for instance, that other systems or cultures are not opposites to the ones students are familiar with. Rather, in comparison, students will find that some things are the same and others are different.

This relates to the fifth second-order concept: perspective-taking. Perspective-taking is the ability to shift perspectives and understand different cultures and political ideas on their own terms. In research, this perspective-taking is understood as 'social perspective-taking' rather than 'interpersonal perspective-taking', which refers to the ability to understand a fellow human being. Instead, social perspective-taking refers to the ability to understand the motivations of other agents at a more structural (and academic) level, where historical, cultural or political settings are in focus (Gehlbach 2011; Sandahl 2020). Consequently, it is not about identifying or sympathizing with other agents yet to understand their position and the values they deem important. Also, it includes the understanding that perspectives can be differential, for instance, that perspectives are not necessarily shared by everyone in a group or within a nation. One example is the view on guns in the US, where people hold very different positions on the issue while the media might portray this as an "American perspective". Perspective-taking is best practiced through contextualization. If students are supposed to infer

conclusions on why individuals, groups and societies act as they do, they need to understand the structures of that specific context. Otherwise, students might conclude that people are ‘stupid’ because their thinking might be different. Therefore, perspective-taking also includes reflexivity: awareness of one’s own values, motives and beliefs. In our research, we have identified perspective-taking as a core ability for students to critically examine different stances in relation to political trust (Jansson et al. 2023; Johansson and Sandahl 2023) and financial literacy (Björklund and Sandahl 2020, 2021, 2023; Björklund 2021).

This leads us to the sixth and last second-order concept: the ability to assess normative dimensions. Even if we use other thinking concepts when we try to understand an issue, it still raises normative and evaluative questions. Imagine that we inquire about the question of surveillance in society. We can find evidence to discuss its causes and consequences and the various perspectives on its pros and cons for individuals, groups and societies. But at the end of the discussions, the issue is a normative one, and social science cannot answer if it is good for societies or not. It depends on the values that we hold important as individuals, in this case, perhaps security or integrity. An important aspect for social science teachers is to practice students’ ability to discern such values in different topics and to understand the various positions that are possible to hold (Sandahl 2019, 2020). We would argue that this dimension is often implicit in the social sciences and that normative dimensions are often interwoven in the research approach (for instance, Marxist theory or neoclassical theory). In social science education, it is possible to practice students’ ability to identify such perspectives and their importance on conclusions in societal issues.

To conclude, the disciplinary approach is far more than conveying the facts of the disciplines. Rather, it is about practicing the thinking of social scientists and the procedures they use to create an understanding of social issues. As such, it coincides with the notion of powerful knowledge and its characteristics (compare the description from Lambert above). Disciplinary knowledge has the potential to give students new understandings and take them beyond their previous experiences. At best, we can hope that students use their insights from this approach when they discuss and debate with their peers outside school, perhaps giving intricate perspectives on cause and consequences, asking for evidence or offering conflicting (but logical) perspectives. Underlining this kind of knowledge is not new in social science (or more broadly in social studies). Rather, it has been a core item in the literature, and its merits have been discussed for decades (Newmann 1990; Kincheloe 2001; Parker 2010; Barton 2017; Sandahl 2015) and just lately discussed in terms of powerful knowledge (Aashamar and Klette 2023; Sandahl 2019; Björklund and Sandahl 2023). One of its merits is that the disciplinary approach takes a ‘cold position’, trying to dissect social issues without invoking students in debates and deliberations about potentially controversial and sensitive issues. The question is if it is a successful way to deal

with polarized positions in controversial and sensitive issues and thus function as an important part of citizenship education. We will argue that it is not enough and that we need to include the concept of the life-world when we discuss social science education.

MOVING BEYOND POWERFUL KNOWLEDGE

The use of a disciplinary approach has been prevalent in social studies education and seems to be a comfortable way for teachers to avoid controversial and sensitive issues (Barton and McCully 2005). As such, it has also shown promising results in regard to citizenship education in providing students with new social perspectives (Sandahl 2015, 2020) and has strong support from social studies and social science education research (Barton and Avery 2016; Klijnstra et al. 2022). In the British Isles, citizenship education has been criticized for its lack of emphasis on specialized knowledge in favour of generic skills (Jerome 2018; Andrews and Mycock 2007). In continental Europe and the US/Canada, where there, in most cases, is a specific school subject designated for citizenship education, such as social science education, specialized knowledge is more clearly integrated into the curriculum (Barton 2017; Parker 2008; Sandahl et al. 2022). However, another strand of discussion in the broad field of social studies research is that it is not quite enough to involve students in the discussion in a way that is appropriate in terms of citizenship education (Jay 2022). Here, the German discussion around the 'Beutelsbach Consensus' (Reinhardt 2016) can give complementary perspectives on the role of social science education.

The Beutelsbach Consensus refers to the three principles of teaching controversial issues that were formulated during a turbulent time in political education in Germany in the 1970s. In the midst of polarized political conversations, researchers and practicians met in the town of Beutelsbach in Southern Germany to discuss the aims of schools' political education (Christensen and Grammes 2020). Although the debate was heated and offered many conflicting ideas, they managed to reach a consensus, resulting in three principles for political education (Christensen and Grammes 2020, pp. 3–4; cf. Wehling 1977; Reinhardt 2016):

Prohibition against overwhelming the student

It is not permissible to catch students off-guard, by whatever means, for the sake of imparting desirable opinions, thereby hindering them from 'forming an independent judgment'. This is the difference between political education and indoctrination. In- doctrination is incompatible with the role of a teacher in a

democratic society and the generally accepted objective of making students capable of independent responsibility and maturity (Mündigkeit).

Treating controversial issues as controversial

Matters which are controversial in scholarship and political affairs should also be presented as controversial in the classroom. This requirement is very closely linked to the first point above a teacher who loses sight of differing points of view, suppresses options, and leaves alternatives undiscussed is already well on his or her way to indoctrinating students. We have to ask whether teachers have, in fact, a corrective role to play, that is, whether they should or should not specifically set out such points of view and alternatives that are foreign to the social and political origins of students (and other participants in programs of political education) [. . .].

Giving weight to the personal interests of students

Students should be put in a position to analyze a political situation and their own personal interests, as well as to seek ways to have an effect on given political realities in view of these interests. Such an objective strongly emphasizes the acquisition of operational skills, which follows logically from the first two principles set out above.

In relation to powerful knowledge, the first two items are not very problematic. When analyzing political, economic and social issues, second-order concepts can be used in a way that does not give students a preferred judgement. Furthermore, it is possible, specifically through perspective-taking and the assessment of normative dimensions, to treat controversial and sensitive issues as such and allow the teacher to play the role of the devil's advocate. The disciplinary approach, however, tries to keep the scholarly cool and does not focus on students' own interest or their mündigkeit.

The third item of the Beutelsbach consensus thus makes powerful knowledge some- what problematic if we really want to address politically controversial or sensitive issues in the classroom. On the one hand, the second-order concepts of assessing normative dimen- sions open up for understanding different (political) positions, but disciplinary thinking particularly allows for sense-making since societal phenomena can be understood and explained but do not necessarily offer meaning-making. When things matter, we invest our own feelings and beliefs (Blennow 2019). Therefore, we would argue that we need to combine the experiences students bring with them to school, that is, their 'everyday life-world', with the disciplinary world that social science education can offer. In order to implement this, we need to think theoretically about how to combine these two worlds.

One possible answer is suggested through the framework of historical consciousness (Rüsen 2017). In history education, historical consciousness has become an important theo- retical paradigm for understanding meaning-making processes and the role of education. Humans live their lives in the life-world, where they make meaning of the social reality (Schutz and Luckmann 1973). Here, knowledge is intertwined with feelings, and identity is based on and formed by the experiences we have. When we have questions—often originating in societal changes or challenges—we use our experiences and knowledge to interpret what is going on. Our interpretations take the shape and form of a representation that signifies our new understandings. These new understandings then guide us in our coming action in relation to the question we have, or in other words, it orients us. The hermeneutic process of experiencing–interpreting–orientating is simultaneous and part of our existence as humans in an effort to create meaningful narratives.

For Rüsen (2005), the goal of (history) education is to develop students' narrative competence through the scientific approach. In the case of social science education, the social scientific world does not come naturally but exists outside the direct experiences in students' everyday life-world (cf. Lambert 2017). The disciplinary approach can, through the subject, contribute to concepts and procedures of social scientific thinking through first- and second-order concepts. These can help students qualify their understanding of the surrounding society and allow them to reach conclusions based on evidence. Thus, social science education has a specific contribution to students' narrative competence by giving them new experiences and means to perform a qualified interpretation.

In order to follow the principles of the Beutelsbach consensus, the role of education is not to prescribe students' conclusions or direct them in certain orientations but rather give them tools to arrive at more judicious suppositions and prepare them to act as they see appropriate. When students' interests are given weight, it is, therefore, important to also confront them through the subject and give them perspectives on the challenges and prospects of their positions. A social science education of that kind requires brave and knowledgeable teachers to guide them toward independent citizenship.

CONCLUDING DISCUSSION

This paper set out to critically examine and discuss the role of powerful knowledge in relation to the societal desire to allow political education to play a role in strengthening democracy. Based on decades of research on social science education, it is our firm conclu- sion that education can play an important role in contributing to strengthening democracy. We would, in line with many educational researchers, argue that a disciplinary approach can offer students new

and powerful knowledge that can take them beyond their everyday understandings and function as a 'disturbing' factor in contrast to the ideas they have about politics and social issues (cf. Young 2013; Young and Muller 2013; Lambert 2017). This includes 'knowing the facts' and being able to use procedural abilities to organize, analyze, contextualize, and critically review societal issues. When teachers emphasize this approach, it is possible for students to inquire about different explanations and perspectives and uncover normative positions by using evidence rather than their own experiences and ideological outsets. If the disciplinary approach is done professionally, it has the potential to challenge students and their ideas. However, it has to include their experiences and beliefs about a good society as well.

If not, social science education is at risk of becoming 'meaningless' for students (cf. Barton 2009). It can, at best, offer sense-making by giving students complex disciplinary understandings of political, economic and social issues, hence how society is structured. But social science education can also become 'sterile' and clash with students' own perspectives on societal issues, becoming something completely different from how politics is discussed in society in general. Political conversations in social media, political debates in and outside of parliaments, or with peers and family are often completely different compared to when academics dissect the same conversations. The public debate is integrated with issues of identity and convictions of what is right and wrong, thus being part of the life-world that students are familiar with. In one way or another, the life-world needs to be given space in classrooms as well. The Beutelsbach consensus offers a sobering awakening in its call from the 1970s when talking about controversial and sensitive issues: treat them as such, do not force beliefs on students and involve them as stakeholders in societal issues by listening to them.

The contrasting approach of practicing democratic conversations through deliberative and agonistic discussions (Englund 2006; McAvoy and Hess 2013; Tryggvason 2018) has, in spite of its teaching challenges, its merits when inviting students to such conversations. Structured dialogues allow for life-world perspectives to have their space but cannot be the only way forward. If students' perspectives are dominant, there will not be any new contributions for students but rather a familiar (but moderated) version of their everyday experiences. We would argue that the disciplinary approach needs to be the focal point of social science education and that individual life-world experiences of students should be invited and dealt with through the teachers' professional 'gaze' of disciplinary understandings in order to become more than just individual representations. Dealing with controversial or sensitive issues as a 'social scientist' gives a professional aspect where issues can be problematized and dealt with through structured discourse where arguments are explored and scrutinized rather than only representing one's own perspectives. Here, tools such as 'critical inquiry' (Bermúdez 2015) and 'structured academic controversies' (Johnson and Johnson

1993) can give teachers feasible didactical tools to use with students. Based on such a focal point, deliberative and agonistic approaches can add life-world perspectives and strengthen the principle that students' interests must be invited.

In order to achieve such a social science education, we need well-educated social science teachers who not only have academic understandings but can act as intermediaries between the life-world and the disciplinary world. Certainly, this is a challenging task for teachers since identity and political convictions can be very emotional and stir up more polarization. But feelings have a place in social science education (Blennow 2019). If not, social science education becomes a place where your own ideas have no place unless they are in concord with certain ideas. That would be a very different place than the society outside the classroom.

The powerful knowledge or disciplinary approach is no remedy to battle political polarization or democratic deficits. Nor is it incompatible with citizenship education or approaches focusing on deliberation or agonism (Jay 2022). The potential lies in the combi- nation of allowing students' everyday life-world perspectives to take place but to address them through the eyes of the disciplinary 'gaze'. For sure, it is an immense challenge for teachers to make students leave their comfortable political affiliations and beliefs and step into a 'social scientific mode', particularly as researchers are seen as antagonists by some groups. But if we succeed and students bring new qualified understandings back to the life-world and use them to orient themselves and form their own opinions in a more informed way, education has fulfilled its role. It is not our responsibility to tell them how to act but to offer them the tools to do so. Arguably, many of those tools are found in the disciplines.

Before concluding and in relation to highly polarized communities, let us remind ourselves of the limitations of education. Mass education can be an important instrument in socializing youth into a desired existing order (such as democracy) and a vital tool to give students crucial knowledge and abilities useful in society. However, it is not a remedy for all, and the failures of societies are seldom compensated in education, to paraphrase Basil Bernstein (1970). When political (or socio-economic) polarization occurs, its origins are most likely found outside the educational system. In fact, research suggests that young people are more inclined to bridge polarized conversations (Harvard Youth Poll 2023). Perhaps we should be more concerned about adults.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES

Aashamar, Peter N., and Kirsti Klette. 2023. Powerful Knowledge in the Social Studies Classroom and Beyond. Journal of Curriculum Studies 55: 388–408. [CrossRef]

Anderson, Lorin W, David R. Krathwohl, and Peter W. Airasian. 2000. A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. Boston: Allyn & Bacon.

Andrews, Rhys, and Andrew Mycock. 2007. Citizenship Education in the UK: Devolution, Diversity and Divergence. Citizenship Teaching and Learning 3: 73–88.

Barton, Keith C. 2009. The Denial of Desire: How to Make History Education Meaningless. In National History Standards: The Problem of the Canon and the Future of Teaching History. Edited by Linda Symcox and Arie Wilschut. Charlotte: Information Age Publishing, pp. 265–82.

Barton, Keith C. 2011. Wars and Rumors of War: Making Sense of History Education in the United States. In History Wars and the Classroom: Global Perspectives. Studies in the History of Education. Edited by Tony Taylor and Robert Guyver. Charlotte: Information Age Publishing, Inc.

Barton, Keith C. 2017. Shared Principles in History and Social Science Education. In Palgrave Handbook of Research in Historical Culture and Education. Edited by Mario Carretero, Stefan Berger and Maria Grever. London: Palgrave Macmillan, pp. 449–67.

Barton, Keith C., and Alan W. McCully. 2005. History, Identity, and the School Curriculum in Northern Ireland: An Empirical Study of Secondary Students' Ideas and Perspectives. Journal of Curriculum Studies 37: 85–116. [CrossRef]

Barton, Keith C., and Patricia C. Avery. 2016. Research on Social Studies Education: Diverse Students, Settings and Methods. In Handbook of Research on Teaching, 5th ed. Edited by Drew H. Gitomer and Courtney A. Bell. Washington, DC: AERA, American Educational Research Association, pp. 985–1038.

Baumann, Zygmut, and Stanislav Obirek. 2015. On the World and Ourselves. Cambridge: Polity.

Beck, John. 2017. Powerful knowledge, esoteric knowledge, curriculum knowledge. Cambridge Journal of Education 43: 177–93. [CrossRef]

Bermúdez, Angela. 2015. Four Tools for Critical Inquiry in History, Social Studies, and Civic Education. Revista de Estudios Sociales 35: 102–18. [CrossRef]

Bernstein, Basil. 1970. Education Cannot Compensate for Society. New Society 15: 344–47.

Björklund, Mattias. 2021. Beyond Moral Teaching: Financial Literacy as Citizenship Education. Doctoral thesis, Karlstad University, Karlstad, Sweden.

Björklund, Mattias, and Johan Sandahl. 2020. Financial Literacy as Citizenship Education—A viable prospect? Journal of Social Science Education 19: 4–20. [CrossRef]

Björklund, Mattias, and Johan Sandahl. 2021. Inviting students to independent judgement: Teaching financial literacy as citizenship education. Citizenship, Social and Economics Education 20: 103–21. [CrossRef]

Björklund, Mattias, and Johan Sandahl. 2023. Teaching and Learning Financial Literacy within Social Studies—A Case Study on How to Realise Curricular Aims and Ambitions. Journal of Curriculum Studies 55: 325–38. [CrossRef]

Blennow, Katarina. 2019. The Emotional Community of Social Science Teaching. Doctoral thesis, Lund University, Lund, Sweden. Bogaards, Matthijs, and Franziska Deutsch. 2015. Deliberation by, with, and for University Students. Journal of Political Science Education 11: 221–32. [CrossRef]

Carlgren, Ingrid. 2020. Powerful knowns and powerful knowings. Journal of Curriculum Studies 52: 323–36. [CrossRef]

Carothers, Thomas, and Andrew O'Donohue, eds. 2019. Democracies Divided. The Global Challenge of Political Polarization. Washington, DC: Brookings Institution Press.

Christensen, Anders Stig, and Tilman Grammes. 2020. The Beutelsbach Consensus—The Approach to Controversial Issues in Germany in an International Context. Acta Didactica Norden 14: 1–19. [CrossRef]

Englund, Tomas. 2006. Deliberative Communications: A Pragmatist Proposal. Journal of Curriculum Studies 38: 503–20. [CrossRef] Gehlbach, Hunter. 2011. Making Social Studies Social: Engaging Students Through Different Forms of Social Perspective Taking. Theory Into Practice 50: 311–18. [CrossRef]

Gutmann, Amy, and Sigal R. Ben-Porath. 2014. Democratic Education. In The Encyclopedia of Political Thought. Edited by Michael T.

Gibbons. Hoboken: Wiley-Blackwell Publishing, pp. 863–75.

Habermas, Jürgen. 1987. The Theory of Communicative Action Vol. 2 Lifeworld and System: A Critique of Functionalist Reason. Cam- brige: Polity.

Hartman, Sven. 2012. Det Pedagogiska Kulturarvet: Traditioner Och Idéer i Svensk Undervisningshistoria [The Pedagogical Cultural Heritage: Traditions and Ideas in Sweden's History of Education]. Stockholm: Natur & Kultur.

Harvard Youth Poll. 2023, In Harvard Youth Poll, 45th ed. Cambridge, MA: Harvard Kennedy School, Institute of Politics. Available online: https://iop.harvard.edu/youth-poll/45th-edition-spring-2023 (accessed on 20 August 2023).

Hess, Diana E. 2009. Controversy in the Classroom: The Democratic Power of Discussion. New York: Routledge.

Ho, Li-Ching, Theresa Alviar-Martin, and Enrique N. P. Leviste. 2014. "There Is Space, and There Are Limits": The Challenge of

Teaching Controversial Topics in an Illiberal Democracy. Teachers College Record 116: 1–28. [CrossRef]

Jansson, Maria, Patrik Johansson, and Johan Sandahl. 2023. Trust as subject content: Developing students' reasoning on democracy through displacement. Journal of Social Science Education 22. [CrossRef]

Jay, Lightning. 2022. The Disciplinary and Critical Divide in Social Studies Teacher Education Research: A Review of the Literature from 2009–2019. Theory & Research in Social Education 50: 339–74. [CrossRef]

Jägerskog, Ann-Sofie. 2021. The Affordance of Visual Tools: The Potential of Visual Representations of Pricing Facilitating an Epistemic Practice in Economics Teaching. Journal of Social Sciences Education 20: 65–90. [CrossRef]

Jerome, Lee. 2018. What do citizens need to know? An analysis of knowledge in citizenship curricula in the UK and Ireland. Compare: A Journal of Comparative and International Education 48: 483–99. [CrossRef]

Johansson, Patrik, and Johan Sandahl. 2023. Should government agencies be trusted? Developing students' civic narrative competence through social science education. The Journal of Social Studies Research, in press.

Johnson, David W., and Roger T. Johnson. 1993. Creative and Critical Thinking through Academic Controversy. American Behavioral

Scientist 37: 40–53. [CrossRef]

Journell, Wayne, Melissa Walker Beeson, and Cheryl A. Ayers. 2015. Learning to Think Politically: Toward More Complete Disciplinary

Knowledge in Civics and Government Courses. Theory and Research in Social Education 43: 28–67. [CrossRef]

Kello, Katrin. 2016. Sensitive and controversial issues in the classroom: Teaching history in a divided society. Theory and Practice 22: 35–53. [CrossRef]

Kincheloe, Joe L. 2001. Getting Beyond the Facts: Teaching Social Studies/Social Sciences in the Twenty-First Century. New York: Peter Lang. Klijnstra, Thomas, Gerhard L. Stoel, Gerhard J. F. Ruijs, Geerte M. Savenije, and Carla A. M. van Boxtel. 2022. Toward a framework for assessing the quality of students' social scientific reasoning. Theory and Research in Social Education 51: 173–200. [CrossRef]

Koivunen, Anu, Jari Ojala, and Janne Holmén, eds. 2021. The Nordic Economic, Social and Political Model. New York: Routledge.

Koutsouris, George, Lauren Stentiford, Simon Benham-Clarke, and David Hall. 2022. Agonism in Education: A Systematic Scoping Review and Discussion of Its Educational Potential. Educational Review 74: 1029–54. [CrossRef]

Lambert, David. 2017. Powerful Disciplinary Knowledge and Curriculum Futures. In Changing Subjects, Changing Pedagogies: Diversity in School and Education, Studies in Subject Didactics 13. Edited by Noora Pyyry, Liisa Talnio, Kalle Juuti, Riane Vasquez and Maiju Paananen. Helsinki: Finnish Research Association for Subject Didactics.

Larsson, Anna, and Lars Larsson. 2021. Controversial Topics in Social Studies Teaching in Sweden. Nordidactica: Journal of Humanities and Social Science Education 2021: 1–21.

Lee, Peter. 2005. Putting Principles into Practice: Understanding History. In How Students Learn. History, Mathematics and Science in the Classroom. Edited by M. Suzanne Donovan and John D. Bransford. Washington, DC: National Research Council. Levinson, Meira. 2003. Challenging Deliberation. Theory and Research in Education 1: 23–49. [CrossRef]

Lindmark, Torbjörn. 2013. Samhällskunskapslärares ämneskonceptioner [Social Science Teachers' Subject Conceptions]. Doctoral thesis, Umeå University, Umeå, Sweden.

Lundholm, Cecilia. 2018. Conceptual Change and the Complexity of Learning. In Converging Perspectives on Conceptual Change: Mapping an Emerging Paradigm in the Learning Sciences. Edited by Tamer Amin and Olivia Levrini. Abingdon: Routledge.

McAvoy, Paula, and Diana E. Hess. 2013. Classroom Deliberation in an Era of Political Polarization. Curriculum Inquiry 43: 14–47. [CrossRef]

Misco, Thomas, Nancy Patterson, and Frans Doppen. 2011. Policy in the Way of Practice: How Assessment Legislation Is Affecting

Social Studies Curriculum and Instruction in Ohio. International Journal of Education Policy and Leadership 6: 1–13. [CrossRef] Muller, Johan. 2022. Powerful Knowledge, Disciplinary Knowledge, Curriculum Knowledge: Educational Knowledge in Question. International Research in Geographical and Environmental Education 32: 20–34. [CrossRef]

Newmann, Fred M. 1990. Higher Order Thinking in Teaching Social Studies: A Rationale for the Assessment of Classroom Thoughtful- ness. Journal of Curriculum Studies 22: 41–56. [CrossRef]

Oskarson, Maria, and Marie Demker. 2015. Room for Realignment: The Working-Class Sympathy for Sweden Democrats. Government and Opposition 50: 629–51. [CrossRef]

Öberg, Joakim, and Pontus Bäckström. 2021. Kanon Eller Inte Kanon? En Enkätstudie Bland Samhällskunskapslärare i Årskurs 7–9 [Canon or Not? A Survey among Social Science Teachers, Years 7–9]. Nordidactica: Journal of Humanities and Social Science Education 2021: 20–56.

Parker, Walter C. 2008. Knowing and Doing in Democratic Citizenship Education. In Handbook of Research in Social Studies Education. Edited by Linda S. Levstik and Cynthia A. Tyson. New York: Routledge, pp. 65–80.

Parker, Walter C. 2010. Social Studies Education EC21. In Social Studies Today: Research and Practice, 2nd ed. Edited by Walter C. Parker. New York: Routledge.

Parker, Walter C. 2022. Structured Academic Controversy: What It Can Be. In Making Classroom Discussions Work: Methods for Quality Dialogue in the Social Studies (Research and Practice in Social Studies Series). Edited by Jane C. Lo. New York: Teachers College Press, pp. 71–85.

Persson, Mikael, Klas Andersson, Per Zetterberg, Joakim Ekman, and Simon Lundin. 2020. Does Deliberative Education Increase Civic Competence? Results from a Field Experiment. Journal of Experimental Political Science 7: 199–208. [CrossRef]

Pollak, Itay, Aliza Segal, Adam Lefstein, and Assaf Meshulam. 2018. Teaching Controversial Issues in a Fragile Democracy: Defusing Deliberation in Israeli Primary Classrooms. Journal of Curriculum Studies 50: 387–409. [CrossRef] Reinhardt, Sibylle. 2016. The Beutelsbach

Consensus. Journal of Social Science Education 15: 11–13. [CrossRef] Rüsen, Jörn. 2005. History: Narration, Interpretation, Orientation. New York: Berghan Books.

Rüsen, Jörn. 2017. Evidence and Meaning: A Theory of Historical Studies. New York: Berghan Books.

Samuelsson, Martin, and Steinar Bøyum. 2015. Education for deliberative democracy: Mapping the field. Utbildning & Demokrati— Tidskrift för Didaktik och Utbildningspolitk 24: 75–94. [CrossRef]

Sandahl, Johan. 2014. Samhällskunskap och historia i svensk gymnasieskola: ämnenas roll och relation i diskurs och ämnesplaner [Social Science and History in Swedish Upper Secondary School: The Role and Relationship of the Subjects in Discourse and Curricula]. Nordidactica—Journal of Humanities and Social Science Education 2014: 53–84.

Sandahl, Johan. 2015. Preparing for Citizenship: The Value of Second Order Thinking Concepts in Social Science Education. Journal of Social Science Education 14: 19–30. [CrossRef]

Sandahl, Johan. 2019. Studying Politics or Being Political? High School Students' Assessment of the Welfare State. Journal of Social Science Education 18: 153–71. [CrossRef]

Sandahl, Johan. 2020. Opening Up the Echo Chamber: Perspective Taking in Social Science Education. Acta Didactica Norden 14: 1–24. [CrossRef]

Sandahl, Johan, Martin Jakobsson, and Malin Tväråna. 2022. Samhällskunskap (Social Science Education) in Sweden. A Country Report. Journal of Social Science Education 21: 85–106. [CrossRef]

Schutz, Alfred, and Thomas Luckmann. 1973. The Structures of the Life-World, Volym 1. Evanston: Northwestern University Press. Seixas, Peter, and Tom Morton. 2013. The Big Six Historical Thinking Concepts. Toronto: Nelson Education.

Swedish National Agency for Education (SNAE). 2011. Syllabus. Social Studies. Upper Secondary School. Available online: https://www.skolverket.se/download/18.4fc05a3f164131a74181078/1535372299998/Social-studies-swedish-school.pdf (accessed on 15 August 2023).

Taber, Charles S. 2011. Political Cognition and Public Opinion. In The Oxford Handbook of American Public Opinion and the Media. Edited by George C. Edwards, Laurence R. Jacobs and Robert Y. Shapiro. Oxford: Oxford University Press, pp. 368–83.

Tryggvason, Ásgeir. 2018. Democratic Education and Agonism: Exploring the Critique from Deliberative Theory. Democracy and Education 26: 1–9. Available online: https://democracyeducationjournal.org/home/vol26/iss1/1 (accessed on 1 October 2023). Wehling, Hans-Georg. 1977. Konsens à La Beutelsbach? In Das Konsensproblem in Der Politischen Bildung. Edited by Siegfried Schiele and Herbert Schneider. Stuttgart: Ernst Klett Verlag.

White, John. 2018. The weakness of "powerful knowledge". London Review of Education 16: 325–35. [CrossRef]

Wineburg, Sam, and Sarah McGrew. 2017. Lateral Reading: Reading Less and Learning More When Evaluating Digital Information. Stanford History Education Group Working Paper No. 2017-A1. Available online: https://doi.org/10.2139/ssrn.3048994 (accessed on 1 October 2023).

Yacek, Douglas. 2018. Thinking Controversially: The Psychological Condition for Teaching Controversial Issues. Journal of Philosophy of Education 52: 71–86. [CrossRef]

Young, Michael. 2008. Bringing Knowledge Back In: From Social Constructivism to Social Realism in the Sociology of Education. London: Routledge.

Young, Michael. 2013. Overcoming the Crisis in Curriculum Theory: A Knowledge-Based Approach. Journal of Curriculum Studies 45: 101–18. [CrossRef]

Young, Michael. 2015. What Is Learning and Why Does It Matter? European Journal of Education 50: 17–20. [CrossRef] Young, Michael, and Johan Muller. 2013. On the Powers of Powerful Knowledge. Review of Education 1: 229–50. [CrossRef]