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Group Problem Solving as a Different Participatory Approach to Citizenship Education

- European policy makers and a large part of the citizenship education (CE) research community convey a specific idea of democracy and citizenship without discussing it.
- This hidden goal of the curriculum limits teachers' and pupils' autonomy.
- Choosing a theoretical framework has consequences for the learning goals, the chosen pedagogical approach and the kind of civic capacities pupils should practice.
- Group problem solving was justified as an alternative participatory approach to citizenship education and translated into educational principles.
- An epistemological theory of deliberative democracy laid the basis for this choice and learning activities were developed and implemented in primary and secondary schools.

Purpose: The main goal of this article is to define and justify group problem solving as an approach to citizenship education. It is demonstrated that the choice of theoretical framework of democracy has consequences for the chosen learning goals, educational approach and learning activities. The framework used here is an epistemic theory of deliberative democracy. It is argued that such an approach enhances teachers' and pupils' autonomy.

Design/methodology/approach: First, it was discussed what kind of theory of democracy lies behind the mainstream approach to citizenship education. Then, it was demonstrated how a chosen theory of democracy and citizenship leads to a specific translation into educational principles. In order to define and translate the chosen framework into educational principles and learning activities, different disciplines were drawn upon: political philosophy, cognitive and educational psychology.

Findings: Group problem solving was defined as an alternative participatory educational approach to citizenship education and four educational principles were defined: argumentation, connected learning, decision making and thinking together.

Practical implications: Educationalists, policy makers and researchers working on citizenship education should discuss their ideals of democracy and citizenship in order for these to become an object of scrutiny in the curriculum.

Keywords:

Deliberative democracy, citizenship education, group problem solving, Participation, civic education

1 Introduction

European policy makers and a large part of the citizenship education (CE) research community convey a specific idea of democracy and citizenship, as can be read in for example the Eurydice and International Civic and Citizenship Education Study (ICCS) reports. Behind this idea, there is a specific view on how citizens should relate to other citizens and the state. In other words, such policy documents use certain theories of democracy and citizenship. However, the fundamental assumptions of these theories still remain vague (Hedtke, 2013; Kennedy, 2008; Zimenkova, 2013). According to Peterson (2009), policy makers are mostly republican orientated, whereas van der Ploeg (2016) analyses their orientation as a mixture of republicanism and liberalism. Nevertheless, policy makers and numerous researchers advocating the mainstream participatory approach to CE do not always explain or discuss its connection to a specific theory of democracy or citizenship. And when they do, the analysis often remains rather superficial. Hidden curriculum occurs when the theoretical framework used,

which sets out the direction for the curriculum, is not discussed and justified: "Ideology is not always immediately apparent in citizenship curriculum documents. It can be easily overlooked without a deeper examination of the theory behind the recommended practice" (Kennedy, 2008, p.11). This hidden goal of the curriculum limits pupils' autonomy: they are only confronted with one idea of democracy and a single conception of good citizenship (van der Ploeg & Guérin, 2016). As Künzli (2007) and van der Ploeg and Guérin (2016) argue: the political conceptions communicated in the curriculum have to become the object of critical scrutiny. Furthermore, clarifying the framework of democracy chosen for CE enables one to define and justify the choice of learning goals, the kind of civic capacities pupils should practice, as well as the most appropriate pedagogical approach (Peterson, 2009; Parker, 2006, 2010). A good example of this hidden curriculum is the Crick report, released in 1998 by the Curriculum Authorities, describing the kind of CE that was becoming compulsory. A few years later, Crick (2007) acknowledges that civic republicanism was the theory underlying this CE.

The goal of this article is to define and justify the kind of participatory approach that enhances pupils' autonomy and to demonstrate how this can be translated into educational principles and in the school practice. In

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order to do so, different disciplines were drawn upon: political philosophy, cognitive and educational psychology. First, the (hidden) theoretical framework of the mainstream participatory approach advocated by policy makers and researchers will be shortly described and questioned. Secondly, the chosen focus on deliberative democracy will be explained and justified. Then, the process of deliberation, with group decision making as its main goal, will be briefly explained. Finally, the demands deliberation places on the thinking capacities described will be translated into four educational principles, drawing upon cognitive developmental and educational psychological research. At last the implementation in the school practice will be illustrated.

2 The mainstream participatory CE: a hybrid conception

According to Peterson (2009), England is promoting a republican idea of democracy in its conception of CE. This civic republicanism is recognisable in the overarching goal of fostering active participation in political and public life. It is also perceivable in the following features: "First, that citizens possess and should recognise certain *civic obligations*; second, that citizens must develop an awareness of *the common good*, which exists over and above their private self-interests; third, that citizens must possess and act in accordance with *civic virtue*; and fourth, that civic engagement in democracy should incorporate a *deliberative aspect*." (Peterson, 2009, p. 57).

According to Van der Ploeg (2015) European policy documents, such as Eurydice, or international research such as ICCS, are a combination of liberalism and republicanism, with the republican orientation being dominant, as it sees active participation, social cohesion and harmony as the main pedagogical goals of CE. Furthermore, the emphasis of CE is on experiencing active citizenship within a real-life context (Schultz et al., 2010; Eurydice, 2012). For Zimenkova (2013, p.48), even though Europe and several European countries state in their documents that youth should be prepared to reflect as critical citizens, this criticism should have its limits:

"All these calls for civic activities which *do not question* the given political order (or detract from other kinds of criticism). What is expected, then, from an active political citizen is that she maintains cohesion, observes politics and (if at all) critically reflects on politics, is informed about politics and then reproduces and supports the division of labour within democracy.

The mainstream participatory approach to CE favours an obedient citizen while ruling out stronger non-conformist forms of participation, such as insubordination (Hedkte, 2013). In the Netherlands, the same kind of hidden curriculum occurs. In a recently published article, Eidhof, ten Dam, Dijkstra and Westhof (2016) state that there is a consensus in political theories about democratic citizenship goals. These authors are relevant as they have a strong influence on Dutch educational policy. Ten Dam worked for the Education Council of the Netherlands (Onderwijsraad) and Dijkstra works at the

Education Inspectorate. The authors make a distinction between democratic citizenship goals and citizenship goals. The first being general goals and the second more specific goals. The consensus found in the literature is at the level of general goals:

"A fair amount of consensus exists between various political theories with regard to the promotion of democratic citizenship. As such, these consensus citizenship goals can serve as common ground. To stimulate or sustain democracy, societies cannot depend on the existence of democratic institutions alone. A democracy is defined by its practices as much as its principles: principles are most effective when supported and practiced by all citizens. (Eidhof, ten Dam, Dijkstra and Westhof 2016, p. 3).

According to Eidhof et al. (2016), this consensus is based on a threefold virtue that citizens must possess: (1) "tolerance for diversity and civility" as well as a recognition of equal rights, (2) solving conflict in the personal, public and political spheres in a non-violent way and lastly (3) civic engagement through volunteering. In their article, the authors defend the view that *all* citizens should participate actively in civic life and also actively engage in volunteer practices. This supposed consensus, and the way it is justified, is problematic. First of all, if there seems to be a consensus among different political theories, this consensus is of a different nature. The focus of political theories on citizens' rights came under pressure in the 70-80's and a shift started to occur, leading to the recognition of the responsibility of citizens towards democracy (Kymlicka & Norman, 1994). However, the kind of responsibilities citizens should take on, and the nature of the virtues citizens should ideally possess, are subject to dispute (Kymlicka & Norman, 1994; Kymlicka, 2004). Secondly, the last virtues mentioned by Eidhof et al. (2016) define a participative approach praised by civil society's theorists. In the case of the third and last claim, this idea of consensus is only underpinned by three authors Almond / Verba and Putman who themselves are advocates of a certain kind of theory of civil society.

Democracy and citizenship are controversial issues and should be dealt with as such in the curriculum (Biesta, 2014; Van der Ploeg, 2015; van der Ploeg & Guérin, 2016). Moreover, there is also a lack of consensus among political theories as to whether the participation of all citizens is necessary in order for a democracy to function well, and the same applies to the kind of participation required. Thus, 'where', 'how' and 'how many' citizens should participate is also a matter of controversy. Some political philosophers argue that it is sufficient to sustain a democracy when only a portion of the citizens participates (Van der Ploeg, 2015; van der Ploeg & Guérin, 2016). For Eidhof et al. (2016) a good citizen is an active and engaged one. Amnå and Ekman (2014) concluded in their research that the way active and passive citizenship is defined is contra-productive, as it leads researchers to think in terms of a dichotomy. In their research, they found that some of the youths typed as passive, should preferably be considered as "standby" citizens, having a

basic confidence in democracy but prepared to come into action when necessary.

To summarize, CE is ideological driven and implementing CE in the school requires clarity regarding the theory of citizenship one uses as a framework along with its justification in educational terms. This implies that educators should make a choice, discuss it and demonstrate how they translate their approach into educational principles. Such justification is now missing. In this article, deliberative democracy has been chosen as a framework, justified and translated into educational principles.

3 Justification for a theory of deliberative democracy

Deliberative democracy is a broad concept of democracy with no consensus among deliberative theorists regarding the goals and process of deliberation (Peterson, 2009; Bächtiger, 2012; Landemore & Page, 2012). For some deliberative theorists, deliberation is not necessary to reach a consensus, but its aim lies in discussing an issue with other people, providing reasons and justifying them publicly. For others, the emphasis of deliberation lies in expressing one's values, sharing them, while respecting others' autonomy and judgment, and developing a (shared) identity. For still others, reaching a consensus and making joint decisions should be the aim of deliberation, with the emphasis on enhancing epistemic quality (Landemore & Page, 2012). This stance about the epistemic function of deliberation is supported by epistemic deliberative theories that "emphasize the instrumental properties of deliberation, namely the fact that it may and should get us to the "correct" answer", or at least, to the best possible answer to a given collective problem." (Bächtiger, 2013, p.21). The chosen focus with regard to the aim or process of deliberation has a bearing on how citizenship education should be taught. Peterson (2009) and Parker (2006, 2010) use a deliberative framework, justifying which aspect of deliberation to emphasize, why, and sometimes also how. They stress that defining such a framework helps clarify the kind of skills students should learn and how. Therefore, it gives orientation to teachers' educational practices.

If the essence of democracy is collective deliberation and decision making, then in order to make a significant contribution to collective decision making, citizens must be able to deliberate on all sorts of issues, to evaluate them, find solutions and ideally reach shared agreements (Goodin, 2008; Kymlicka, 2008). According to this view, group problem solving could be classified as fitting deliberative theories of democracy (Van der Ploeg, 2015). Group problem solving as a pedagogical approach to CE, is not only linked to proponents of a deliberative democracy, but has also been supported throughout the last century by educationalists such as Dewey and Kohnstamm, and has been implemented in the U.S. social studies curriculum, as well as in Politische Bildung in Germany (Van der Ploeg, 2015; Van der Ploeg & Guérin, 2016).

Black (2012) distinguishes two aspects of deliberation that occur in conjunction:

"...one aspect is analytic process, which involves group members talking together in ways that allow them to develop a shared information base, clarify the key values at stake, identify and weigh the pros and cons of possible solutions, and make the best decision possible. The second process necessary in deliberation is the social interaction that develops quasi-democratic relationships among participants. This social process involves participants having equal and adequate opportunities to speak, demonstrating mutual comprehension and consideration of other's view, and communicating respect of the group members and their perspectives. (p. 61-62).

Both processes are relevant to optimal deliberation, the second, the social process, enables and supports the first, the analytic process. But this analytic process, even under optimal social conditions, can be inadequate (Bächtiger, 2010). This means that working on these social aspects would not be enough to attain the best solution for the problem at hand. Some advocates of a deliberative democracy argue in favour of enhancing the epistemic quality of the discussion.

The epistemic variant of deliberative democracy considers the content of the discussion and the epistemic quality of the solution to be the goals of deliberation. Choosing such a framework seems appropriate, as societal issues are complex and often controversial. Offering a setting for students to engage in group reflection with their peers on such issues increases their autonomy by elaborating their knowledge and by reflecting on them. Furthermore, it opens the possibility of discussing this theory of democracy with students and allows them to explore other conceptions of democracy and the idea of being "good citizens" and helps them to think through and discuss these competing views on democracy and citizenship (Van der Ploeg, 2015; van der Ploeg & Guérin, 2016).

4 The epistemic theory of deliberation

How to improve the epistemic quality of the discussions and decisions through deliberation is a matter of ongoing debate among deliberative theorists. For Landemore (2007, p.7),

"Epistemic democrats, who focus on "truth-tracking" properties of democratic procedures, such as voting and deliberation, argue that the value of democracy is partially to be found in the epistemic quality of the decisions that democratic decision making (at least probabilistically) produces.

The question then raised is how to enhance this epistemic quality.

According to Bächtiger (2010), the epistemic quality of discussion will improve by the use of "productive contestatory techniques" which lead participants of deliberation to deepen their disagreements through argumentation, to search for inconsistencies in others'

arguments, to evaluate the validity of claims and ultimately reach a broader understanding of the issue at hand. These contestatory techniques encompass: "... three interrelated elements: questioning, disputing, and insisting." (Bächtiger, 2010, p.8). When consensus is considered an aim of deliberation, this can give rise to a search for common ground without thoroughly analysing and evaluating the disagreements and arguments, avoiding arguments that might lead to conflict, failing to share all information on the issue. For Landemore and Page (2015), it is the deliberation task that defines what kind of communication would be most efficient. Landemore and Page (2015) distinguish three different tasks: aggregative preferences, problem solving and predictions. Depending on the task at hand, the process and outcomes of deliberation will vary. For issues in which citizens view their disagreements as fundamental and for which they can give good reasons for various positions, for example abortion, aggregation could be one efficient way of reaching a decision. In the case of problem solving, striving for a consensus is the most adequate procedure because the aim of deliberation is to work out different solutions and decide which is the most appropriate. Whereas for predictive tasks requiring no agreement, for example when discussing the possible impact of certain policies. Contestatory discussion techniques, such as those proposed by Bächtiger (2010), would be best suited, as they encourage participants to compete in producing predictive models which ideally lead to "more accurate collective prediction." (Landemore & Page, 2015, p. 20). The objection raised by Bächtiger (2010), namely that a premature search for common ground may compromise epistemic quality, should be considered when engaging students in discussing during a deliberation. This means that students should be encouraged to deepen their positions, explicitly discuss their disagreements and share their knowledge thoroughly before embarking on a search for potential solutions and consensus. In short, exercising how to deliberate can include "productive contestatory techniques", even in the pursuit of consensus.

To sum up, Landemore and Page (2015) and Bächtiger (2010) agree that the primary goal of deliberation is to increase the epistemic quality of the discussions, finding solutions and making decisions on the problems citizens face. This implies that the educational approaches used should focus on enhancing the quality of discussion among students and the quality of the solutions proposed. In that case, the content is paramount. Choosing such an epistemic theory of democracy maximizes students' autonomy, because they will have to acquire certain knowledge in order to understand and deliberate on the issue.

I am, however, not claiming that learning how to share values is not relevant. Listening to others respectfully, accepting different points of view, equity and trust, are important conditions that facilitate the process of group problem solving. But within this framework, the attitudes students are required to learn are functional in the sense that they enable them to attain a good quality of

discussion among themselves. According to the literature on collaborative learning, students should receive training in order to successfully develop such listening skills, to learn to respect others' arguments and have enough trust in other students to engage in discussions and share their points of view (Baines, Blatchford & Chowne, 2009).

Our focus is on developing the thinking capacities students need to engage efficiently in group problem solving. As Parker (2006, 2010) emphasises, schools are the first institution students are exposed to, allowing them to engage in deliberation with students from different cultural, ideological and familial backgrounds. In CE, too strong focus on social interaction could come at the expense of learning how to argue, to reach sound judgments and make good decisions. There is an overwhelming amount of research showing that argumentation skills take time to develop, that the quality of people's judgments and decision making is often poor, due to thinking biases and heuristics, and that group thinking is not always efficient (Baron, 2008; Perkins, 2009, Kahneman, 2003; Stanovich & West, 2007). Now that the theoretical framework for CE has been chosen, justified and discussed, let us continue by considering the kind of thinking skills citizens require in order to deliberate.

5 The process of deliberation

The point of departure here, is that the content of deliberation concerns a wide range of issues relating to the common good of citizens and to making decisions as to how to solve such issues. This means that citizens may deliberate on issues ranging from political to environmental, from local to (inter)national. The goal of such deliberation is not per se that citizens change their opinions, but that they develop an informed view on the issue at hand in the awareness that there are potentially several defensible positions concerning this issue. An outcome of such deliberation might be that no consensus or solutions are possible due to irreconcilable points of view or judgments. In this case, citizens either have to reach a consensus on how to deal with these differences or opt for aggregative forms of decision making, as suggested by Landemore and Page (2015). I also assume that citizens have the opportunity to inform and prepare themselves prior to taking part in such deliberation. I will distinguish three phases in order to achieve a more accurate description of what is required of citizens. First, citizens can prepare themselves for taking part in the deliberation. Second, in (small) groups, they have to explain their position to each other. Third, they must reach a common analysis of the topic under deliberation and make a decision.

Preparing for deliberation

Deliberating with others requires that individuals are able to justify their point of view on the issue in such a way that others can understand them (Gutmann & Thompson, 2004). Here, two things are needed: (a) that a position is taken on the issue and (b) their ability to explain it to themselves and others, even to strangers. Let us examine (a) and (b) more closely. Participating in a

deliberation should lead one to reflect on one's own position and be able to justify it. If an opinion is held on the matter, the underlying reasons have to be made explicit. One engages in evaluating and judging one's own reasons – are these reasons supported by evidence and/or can they be organised and structured as a logical set of arguments? Is there a need for new or further information or evidence? If so, this has to be gathered and evaluated to determine its credibility and adequacy. The new information needs to be interpreted, analysed and evaluated, inferences have to be made and integrated within the argumentation. This process can result in improving, revising or changing one's earlier position. The amount of preparation, either the search for additional information or the examination of one's own argumentation, may, of course, vary. This depends on the complexity of the issue and the level of one's relevant knowledge and expertise, the willingness to do so and the time available. During this process, citizens can take their time to think things through, or choose not to do so. Therefore, they can reason at their own pace and level, practicing internal deliberation.

Explaining one's own position

Once the actual deliberation commences, there is less time to think and individuals also have to respond to others' reasoning: citizens must react to others' positions, give counter-arguments, deal with others' reactions to their own position and react to them. But first of all, each member must be ready to explain their position. This means assessing the appropriate kind of explanation and the level of complexity other members of the group can handle. This evaluation depends on the complexity of the issue discussed and the level of knowledge one believes others possess. Therefore, if a person presents an argumentation too complex to be grasped in the light of other members' lack of the required knowledge, then further explanation is called for. This demands the ability to tailor one's explanation to meet the required level, as well as some degree of pedagogical insight, which is not always easy when dealing with complex issues. Moreover, the issue must often be deliberated with strangers. The arguments not only have to be comprehensible, they ideally should also have a certain validity in order for them to be considered as relevant or worthy of discussion by other members of the group. And if he/she fails to convince others of the relevance of the arguments, then they must find new ways of explaining their position. Each group member presents their position, which is then to be evaluated by the other members, for instance by constructing new counter-arguments if in disagreement, or, if in agreement, by supplementing the position by adding new arguments, or by leaving it as it is. Ideally, this process can give rise to a revision or improvement of one's own position in the light of more valid arguments, by gaining a deeper insight into the issue at stake.

Deliberation and making a decision

The objective of bringing people together to deliberate is

to reach a justified decision (Gutmann & Thompson, 2004). This means that members of the group have to make a judgment as to an appropriate decision. In order to do so, different possibilities have to be developed with regard to resolving the issue. In the deliberation process, the judgments or points of view brought forward by the participants are sometimes insufficient to reach a decision and so new information may be called for. To this end, experts may be consulted, or group members may seek additional information themselves. This new information must then be evaluated, inferences have to be made based on the new evidence and integrated in a coherent way. In the light of the new information, possibilities can either be explored, revised or abandoned. In order to make a decision concerning an issue, various possibilities have to be evaluated and the best judgment is then determined, based on the new insights. In order to make a judgment, criteria have to be set (Baron, 2008; Black, 2012; Landemore & Page, 2015). These criteria, set by the members deliberating, can either be ethical or factual or both, but, whatever the case, they must be supported by group consensus. Evaluating possibilities also entails attempting to foresee the various associated consequences. Both direct and indirect consequences have to be considered. In other words, the process involves making predictions and attempting to take into account predetermined and undetermined factors. Again, the complexity involved in making predictions varies. Therefore, in some cases the issue could be relatively easy to solve, whereas in other instances, making any kind of realistic prediction may prove much more challenging. When no real agreement is attainable due to the nature of the issue group members must decide on how to deal with such differences (Gutmann & Thompson, 2004).

6 Deliberation and its critics

In short, deliberation requires that citizens be adequately informed, be able to develop and reach reasoned judgments, that they develop different scenarios and make predictions relating to these, that they make judgments regarding the best solutions and ultimately make collective decisions. The question raised, is whether all this is asking too much of citizens, as it places high demands on their rationality. Another potential criticism is whether deliberative theory of democracy, especially the one with group problem solving as its goal, rule out a more agonistic perspective on citizenship (Mouffe, 2013).

Placing too heavy demands on rationality is a common criticism voiced by opponents of a deliberative democracy (e.g. Gastil & Levine, 2005; Nabatchi et al., 2012). As already mentioned, research on rationality has shown that human thinking often suffers from various thinking biases and heuristics, such as oversimplification, confirmation bias, one-side bias and framing effects, potentially leading to poor judgment and decision making (e.g. Baron, 2008; Kahneman, 2003; Perkins, 2009; Stanovich & West, 2007). This irrationality does not mean that citizens are unable to develop good thinking skills. In fact, research on thinking skills has demonstrated that in-



formed views can be reached through deliberation (Fishkin, 2005; Pincock, 2012). Research on citizens' deliberation gives grounds for some degree of optimism. For decades, various national and international initiatives have been developed, aimed at organising deliberation among citizens, such as deli-berative polling, citizens' jury or the National Issues Forum (Gastil & Levine, 2005; Nabatchi et al., 2012). Leighninger (2012) listed 18 different initiatives. The research results of such deliberations show that participants can enhance their deliberation skills, although this does require thoughtful preparation: offering carefully gathered information on the chosen topic, delivering an unbiased presentation to participants, inviting experts to speak, moderating small group discussions and coaching small groups to reach agreements (Gastil & Levine, 2005; Nabatchi et al., 2012).

The second criticism is that group problem solving and deliberation places too much emphasis on consensus seeking procedures. It might even be reduced, as Hedtke (2013, p. 58) puts it, to "political and social functionalism", leaving no room for contestatory forms of citizenship, such as agitation, conflict and protest (van der Ploeg & Guérin, 2016; Biesta, 2014). One response to this criticism is to emphasise that seeking a consensus is by no means an essential goal of group problem solving. Attempting to understand the issue at hand and others' positions can lead to a better understanding of the irreconcilability of differences and help to clarify why no common ground can be found. Then, if it is still necessary to make a decision regarding the issue at stake, alternative ways to decide should be explored. Another, more serious objection to deliberative democracy is that it comes at the expense of diversity and minority rights, because it compels minority citizens to adopt the majority procedural rules. But in all political conflicts, there comes a point where the most effective strategy involves influencing the majority opinion and hence engaging in deliberation. Otherwise, the only remaining option is to end the conflict by exercising power and this will be at the expense of minority rights.

In the following sections, I elaborate four educational principles that can be used to guide teachers in developing learning activities aimed at exercising students' group problem solving skills. These principles have been developed using literature from the fields of cognitive, developmental and educational psychology.

7 Educational constituents of group problem solving

The educational consequence of the deliberative concept of democracy, focusing on epistemic quality and with group problem solving as its goal, is that students, both individually and together with their peers, reflect on all kinds of complex societal issues, develop well-grounded positions and make decisions on how to solve them. Gradually, students recognise that every solution has its drawbacks and that solutions found generally give rise to new and unforeseen problems. In such a democracy, citizens embark on a continuous process in which there is no such thing as an ideal end state. Such an approach not only places demands on the students, but also on the

teacher and on educational arrangements. As a consequence, students should have sufficient knowledge and thinking skills to form their own judgments and make their own decisions.

Although the goal of deliberation is to reach a justified and shared decision, argumentation is at its heart: citizens use argumentation in order to adopt a position, to defend or explain it and, together with others, to discuss the merits of potential solutions (Landemore & Mercier, 2010). Therefore, teaching students how to reach sound judgments through argumentation is important. While arguing with each other, citizens have to be able to take different perspectives relating to the issue at stake. Being able to consider the actors' different interests and perspectives is necessary in order to develop an understanding of the problem and its possible solutions that take such interests into account. Not only do students have to connect different interests, but also various types of knowledge, as the issues are often multi-dimensional. In addition, these issues can be controversial with no straightforward solutions. Once several potential solutions have been developed, students make a decision. The decision making process is complicated, as students could conceivably disagree on a potential solution. During the deliberation, students jointly determine which criteria, to their knowledge, the solution must meet. This means that special attention should be devoted to group work and particularly to sustaining and achieving a good level of exchange and encouraging students to think effectively together. I deduce four educational principles corresponding to the key aspects of the deliberation process: argumentation, connected learning, decision making and thinking together. In order to define the content of these principles, I used the work of cognitive and educational psychologists who have developed concrete learning materials together with teachers and researched their educational strategies in primary and secondary schools. For the principle of argumentation, I used the educational strategies of Kuhn, Hemberger and Khait (2013); for connected learning, I drew on the work of Künzli and Bertschy (2007, 2007); for decision making, I am indebted to Swartz, Costa, Beyer, Reagan & Kallick (2008); and for thinking together, to Dawes, Mercer and Wegerif (2004). These educational principles lend themselves to guiding teachers in their efforts to implement group problem solving within CE.

Argumentation

Argumentation, as an educational principle, has three major goals: learning the rules of reasoned argumentation, learning how to integrate evidence in argumentation and understanding that through argumentation a better informed view or sounder judgment can be achieved than the one formerly held. This implies that students exercise, not only how to formulate a good argument but also how to assess the quality of such arguments.

Students become acquainted with argumentation techniques and exercise arguing in groups. Kuhn et al. (2013) distinguish three aspects of argumentation that

students find difficult, as they require cognitive effort and take time to master. The first aspect is that students have to distinguish opinions from reasons and understand that reasons may differ as to their logical soundness, their validity, acceptability or reliability. Reasons must also be evaluated and interrelated in a logical way. The second aspect is to bear in mind that others may choose alternative positions on an issue, for which they have their own reasons and arguments, and these can be legitimate ones. Engaging in a thorough examination of the arguments brought forward by others, reflecting on counterarguments, weighing them and comparing them with one's own arguments, helps students to think things through. Equal time should be allocated to strengthening one's own position as to scrutinising others' positions. This encourages reflection on others' arguments and engagement in productive disagreement discussions. Finally, students have to integrate evidence into their argumentation. Thinking about evidence also requires one to consider knowledge and the kind of evidence that can be derived from different kinds of knowledge. Evidence can strengthen or weaken students own arguments but also others' arguments and that the same evidence can be used in different contexts and even to support opposing positions.

Connected learning (Vernetzendes Lernen)

In connected learning, students take different perspectives on an issue and interrelate these perspectives (Künzli, 2007, p. 56). They identify and differentiate perspectives, identify and analyse primary and secondary consequences of an act and, lastly, interrelate different perspectives (Künzli, 2007; Bertschy, 2007). The perspectives can differ with regard to the knowledge dimension (different kinds of knowledge lead to different kinds of insight and opinion), the interests of actors (different actors have different interests) and the kind of relevant factors involved, such as social, economic, ecological, local and global aspects. Which factors have to be incorporated in the analysis of the issue, depending on relevancy, geographical range: local or global, or time perspective: past, present or future.

Students need to understand that these different perspectives can give rise to conflicting insights and opinions, subject to the interests of the actors, their social background, their views on the issue and their relevant knowledge. Not only may their interests clash, the issue itself can be conflictual, depending on whether it is viewed from a predominantly social, economic or ecological perspective. Each actor, and their interests, should be studied and embedded in their social, cultural, economic and, if relevant, ecological context.

Decision making

Two distinctions have to be made with respect to decision making: (1) reaching consensus and (2) supporting the decision making-process. Regarding the first point: should students be asked to reach a consensus? Not doing so can compromise the work because students would tend to avoid disagreement (Mercer & Littleton,

2007). Therefore, students would neither learn how to deepen other students' perspectives, understanding the disagreement, nor how to integrate these in their own thinking, potentially leading to the development of superficial solutions (Mercer & Littleton, 2007). On the other hand, there are issues that cannot be resolved. Forcing students to attain a consensus on such issues can result in compliance or the pretence of consensus. And so, while Mercer and Littleton (2007) claim that asking students to reach a consensus, as an educational objective, may provoke better and deeper discussions among students, Bächtiger (2010) believes to the contrary, that the wish to attain a consensus can lead to a superficial analysis of the issue under consideration. As mentioned earlier, students should not prematurely seek common ground, but first scrutinize different positions and the argumentation on which these are based. When they are unable to reach a consensus due to divergent judgments or fundamental disagreements, then students could learn how to achieve a consensus on how to deal with disagreement. But before reaching a decision, students are required to discuss and analyse the pros and cons of each alternative.

With regard to the second point: supporting the decision making process, educational approaches have been developed dealing with how to make decisions in the case of complex issues involving multiple criteria and predetermined and undetermined factors. These approaches support the decision making process, for instance: developing criteria for decision making, applying these to the different alternatives, tracking consequences and summarising results (Perkins, 2009). The models used to help students structure their decision making process must be a mixture of both quantitative decision making processes, such as listing the pros and cons for different alternatives that have been developed, and narrative approaches in which a line of argument is developed in order to support the possible solution.

Thinking together

Thinking together on how to solve a problem involves explaining one's positions to others, provoking and sustaining discussions, scrutinising possible solutions, weighing them up, reaching a common understanding on how the problem is to be solved and, lastly, making a decision together (Mercer, 1996, 1999). In short, thinking together should aim at achieving a shared understanding of the problem and how to solve it. The heart of thinking together is the students' exchange of ideas. This means that students have to argue, challenge each other and reach sound relevant judgments together. Mercer (1996) calls this exchange "Exploratory talk".

In order to achieve this level of exchange, students first work together by developing certain social skills, building their confidence and their trust in other group members. Special attention should be paid to communication skills such as listening, turn taking, posing and answering questions, requesting and offering explanations (Baines, Blatchford & Chowne, 2009). Students can develop these social and communication skills by practising specific



skills each time they work together and by jointly defining the ground rules of their exchange. The teacher can organise a briefing and debriefing loop, concentrating on one central communication skill per group work session. Students also need to sustain a discussion and share both their knowledge and thinking strategy while working together. This requires that students explain their points of view in such a way as to be understandable to others and that other group members ask questions until they all understand one another (Webb et al., 2008). The teacher's support is crucial in this process. The teacher can model the students by asking open questions aimed at stimulating and sustaining exchange within the group. Moreover, they should all have something to contribute to the group; this means that each group member should be equipped with some kind of prior knowledge on the issue. This can be achieved by having students do preparatory research on the issue in groups of two.

Research shows that learning how to think (together) effectively requires a great deal of practice, time and patience (Kuhn et al. 2013; Swartz et al., 2008). The necessary thinking skills do not develop by themselves and demand expert support on the part of the teachers (Rojas-Drummond & Mercer, 2003; Webb et al., 2008; Iordanou, 2010, Kuhn et al., 2013). These skills need to be practised in different contexts and applied to different topics. Due to the requirements involved in preparing for broad participation, merely exercising these skills within subject domains does not suffice. They must also be practised through cross-curricular activities.

Implementation in the school

In a four years research project "Working together towards scientific citizenship", the theoretical framework just elaborated and the educational principles were translated into concrete learning activities. In this project companies, institutions, schools (Primary schools, secondary schools) and researchers from the Saxion, and the University of Twente collaborated in developing these programmes of learning activities dealing with socio-scientific issues. Group problem solving, as CE, involves cross-curricular activities: (1) general educational approaches have to hybridise with educational approaches focusing on subject matter and (2) different kinds of knowledge also have to come together: history, geography, science... However, it is not feasible, within the scope of a single lesson series, to explore all subject matter relevant to understanding the chosen issue in depth, or to do equal justice to all general and specific knowledge content. Therefore, teachers have to define the societal issues they will be dealing with and choose which subject content the lesson series will focus on. The motivation of this choice depends on the kind of societal issues the teacher is planning to address, which subject matter will be best suited to further students' understanding of the chosen issue and the duration of the lessons.

In the research project discussed below, science provides the chosen central subject matter. The use of science,

as the main subject matter is relevant. Researchers warn that citizens are often unable to follow current discussions (Jenkins, 1994; Mooney & Kirschenbaum, 2009). Citizens require scientific know-ledge and skills in order to participate on equal terms in discussions and decision making concerning societal issues, such as shale gas, genetic engineering, poverty, nuclear energy and climate change (e.g. Aikenhead, 2011; National Research Council, 2012; Osborne, 2007). According to Day and Brice (2011), science education should also help students "to hold and defend informed views on social, moral, ethical, economic and environmental issues related to sciences" (p.6). Dealing with socio-scientific issues provides an educational context to support the development of scientific literacy (Sadler, Klosterman & Topcu, 2013). Through the learning activities to be designed, students develop their scientific literacy by solving socio-scientific issues in groups. The issues form the heart of authentic learning tasks taking place in the classroom and outside the school, in companies and/or institutions. The programs alternated learning tasks performed at school with learning assignments carried out within the companies and/or institutions, whereby companies and schools form an integrated and varied learning environment. In this way, students learn the relevance of science, as well as its social relevance.

In order to realise the translation of an epistemic theory of deliberative democracy, a number of activities were conducted. Teachers were professionalized during one year. De professionalization activities entailed two activities. The first one was that teachers followed a training and coaching course prior to the development of the learning activities. The duration of this training was six months and aimed at increasing teachers' knowledge and skills with respect to stimulating argumentation skills during group solving of socio-scientific issues and preparing pupils on how to work and think together. Each teacher was coached four to five times between training sessions and during the execution of the assignments given during the training sessions. The coaching focused on enhancing teachers' scaffolding skills. Then, the companies/institutions, teachers and researchers in co-creation developed programs of learning activities aimed at having students carry out authentic learning tasks in and outside the school, within companies and/or institutions. Teachers received training and support from the researchers in developing the program of learning activities in a science context. Themes such as textile, medical isotopes, plastic soup were developed. Each program of learning activities is lasting eight to ten weeks varying from three quarters of an hour to one and a half hour per week. The learning activities are now being put into practice in the participating schools. Each school is implementing two programmes of learning activities per year. In the Dutch curriculum at primary schools, the programmes are implemented in the social sciences and sciences lessons and in the secondary schools during a project related time slot.



8 Conclusion and discussion

It is important to be very clear about the theories of democracy and citizenship used, otherwise there is a real risk of indoctrinating both students and teachers. These concepts should be the object of critical scrutiny. Group problem solving, as the core competency of an epistemic theory of deliberative democracy, was explained and justified. It was demonstrated how such a theory can be translated into educational principles. Four educational principles were put forward: argumentation, connected learning, decision making and thinking together. According to Mercier and Sperber (2011), the function of argumentation is to support the development of reasoning. Argumentation should lead students to form sound judgments on the issue at hand. Connected learning helps students to take perspectives regarding content, actors and dimensions and to interrelate these. In this way, students can exercise how to develop different alternatives to solve the issue and how to make collective decisions. Students also exercise how to think and work effectively together. Teachers should understand how these educational principles can be implemented in order to develop interesting activities. This means, on the one hand, that teachers should receive training on how to develop learning activities dealing with societal issues, involving cross-curricular lessons and integrating the four educational principles. On the other hand, teachers should also be knowledgeable about the issues students are dealing with, along with possessing argumentation skills and a certain degree of epistemic knowledge.

Considering citizenship education as group problem solving, raises the question of whether schools are best suited to let students exercise for this deliberative way of participation, or whether these deliberation skills can be learned later on as an adult. Research on deliberation among adults shows that it is, indeed, possible for adults to learn how to deliberate, however it takes a tremendous effort to organise such deliberative polls and also to prepare and support the citizens taking part in them. One convincing argument in favour of schools exercising such citizenship is that the thinking skills involved require a great deal of practice in many different contexts in order to develop. To argue effectively with each other, students must learn the rules of argumentation and be trained in developing the necessary social and communication skills allowing them to work productively in groups. Attention should also be given to the decision process regarding content: generally speaking, societal issues are complex and controversial. Students need to be able to take into account different variables and keep these in mind while trying to develop solutions and make a decision. Students have to deal with uncertainty and become acquainted with the complexities of reality. The purpose of this CE is not only to develop good thinking skills, avoiding biases and heuristics, but also to make students aware that societal issues require a great deal of thought and that this process is continuous, that there is no ideal state to be attained, only striven towards.

Another point to be considered, is whether this approach implicitly treats the student as an object. According to Biesta (2104), there should be a shift in teaching citizenship towards learning democracy and that the main goal should be subjectification: enabling students to raise their voices as political agents and experience and learn democracy in the public sphere of the school (Andersson, 2016; Biesta, 2014). Students learn democracy when they are able to bring their experience to the classroom, to share it, communicate with each other, and experience opposition to their own view. This generates political action and societal engagement and therefore stimulates a certain kind of participation. This is educationally problematic: the emphasis lies on shaping students in a particular way. Andersson (2016) claims that one should respect diversity: "cultural, traditions, attitudes, values", however it seems that, within this diversity, there is only one way to define political participation and, seemingly, non-participation is not an option. Educationally speaking, this is problematic as students' autonomy is at risk, unless they have room to define political participation in alternative terms or explore other ways. Students' autonomy is also at risk because the content is defined by the experiences brought by the students into the classroom. Controversial subjects, that are not part of students' direct experience, can nevertheless be made very interesting: it is a matter of how meaningful the teacher is able to introduce them. Furthermore, there are other politically controversial issues that do not appear to be political at first glance, but actually are so, and students can subsequently learn about their political dimension. There are various different concepts of citizenship, each supported by reasonable arguments (van der Ploeg & Guérin, 2016). Therefore, citizenship has to be scrutinised by students in order to enhance their understanding and enable them to make their own choices when it comes to defining the kind of participation or non-participation they think is adequate.

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