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# Student Teachers' Knowledge of Multiperspectivity and Its Implementation in Geography Lesson Plans: Results from an Exploratory Qualitative Study with German and Dutch Student Teachers

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**Abstract:** This exploratory qualitative study reports student teachers' knowledge of multiperspectivity as well as how student teachers consider multiperspectivity in lesson planning. The study was embedded in a project in which German and Dutch student teachers dealt with multiperspectivity for one semester. Based on the theoretical literature and the empirical results, we identified a set of criteria for multiperspectivity in geography lessons. These criteria were then applied to analyse the student teachers' lesson plans and teaching materials as well as the student teachers' answers in the qualitative questionnaires, which the student teachers answered at the beginning and at the end of the semester. The results of this study showed that the professional knowledge of student teachers in terms of multiperspectivity was not extensively represented or apparent from the answers to either the pre- or the postquestionnaire. The analysis of the lesson plans and the teaching materials showed that the student teacher groups were able to form a multiperspective topic didactically. However, not all groups had considered promoting evaluation competence in lesson planning, and the reflection competence was hardly considered. Therefore, our developed criteria for multiperspectivity in geography lessons could help student teachers to better understand and consider multiperspectivity when planning lessons.

**Keywords:** multiperspectivity; perspective-taking; geography education; student teachers



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## 1. Introduction

Current issues affecting today's society, as well as future generations, such as climate change or sustainable transformation of our society, are complex and often discussed in a controversial way [1,2] (p. 2). Especially in geography lessons, students need to be taught an understanding of society's challenges, such as renewable energy, recycling, sustainable cities, tourism, or fashion [3] (pp. 11–19). The controversy and complexity of such challenges are due to different opinions and perspectives on these issues and because it is difficult to find satisfactory solutions for the whole of society [1] (p. 1). So that students recognise and understand this complexity, it is important to take a multiperspective view of the issues or problems. Multiperspectivity is of fundamental significance for geography because many topics that are discussed can be assigned to perspectivism, such as spatial conflicts, cultures, or economic and ecological developments [4]. To promote multiperspective views, teachers must be able to involve multiperspectivity in lessons. However, as previous research has shown, implementing multiperspectivity in lessons can be a challenging task for teachers [5–7]. Including multiperspectivity in lesson planning is complex and demands pedagogical content knowledge [8–10] (p. 482). This means teachers need theoretical knowledge about multiperspectivity to be aware of what they need to consider when planning lessons, and they also need to know how to apply this theoretical

knowledge in practice. However, empirical results show that teachers often struggle with this application [11–18].

There is therefore a need to promote the professional knowledge of student teachers with regard to pedagogical content knowledge of multiperspectivity. To promote such pedagogical content knowledge, it is important to know the difficulties that student teachers face when planning lessons that include multiperspectivity. This way, the appropriate teaching and learning support can be developed in higher education. Thus far, to the authors' knowledge, no research on student teachers' understanding of multiperspectivity or how they consider multiperspectivity in lesson planning has been undertaken. Therefore, this exploratory study was designed to analyse student teachers' knowledge of multiperspectivity and their competence in including multiperspectivity in lesson planning. The aim of the study was to gain initial insight into what support student teachers may need during their training to be able to consider multiperspectivity in planning lessons, as lesson planning is an essential part of teacher education and subsequently in the teaching profession. The study was embedded within a project in which German and Dutch student teachers explored multiperspectivity for one semester. The project is one of several research exchange projects already realised between the University of Cologne and the Fontys University in Tilburg. Previous research topics have included citizenship education [17], spatial planning [19], and setting tasks [16]. In this year's research project, the German and Dutch student teachers dealt theoretically with multiperspectivity before planning lessons with a focus on multiperspectivity. Afterwards, the German and Dutch student teachers visited each other's classes and exchanged ideas about multiperspectivity by discussing and reflecting on the lessons they planned and implemented together. As the study was part of the project and its focus was on the student teachers' knowledge of multiperspectivity and their competence in planning multiperspectivity, we did not analyse the project itself or its impact. Instead, this article aimed to answer the following research questions:

1. What is the student teachers' knowledge of multiperspectivity in geography education at the beginning and of the end of the semester?
2. How do student teachers implement multiperspectivity in their lesson plans and teaching materials in geography education?

To analyse the student teachers' knowledge of multiperspectivity, 26 student teachers answered a qualitative questionnaire at the beginning of the semester, and 24 student teachers answered a qualitative questionnaire at the end of the semester. In addition, eight lesson plans, which were developed in groups, as well as teaching materials developed by the student teachers, were analysed. It was therefore necessary to initially identify a series of criteria that define multiperspectivity in geography education. To do so, a set of criteria for multiperspectivity in geography lessons were derived based on theory and empirical results.

In the first part of the article, we present the theoretical background and empirical results based on which the criteria for multiperspectivity were developed, followed by the research design for this study. Afterwards, we present and discuss the results of the questionnaires and the analysis of the lesson plans and teaching materials. Finally, conclusions are drawn for further implementation of multiperspectivity in teacher education.

## 2. Multiperspectivity in Education

In the following section, we explore the theoretical background of why multiperspectivity should be considered in teaching. Afterwards, empirical findings regarding multiperspectivity in lessons are presented. The aim of this section was to derive criteria regarding the consideration of multiperspectivity in lesson planning, based on theoretical literature and empirical results. These criteria were then used to undertake empirical analyses.

### *2.1. Theoretical Background: The Potential of Multiperspectivity for Geography Teaching*

Multiperspectivity is an important interdisciplinary principle of didactics. The aim is to avoid a monocausal view of an issue to enable the formation of different views by

considering various perspectives [20,21] (p. 11). Such different views are very important, especially in geography lessons, as controversial questions are discussed that have no single right answers. Instead, it is about discussing the answer to a question by considering different norms, perceptions, and interests [22] (p. 276), which is why multiperspectivity should be seen as a constructive approach. Thus, conflicts, issues, or events also must be seen as social constructions, subjective perceptions, and interpretations. Consequently, teachers should not try to depict the world with an objective ambition [23–25] (p. 496) but instead present different constructs and perceptions and include these in lessons by questioning and deconstructing them [26,27]. Being aware of such differences regarding perceptions and constructions is important especially when discussing spatial questions and conflicts because they are essential components of geography. The perspective's scale, for example, can have a significant impact on how a space and thus a conflict is perceived. This way, it can be demonstrated to the students that there is no objective reality of conflicts and that understanding perspectives and social constructions is crucial when discussing them [23]. Overall, the scales and actors themselves should be analysed in more detail within geography lessons [28–30] (p. 123) because by dealing with controversial and spatial questions this way, higher-order thinking can be promoted. Higher-order thinking includes a way of thinking that is nonalgorithmic and complex and generates many solutions. It also includes the application of multiple criteria dealing with uncertainties and includes nuanced judgements and interpretations. The self-regulation aspect of the thinking process is also a part of higher-order thinking [31] (p. 3).

When dealing with a complex issue, it is necessary to develop different solutions to identify the criteria used to formulate an evaluation of the issue in a different way, but at the same time, to recognise the uncertainties of its findings. Considering the issue through different perspectives enhances this process of thinking as the perspectives can be used to view the problem in a targeted way and thus also provide the students with a structure for approaching the problem. In this context, according to Bloom's Taxonomy, the cognitive domain can also be promoted, which includes the analysis, the synthesis, and the evaluation [32–35] (p. 355). It is not only important to recognise perspectives in conflict and to evaluate the conflict, but also to critically question the respective perspectives and their way of thinking. Therefore, a multiperspective approach can also help develop students' critical thinking by questioning the source of information and comparing information to their previous knowledge to enable students to draw their own conclusions [36]. Overall, critical thinking is essential for promoting metacognitive understanding [37,38].

Powerful geographical knowledge can be promoted in lessons through the inclusion of multiperspectivity, too. Powerful knowledge enables students to understand and explain the social world, to discover other ways of thinking, to consider other experiences beyond their own, and to think about alternative futures [39–41]. According to Maude [42], one of the most valuable aspects of powerful geography knowledge is to provide and encourage new ways of thinking about the world, as students learn about other perceptions, values, cultures, environments, and people. In addition, with a multiperspective approach, students are able to understand how knowledge is created and learn to critically question the opinions of others as well as their own. Another aim of geography is to enable students to discuss local, national, or global issues and to participate in society. Especially the multiperspective view of geographical topics helps students to develop the knowledge for such a participation. With a view to multiperspectivity in lessons, the high demands of powerful geographical knowledge can be fulfilled as it provides the possibility to view, understand, and evaluate issues from different perspectives.

Students should also be able to deal with problems and develop different solutions within geography lessons [43,44] (pp. 5–25). Many of the problems that are discussed in geography class are called wicked problems. Wicked problems are characterised by the fact that the information available is often confusing, many actors are involved, decision makers have very contradictory values, and the ramifications on the social system are confusing [45,46] (p. 15). Overall, these are problems for which there is no single right

solution [45] (p. 166). To understand wicked problems, it is essential to deal with different perspectives. This allows students to disclose and analyse the values of the actors, to question the underlying information, and to discuss the effect on society. As a result, the competence of problem solving can be promoted, and students are also able to evaluate different solutions. Because an absolute holistic view is not possible [27], the principle of multiperspectivity is also about selecting suitable perspectives for considering an issue in lessons [21] (p. 16) [47], such as scientific positions (e.g., theories and models), opinions of actors (e.g., politicians and inhabitants), and views on a certain scale (e.g., micro- and macro-perspectives) [48] (pp. 234–242).

To be able to teach in a multiperspective way, the Beutelsbach Consensus needs to be considered when selecting perspectives [49] (pp. 14–17). The Beutelsbach Consensus is an anchor of political education in Germany, but is equally relevant for geography teaching. It means that a controversial issue must be presented and discussed controversially in lessons [50]. Similarly, in the Netherlands, the concept *Burgerschapsonderwijs* is required in lessons. One of the aims of Burgerschapsonderwijs is to demand critical participation from students in a dialogue [17] (pp. 34–36). Both concepts enable the development of a discussion culture in geography lessons, in which different views can be discussed and own opinions can be formed [51] (pp. 14–20). Incorporating the Beutelsbach Consensus into lessons has the effect of fostering the students' tolerance for ambiguity as they must deal with contentious and often contradictory views [52,53]. Alongside the Beutelsbach Consensus, the complexity of an issue must also be considered when implementing multiperspectivity in lessons. There is the obstacle of simplifying complex contexts and promoting stereotypical views, particularly in geography lessons. Therefore, it should be an aim in lessons to reflect on the problem of stereotyping and simplification with students [54] (p. 163).

Students' competence for perspective-taking can be promoted particularly well in multiperspective lessons. The skill of perspective-taking can help students to better understand different points of view [55] (p. 264) [56] (p. 323) and to abandon an egocentric view [57]. Furthermore, perspective-taking can help in managing conflicts [58], reducing prejudice and discriminatory behaviour [59], and also reducing expressions of stereotypic content [60] (p. 720). Particularly in today's society, perspective-taking is a fundamental skill and highly complex [61] (p. 2) as it requires competency in comparison, analysis, judgement, and reflection [26]. In geography lessons, many topics are suitable for promoting the competence of perspective-taking because they can be discussed with the students from different points of view.

In addition, inert knowledge can be avoided through a multiperspective approach in lessons [62] (p. 879). Using different perspectives, the students do not receive just one fixed point of view of an issue, but rather learn to discuss the issue in different ways. Additionally in the context of learning as a constructive process [63] (p. 253) and in constructivist geography [64] (pp. 625–636), a learning environment in which the students can learn to question different human constructions in general as well as the human constructions of space can be provided. This leads to a flexible transfer of knowledge [62] (p. 879) that can also be applied to other (geographical) topics.

Especially in geography, multiperspectivity is fundamental for geographical understanding. Therefore, the principle of multiperspectivity enables teachers to provide students with varied geography lessons. Therefore, it is important to deal with the principle of multiperspectivity within teacher training, so student teachers learn how to incorporate it into geography teaching effectively.

### 2.2. Empirical Findings about Multiperspectivity in Lessons

Research findings show that teachers have difficulties using multiperspectivity to achieve a sustained verbal exchange in classrooms that probes into a diversity of opinions and their differences [5]. Teachers also often struggle to discuss and evaluate different perspectives in lessons with their students [6,7]. It is important that teachers choose different

perspectives and use them to achieve a deeper discussion so that different opinions can be formed by students. Furthermore, teachers tend not to consider multiple perspectives for moral issues (e.g., shoa) [65,66]. In addition, they often only integrate different perspectives if the cognitive level of their students is high [67]. However, teachers need to take advantage of the opportunity to present a (moral) issue from different perspectives so that students' cognitive competence in perspective-taking can be promoted.

According to the teachers that were interviewed for a study about interpretational history teaching, a topic is particularly suitable for multiperspective consideration if the teachers have knowledge about it and if teaching material is already available [68]. Another study that focused on teachers' usage of multiperspectival texts shows that teachers rarely choose texts that strongly include multiperspectivity, because they thought that students would have difficulties with causal complexity and linking their own perspective with the historical perspective [69]. If teachers did choose texts with high multiperspectivity integration, they explained that it was usually because it was more in line with their ideas of education and teaching historical content. Thus, how a (schoolbook) text is used in a lesson depends on the teacher's beliefs about the subject and their pedagogical content knowledge [69] (pp. 49, 60). It is therefore important to promote (student) teachers' professional knowledge and, in addition, the application of multiperspectivity in practice so that the students' cognitive competence can be promoted to understand complex issues.

The results of an analysis of North Rhine-Westphalian geography textbooks also showed that multiperspectivity is rarely considered in planning tasks [70]. However, different perspectives and interests need to be considered so that solutions can be discussed and planned [70] (pp. 24–31), especially in the case of social, spatial, and ecological problems.

An analysis of geography didactic materials that focus on how perspective-taking is guided by task setting, showed that students are rarely guided when it comes to analysing or reflecting actors' perspectives [26] (pp. 540–541). The analysis is an essential part of a multiperspective approach of learning to enable students to understand issues where several actors are involved.

Empirical studies of geography textbooks have also shown that constructed texts and perspectives are often not revealed as constructions and thus convey presumed authenticity [71]. Therefore, the reflection of the materials presented is also relevant to prevent stereotyping.

Overall, the empirical results show that considering multiperspectivity in lessons is a complex and challenging task for teachers.

## 3. Criteria for Multiperspectival Lesson Planning

Following an overview of previously published theoretical literature and empirical results, we derived a set of qualitative criteria for multiperspectivity that student teachers should consider when planning their lessons. The focus of these criteria is on how teachers can implement the principle of multiperspectivity in geography lessons [8,72,73]. We summarised the criteria for the successful implementation of multiperspectivity and divided them into four main groups: depiction of the multiperspective issue; consideration of the perspectives involved; evaluation of the perspectives; and reflection of the perspectives (see Figure 1). The order of each criterion can be considered differently by the (student) teachers. The figure only illustrates the criteria and does not represent a sequence.

### *3.1. Depiction of the Multiperspective Issue*

Defining the overall question: Teachers should choose a question to be answered by the students in the lesson that includes different perspectives. The overall question helps teachers to determine the focus of the topic being considered to enable a selection of appropriate perspectives and research material [26].

Identifying the controversy in the issue: When an issue is included in a lesson, the teacher should make sure that the controversial nature of the topic is dealt with [50] (p. 179). It is essential to show the controversy involved in an issue, e.g., by presenting incompatible

aims or perceptions from the different perspectives [28]. Different perspectives should also be presented regarding highly moral issues [65,66] so that tolerance of ambiguity can be promoted [52,53].

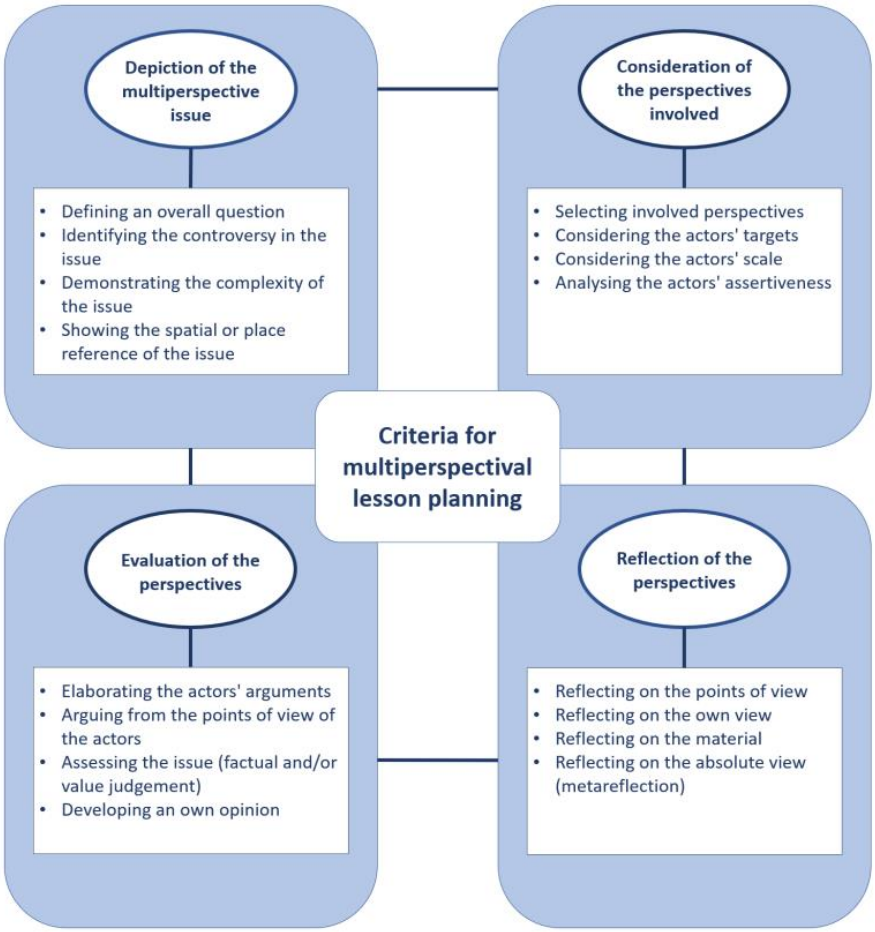


**Figure 1.** Main groups and their criteria for multiperspectival lesson planning (own design).

Demonstrating the complexity of the issue: The teacher should not oversimplify the complexity of a problem. Stereotypical ways of viewing can be promoted unintentionally when simplifying a topic [54] (p. 163) [71]. Therefore, the perspectives presented must represent the complexity of the issue but also be prepared appropriately for the students.

Showing the spatial or place reference of the issue: The teacher and students should locate the issue so that the actors involved and the spatial perception of the problem can be identified [23,28] (p. 274–283).

### *3.2. Consideration of the Perspectives Involved*

Selecting involved perspectives: The teacher should select the relevant perspectives of the problem [21] (p. 16) [47]. At least two perspectives must be presented in a lesson so that an issue can be considered from different perspectives.

Considering the actors' targets: The different targets and interests of each perspective should be described in the lesson so that the students can understand the issue [24,45] [22] (p. 276) [46] (p. 15) [26] (pp. 533–534).

Considering the actors' scale: The scale of the actors' perspectives (local, regional, national, or global) should be presented in the lesson, so that students can identify on which scale actors view a problem and on which scale actors can act [26] (pp. 533–534), [28] (pp. 274, 283), [30] (p. 125).

Analysing the actors' assertiveness: The teacher and students should analyse each actor's assertiveness to understand which of the actors' interests can actually be enforced in reality [23,26] (pp. 533–534).

### 3.3. Evaluation of the Perspectives

Elaborating actors' arguments: The teacher should elaborate on the actors' arguments on the issue with the students. This will allow students to identify different perceptions so that they can later formulate a differentiated answer to the overall question by considering these different perspectives [5,45,46] [22] (p. 276).

Arguing from the points of view of the actors: The teacher should require the students to argue from the perspective of a variety of actors. The students should learn to separate an actor's opinion from their own opinion and to understand an issue from an actor's point of view [5,26] (pp. 533–535).

Assessing the issue (factual and/or value judgements): The teacher should make a factual judgement and/or value judgement with the students [26] (p. 535). The students should then consider different perspectives when answering the question set [6,7,20,22] [21] (p. 18).

Developing an own opinion: The teacher should require the students to develop their own opinion or to make a statement on an issue [22] (p. 276) [32].

### 3.4. Reflection of the Perspectives

Reflecting on the points of view: The teacher should require the students to reflect on the views of the actors [24,25] (p. 496). Consequently, students should understand how opinions of other actors are established, and they should be able to consider, e.g., the actors' targets and interests.

Reflecting on the own view: The teacher should ask the students to reflect on their own view. The students should question how and why they are forming their own opinions [26] (pp. 534–535) [36].

Reflecting on the material: The teacher should require the students to reflect on the complexity of the materials. The students should question how far the materials present the issues and whether there are any stereotypical views included [54] (p. 163) [71].

Reflecting on the absolute view (metareflection): The teacher should ask students to reflect on what alternative perspectives there might be on the issue. The students should understand that in lessons only a selection of perspectives can be presented. Thus, an absolute objective view is not possible, as there are always many other perspectives to consider [26] (p. 535) [27].

Our criteria for multiperspectival lesson planning summarises the most important aspects that need to be considered in geography lessons when the aim is to discuss issues with multiple perspectives. These criteria were also used for the analyses of the questionnaire answers and lesson plans developed by the student teachers. The methods used in this study are described in the following section.

## 4. Methodology

We first present the process of the project's data collection, as well as the sample size. Then, we present the data collection and data analysis of the exploratory study. After that, we briefly discuss the limitations of the study.

### 4.1. Project Design

The project was embedded in one seminar at the University of Cologne (Germany) and in one seminar at the Fontys University in Tilburg (Netherlands). Both seminars were run for student teachers in geography education. In order to answer the set of research questions, the project was divided into five main parts during the semester: (1) the answering of the prequestionnaires in a session of 45 min; (2) the introduction to the theory of multiperspectivity in five sessions of 90 min each in Germany and three sessions of 120 min each in the Netherlands; (3) the planning of lessons in groups with multiperspectivity as the main focus in two sessions of 90 min each in Germany and in three sessions of 90 min each

in the Netherlands; (4) the implementation of the lessons including a respective evaluation and reflection, as well as an exchange between the German and Dutch student teachers about their ideas of multiperspectivity in three common sessions of 120 min each; and (5) the answering of the postquestionnaires in a session of 45 min (see Figure 2). We made sure that the overall amount of time for the sessions in the seminars and lesson planning was similar in both Germany and the Netherlands.

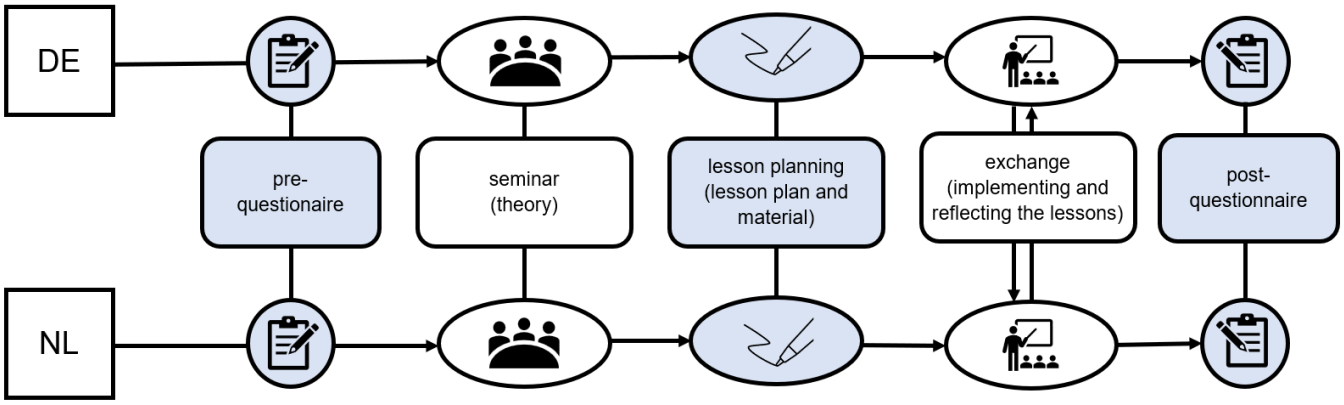


**Figure 2.** Process of the project (the analysed data are highlighted blue, own design).

We analysed the student teachers' answers of the pre- and postquestionnaires (parts 1 and 5) as well as the lesson plans and the teaching materials developed (part 3). We did not analyse the seminars (part 2) or the exchange and lesson implementation of the student teachers (part 4). The analysed data are highlighted blue in Figure 2. The project started on 2 September 2020 and ended on 20 January 2021.

#### 4.1.1. Pre- and Postquestionnaires

We used a qualitative questionnaire at the beginning and end of the project in a pre-and postquestionnaire design, which the student teachers were asked to answer in written form (see Figure 2). For the design of the questions, existing questionnaires for capturing teacher understanding and for evaluating the seminar and project were used as a basis [17,19] to ensure validity and reliability. With the exception of one question, the questionnaire only contained open-ended questions so that the student teachers had the possibility to give in-depth responses. The answers were then analysed by qualitative content analysis. To ensure comparability among the survey data, we used identical questions in both questionnaires. The questionnaire was written in German and Dutch so that the student teachers were able to answer in their native tongue. The student teachers were given 40 min to answer the questionnaire on both occasions. According to their feedback, enough time was provided for the questionnaires. However, it was not possible to ensure that all student teachers spent the same time completing the questionnaires because the questionnaires were filled out anonymously and online on a laptop during the first and last sessions.

#### 4.1.2. Introduction to the Theory of Multiperspectivity

After the prequestionnaire, different theories and approaches about multiperspectivity were introduced to the German and Dutch student teachers within the seminars to gain a theoretical understanding of multiperspectivity (see Figure 2). Although the seminars differed in some aspects due to the different priorities in teacher education, we ensured that the student teachers dealt with similar foci on multiperspectivity. Therefore, the content that was discussed in the two seminars was aligned, and the necessary literature was chosen in the students' native tongue. For example, the German student teachers discussed different disciplinary definitions of multiperspectivity from psychology [74], philosophy [27], and education [21,28]. Furthermore, they discussed which geographical competencies and educational goals should be promoted with multiperspectivity [44] and why stereotyping

should be avoided in the classroom [54,75]. The Dutch student teachers discussed topics such as how different perspectives can be considered in terms of powerful geography teaching [76], spatial concepts [77,78], and higher-order thinking [79]. In addition, aspects of values in relation to multiperspective teaching were also discussed [80,81]. In general, similar contents were defined but discussed with different literature within the seminars.

#### 4.1.3. Planning Geography Lessons

After becoming acquainted with the theory of multiperspectivity, the student teachers were asked to consider the theoretical aspects of multiperspectivity in their lesson planning during the third part of the project (see Figure 2). It should be noted that the student teachers did not receive the criteria for multiperspectival lesson planning (see Figure 1), as these were constructed at the end of the semester alongside the analyses of the pre- and postquestionnaires, lesson plans, and teaching materials. The student teachers worked out how they wanted to implement multiperspectivity in geography lessons independently, based on the theories discussed in the seminar and consulted the seminar leaders only once in the process of resource development. The lesson planning was mainly carried out by the student teachers within their groups outside the seminars. In some selected sessions (see Section 4.1), all groups worked together on their lesson plans and teaching materials by presenting their ideas to their classmates and discussing them. Due to the size of the German and Dutch seminars, the student teachers were divided into small groups of 3–5 student teachers. There were three Dutch groups and five German groups. The groups then received the topics for their lessons from the schools for which they were to focus the lesson. The lesson included a lesson plan, worksheets, tasks, and PowerPoint presentations. The lessons of the German student teachers were held in three schools in Germany, and the lessons of the Dutch students were held in three schools in the Netherlands, all in a lower-secondary education setting.

The eight student teacher groups focused on the following topics:

- Group 1-DE: Lagos: a city with different faces
- Group 2-DE: Opportunities and risks of online trading
- Group 3-DE: Megacity Tokyo: advantage or challenge?
- Group 4-DE: The journey of a pair of jeans—effects of global supply chains
- Group 5-DE: Spaces of conflict in the Alps
- Group 6-NL: Factors in the wealth of a country
- Group 7-NL: Different cultural views
- Group 8-NL: Migration around the world

The groups received different names due to anonymisation. The abbreviation NL represents the Dutch groups, and the abbreviation DE represents the German groups.

#### 4.1.4. Exchange: Implementing and Reflecting the Lessons

In the fourth part of the project, the student teachers implemented the planned lessons and exchanged their ideas about multiperspectivity by evaluating and reflecting on the different lessons.

First, the Dutch student teachers were divided into three groups and held their lessons, while the German student teachers evaluated the lessons by using an evaluation sheet that was developed theoretically during the project. Each Dutch group was evaluated by one German group. This means that the three Dutch groups were evaluated by three German groups, into which the 17 German student teachers were divided. Afterwards, the groups had to discuss and analyse the lesson by identifying positive aspects and aspects that could be improved with regard to integrating and fostering multiperspectivity. The identified aspects were then presented to the other groups and were discussed with them further.

Following the same procedure as in the evaluation of the Dutch school lessons, the German student teachers were divided into five groups and held their lessons, while the Dutch student teachers evaluated these lessons. Each German group was evaluated by one Dutch group. This means that the five German groups were evaluated by five Dutch groups,

into which the nine Dutch student teachers were divided. Because one group included only one student, one university lecturer (author 4) participated in this group. Afterwards, the lessons were analysed and reflected within the five groups and then presented and discussed in the plenary session.

Due to the COVID-19 pandemic, the student teachers were not able to visit each other's classrooms physically or to meet in person for the analysis and discussion of the lesson. Therefore, the exchange between the German and Dutch student teachers was undertaken digitally. While the Dutch student teachers were able to hold their lessons in the classroom in December, the German student teachers had to hold their lessons digitally in January because of the lockdown in Germany. Therefore, the Dutch student teachers recorded their lessons so that the German student teachers could view the groups' lessons on their laptop and evaluate them. The Dutch student teachers, in turn, were able to view the German student teachers' lessons directly in the virtual classroom (via Big Blue Button, Microsoft Teams, or Zoom). Unlike previous years, this part of the project was not equally intensive as the exchange was only digital and not a four-day meeting in person.

### 4.2. Sample

In total, 17 German student teachers aged between 21 and 37 (11 female and 6 male) and 9 Dutch teacher students aged between 19 and 23 (4 female and 5 male) participated in the project. All 26 student teachers were studying geography teaching for lower-secondary education. The German students were Master's level student teachers and had already completed the internship semester. The Dutch student teachers were in the third year of their Bachelor's degree program, which also included teaching practice in school.

The aim of the explorative qualitative study was not to identify differences between the performances of the German and Dutch student teachers. Therefore, we combined both groups in the analysis of the pre- and postquestionnaires. Before analysing the results in more detail, we nevertheless used the Mann–Whitney U test to check whether the two groups (German and Dutch student teachers) differed significantly in their performance. We used the nonparametric test because assumptions for an independent sample t-test were not fully met because of the small sample size [82] (pp. 122–132). Overall, the result of the Mann–Whitney U test showed that there was no statistically significant difference in the performance between the German student teachers and the Dutch student teachers ($U = 44.000$, $Z = -1.771$, $p = 0.077$).

In addition, no distinction was made between the Dutch and German groups in the analysis of the eight lesson plans and teaching materials because it was not the aim of the explorative qualitative study to compare both groups with each other.

### 4.3. Data Collection and Data Analysis

To answer the first research question (What is the student teachers' knowledge of multiperspectivity in geography education at the beginning and of the end of the semester?), we used a questionnaire at the beginning and at the end of the project (see Section 4.1.1).

To analyse the student teachers' understanding more comprehensively, we focused on four questions from the questionnaires and analysed these further. All of these were open-ended except for question 2. Thus, the findings in this article are based on the answers to the following questions from the pre- and postquestionnaires:

1. What do you understand by multiperspectivity?
2. As a teacher, how important do you consider multiperspectivity in geography lessons?
3. Please explain your choice regarding Question 2.
4. Please explain what difficulties you might face as a teacher when implementing multiperspectivity in geography lessons.

Unfortunately, two German student teachers (DE-4 and DE-12) copied their answers from the prequestionnaire to answer the postquestionnaire. Therefore, only their answers from the prequestionnaire were evaluated. Overall, the answers of 26 student teach-

ers were analysed in the prequestionnaire and the answers of 24 student teachers in the postquestionnaire.

To answer the second research question (How do student teachers implement multiperspectivity in their lesson plans and teaching materials in geography education?), the student teachers' lesson plans, including learning materials and tasks that were developed, were analysed (see Section 4.1.3). As the student teachers were divided into groups, there were eight lesson plans, including teaching materials that were analysed.

Both the student teachers' answers and the student teachers' lesson plans were analysed by qualitative content analysis [83]. We used four deductive categories and sixteen subcategories for the analysis (see Table 1). The categories of the analysis for the pre- and postquestionnaires and for the analysis of the lesson plans corresponded to the criteria for multiperspectival lesson planning derived from the theoretical background and the empirical results (see Section 2). In the analysis of the pre- and postquestionnaires, we distinguished whether the criteria for multiperspectivity were explicitly mentioned, partially mentioned, or not mentioned by the student teachers. When evaluating the lesson plans and teaching materials, we distinguished whether the criteria were completely fulfilled, partially fulfilled, or not fulfilled.

**Table 1.** Overview of the categories and subcategories for analysing the student's knowledge about multiperspecitivity, answered in the prequestionnaire and the postquestionnaire (individual answers of the student teachers) and for analysing the implementation of multiperspectivity in their lesson plans and teaching materials (elaboration in groups).

| Category | Subcategory | Example (Pre- and Postquestionnaires or Lesson Plans and Teaching Materials) |
|---|---|---|
| Depiction of the multiperspective issue | Defining an overall question | "*What are the impacts of global supply chains?*" (group 4-DE, lesson plan, own translation [1]) |
| | Identifying the controversy in the issue | "*Critical dealing with controversies must be practiced* "(DE-13, postquestionnaire). |
| | Demonstrating the complexity of the issue | "*To be able to present the complexity of global relationships fairly to the students, the complex depiction of a topic is indispensable*" (DE-10, prequestionnaire). |
| | Showing the spatial or place references of the issue | "*Scales are suitable for focusing on a topic on a specific space and/or for recognising the connections between different spaces*" (DE-4, prequestionnaire). |
| Consideration of the perspectives involved | Selecting involved perspectives | "*By multiperspectivity I understand viewing a topic from different perspectives*" (NL-8, postquestionnaire). |
| | Considering the actors' targets | "*Every social phenomenon involves several actors, each of them with their own interests, experiences and ideas of the subject*." (NL-4, prequestionnaire). |
| | Considering the actors' scale | "*A topic can be considered locally as well as regionally, nationally and globally*" (DE-4, postquestionnaire). |
| | Analysing the actors' assertiveness [2] | "*Identify your actor's interests and points of view*" (group 2-DE, teaching material; example only corresponds to *partially fulfilled*.) |

**Table 1.** *Cont.*

| Category | Subcategory | Example (Pre- and Postquestionnaires or Lesson Plans and Teaching Materials) |
|---|---|---|
| Evaluation of the perspectives | Elaborating the actors' arguments [3] | "*Elaborate the arguments for your actor in your group and prepare yourself for the panel discussion*" (group 2-DE, teaching material). |
| | Arguing from the points of view of the actors | "*Compare in partner work the information and arguments that are important from your actor's point of view* [ . . . ] *present the actor's point of view in the panel discussion*" (group DE-5, teaching material) |
| | Assessing the issue (value and/or factual judgements) | "*Multiperspectivity means providing as many perspectives as possible on a topic to offer the viewer a comprehensive basis to form an opinion/judgement on the topic being discussed*" (DE-3, prequestionnaire). |
| | Developing an own opinion | "*It* [multiperspectivity] *is important* [ . . . ] *to be able to form an own opinion"* (DE-5, prequestionnaire). |
| Reflection of the perspectives | Reflecting on the points of view | "*It is important that the students can perceive, understand and reflect on different points of view*" (DE-1, postquestionnaire). |
| | Reflecting on the own view | "*The own perspective is not necessarily the (only) correct perspective [ . . . ] Instead of trying to convince others of your own perspective [ . . . ] it is better to see how one can consider different points of view as much as possible*" (NL-4, postquestionnaire). |
| | Reflecting on the material | "*Other problems are the students' prejudices and the creation of stereotypes. The last is difficult to avoid. Through appropriate reflection, students can be made aware of the problem. Students could be asked to critically question the ways in which they* [perspectives] *are presented*" (DE-16, postquestionnaire). |
| | Reflecting on the absolute view (metareflection) | "*The fairness of the world economy is a very abstract issue and therefore there is no right or wrong answer. It depends on the interpretation and the standpoint."*Task*: "Is the system fair and what should be changed to make it more fair?*" (group 6-NL, lesson plan and teaching material). |

[1] All statements were made in the native language of the German and Dutch students in the pre- and postquestionnaires, and statements in the lesson plans and teaching materials were translated into English by the authors. [2] This category was only used for the analysis of the lesson plans and teaching materials and not for the evaluation of the pre- and postquestionnaires. [3] This category was only used for the analysis of the lesson plans and teaching materials and not for the evaluation of the pre- and postquestionnaires.

The items of the pre- and postquestionnaires were coded by the first author and a student assistant. A student assistant was chosen for economic reasons, and they received extensive training and analysed the responses in a test phase. The analysis was then discussed, and modifications were made in the coding guide before the actual analysis of the pre- and postquestionnaires was undertaken. Both the first author and the student assistant analysed all student teachers' answers in the pre- and postquestionnaires. Overall,

we obtained the final Kappa coefficient of 0.875 for the analysis of the prequestionnaires and a Kappa coefficient of 0.826 for the analysis of the postquestionnaires.

The lesson plans were coded by the first author and third author. For the analysis, it was important that experienced educators analysed the teaching materials. Overall, we obtained a final Kappa coefficient of 0.892.

All three kappa coefficients showed a high level of agreement, which can be classified as almost perfect [84] (p. 165). We therefore assumed that the criteria developed (see Section 3) could be reliably adapted and applied to the analysis.

Two coding manuals were developed for the analysis: one for the analysis of the lesson plans and teaching materials and another for the analysis of the pre- and postquestionnaires. A summary of the coding manuals can be found below (see Table 1).

### *4.4. Limitation of the Exploratory Study*

Because there is no empirical research regarding the implementation of multiperspectivity in geography lessons or the student teachers' knowledge about multiperspectivity, we decided to perform an exploratory qualitative study. Therefore, the aim of the explorative qualitative study was to gain an initial impression about what student teachers know about multiperspectivity and how they implement multiperspectivity in geography lessons. Thus, we analysed the lesson plans and teaching materials to examine how the student teachers implemented multiperspectivity. Lessons in the classes were not analysed as the focus of this part of the study was on pedagogical content knowledge regarding lesson planning.

In this study, no distinction was made between the German and Dutch student teachers in the analysis as the comparison between the German and Dutch student teachers was not the main focus. Respectively, the Mann–Whitney U test showed that the groups could be combined for the analysis in this study. Nevertheless, the small sample size should be considered when discussing the results.

Overall, the sample sizes for the analysis of the teaching materials of eight groups, the prequestionnaire ($n$ = 26), and the postquestionnaire ($n$ = 24) were not large enough to determine broad conclusions for higher education in Germany and the Netherlands. Furthermore, due to the internationalisation of the seminars (one in Germany and one in the Netherlands), the different literature used in the seminars to discuss multiperspectivity, and the duration (1 semester), confounding variables could not be excluded, so a cause–effect relationship could not be determined. In addition, the study programmes of the German and Dutch student teachers differ. This could also have an impact on what the student teachers generally understand about geography and how they implemented multiperspectivity in geography lessons. Therefore, studies with larger sample sizes would be more significant in this regard.

Nevertheless, the explorative qualitative study offers the advantage of obtaining an overview of the subject multiperspectivity in higher education. Using the criteria developed for multiperspectival lesson planning to analyse the answers of the pre- and postquestionnaires as well as the lesson plans and teaching materials, initial impressions on what student teachers know about multiperspectivity in geography lessons and how they implement multiperspectivity in lesson plans was gained. Based on the results, further studies could be conducted with a larger sample and a control group, in which dependent and independent variables could be specifically analysed.

## 5. Results

In the following section, we present results of the pre- and postquestionnaires and the analysed lesson plans and teaching materials.

### *5.1. Results of the Students' Pre- and Postquestionnaires: What Is the Student Teachers' Knowledge of Multiperspectivity in Geography Education at the Beginning and of the End of the Semester?*

In total, 26 prequestionnaires ($t_0$) and 24 postquestionnaires ($t_1$) were analysed regarding the 14 subcategories (see Section 4.3). It should be noted that the student teachers

considered it as important ($t_0$ = 58%, $t_1$ = 38%) or even very important ($t_0$ = 42%, $t_1$ = 62%) to include multiperspectivity in geography lessons. It is therefore clear that a multiperspective approach is considered highly significant. In addition, there were no differences between the German and Dutch student teachers regarding their current knowledge about multiperspectivity. However, more German student teachers ($n$ = 17) than Dutch student teachers were surveyed ($n$ = 9).

Table 2 shows the aggregated results per subcategory. Overall, the results between the pre- and postquestionnaires were very similar. Therefore, the results of the pre- and postquestionnaires were presented per category: depiction of the multiperspective issue; consideration of the perspectives involved; evaluation of the perspective; and reflection of the perspectives.

#### 5.1.1. Depiction of the Multiperspective Issue

If the topic is suitable for consideration using a multiperspective approach, an adequate overall question leads to the difficulties of an issue and can enable a more detailed discussion based on the perspectives. However, the student teachers did not mention the need for an overall question when applying a multiperspective approach ($t_0$ = 96%, $t_1$ = 96%). In addition, despite their geographical background, the student teachers did not associate the reference to, and thus the consideration of, space through different perspectives using multiperspectivity ($t_0$ = 88%, $t_1$ = 100%). Interestingly, the students recognised the relevance of multiperspectivity to be able to discuss complex issues, but the opportunity to depict controversial issues was not connected with multiperspectivity. While complexity was explicitly, or at least partially, mentioned by the student teachers ($t_0$ = 50%, $t_1$ = 46%), such as in the following example "*To be able to present the complexity of global relationships fairly to the students, the complex depiction of a topic is indispensable*" (DE-10), the consideration of controversy was rarely mentioned ($t_0$ = 81%, $t_1$ = 92%).

#### 5.1.2. Consideration of the Perspectives Involved

Overall, the student teachers explicitly mentioned the need to consider several perspectives if a multiperspective view of an issue should be included in lessons ($t_0$ = 100%, $t_1$ = 96%): "*For me, multiperspectivity means viewing an issue from different points of view*" (DE-9). Interestingly, the majority did not mention the necessity to consider the actors' targets ($t_0$ = 92%, $t_1$ = 71%) or the actors' scale ($t_0$ = 88%, $t_1$ = 92%) to undertake a multiperspective approach. Taking the actors' targets and scale into account allows a better understanding of the conflict. Otherwise, only a superficial view of the conflict is developed. However, compared to the prequestionnaires, the student teachers explicitly or at least partially mentioned the consideration of the actors' targets more often in the postquestionnaires ($t_0$ = 2; $t_1$ = 7).

#### 5.1.3. Evaluation of the Perspectives

Using multiperspectivity to promote the factual and/or value judgement competence of students was not mentioned by most of the student teachers ($t_0$ = 77%; $t_1$ = 75%). Forming one's own opinion, in contrast, is more strongly related to multiperspectivity. A lot of student teachers mentioned this explicitly or at least partially in the questionnaire ($t_0$ = 35%; $t_1$ = 42%) as in the following example: "*The students can only form their own opinion if they know the perspectives of different actors*" (DE-6). While in the prequestionnaire most student teachers did not connect the possibility of thinking or arguing from the perspective of others with multiperspectivity ($t_0$ = 88%), in the postquestionnaire, a larger proportion of student teachers either explicitly or at least partially mentioned using multiperspectivity to be able to think or argue from the perspective of others ($t_1$ = 42%): "*Looking at things from different perspectives enlarges the students' perception of the world. It encourages thinking from the point of view of another person with different values*" (NL-6).

**Table 2.** Results of the analysis of the prequestionnaire ($n$ = 26) and postquestionnaire ($n$ = 24).

| Category | Subcategory | Prequestionnaire ($n$ = 26) | | | Postquestionnaire ($n$ = 24) | | |
|---|---|---|---|---|---|---|---|
| | | Explicitly Mentioned | Partially Mentioned | Not Mentioned | Explicitly Mentioned | Partially Mentioned | Not Mentioned |
| Depiction of the multi-perspective issue | Defining an overall question | 1 | 0 | 25 | 1 | 0 | 23 |
| | Identifying the controversy in the issue | 1 | 4 | 21 | 1 | 1 | 22 |
| | Demonstrating the complexity of the issue | 6 | 7 | 13 | 7 | 4 | 13 |
| | Showing the spatial or place references of the issue | 2 | 1 | 23 | 0 | 0 | 24 |
| Consideration of the perspectives involved | Selecting involved perspectives | 26 | 0 | 0 | 23 | 1 | 0 |
| | Considering the actors' targets | 2 | 0 | 24 | 5 | 2 | 17 |
| | Considering the actors' scale | 2 | 1 | 23 | 1 | 1 | 22 |
| Evaluation of the perspectives | Arguing from the points of view of the actors | 0 | 3 | 23 | 2 | 8 | 14 |
| | Assessing the issue (factual and/or value judgements) | 3 | 3 | 20 | 0 | 6 | 18 |
| | Developing an own opinion | 6 | 3 | 17 | 9 | 1 | 14 |
| Reflection of the perspectives | Reflecting on the points of view | 3 | 4 | 19 | 1 | 1 | 22 |
| | Reflecting on the own view | 1 | 2 | 23 | 2 | 0 | 22 |
| | Reflecting on the material | 1 | 2 | 23 | 1 | 0 | 23 |
| | Reflecting on the absolute view (metareflection) | 3 | 2 | 21 | 0 | 2 | 22 |

#### 5.1.4. Reflection of the Perspectives

Almost all student teachers did not consider reflection to be a part of multiperspective teaching. While point-of-view reflection was explicitly or at least partially mentioned by some teacher students ($t_0$ = 27%; $t_1$ = 8%), such as in the following example: "*It is important that the students can perceive, understand and reflect different points of view*" (DE-1), self-reflection was not mentioned by the majority of student teachers ($t_0$ = 88%; $t_1$ = 92%). It should also be emphasised that point-of-view reflection was mentioned more often by the student teachers in the prequestionnaire ($n$ = 7) than in the postquestionnaire ($n$ = 2). The reflection of the materials was surprisingly also not mentioned by most of the student teachers ($t_0$ = 88%; $t_1$ = 96%). Especially when multiperspectivity is implemented in lessons, the reflection of the materials is an important element as the perspectives in the teaching material only show an excerpt of the issue. The metareflection was mentioned explicitly or at least partially by the student teachers in the prequestionnaire ($t_0$ = 19%), such as in the following example: "*Very often, only one perspective is told in school texts or media reports. This allows the student or reader to accept it as truth without thinking critically about the other side of the story* [ . . . ] *There is not just one correct perspective from which to discuss or explore a topic*" (NL-4), and the metareflection was not mentioned by most of the student teachers in the postquestionnaire ($t_1$ = 92%).

Overall, there were few differences between the pre- and postquestionnaires. Only the categories considering the actors' targets and arguing from the points of view of the actors showed minimal positive changes, while reflecting the points of view and metareflection showed minimal negative changes. Due to the various confounding variables (see Section 4.4), it was not possible to conclude whether the seminar, the project itself, the implementation of the lessons, or the reflection contributed to the changes (see Figure 2).

### *5.2. Results of Students' Lesson Plans: How Do Student Teachers Implement Multiperspectivity in Their Lesson Plans and Teaching Materials in Geography Education?*

In total, eight lesson plans were analysed using the 16 subcategories (see Table 3). The table shows the aggregate results per subcategory.

Overall, it was apparent that the requirements for multiperspective lesson planning were fulfilled very differently by each of the groups. While an overall question and the selection of various perspectives to present the issue were often considered, the evaluation of the perspectives was only sometimes considered, and the reflection of the perspectives was rarely considered by the student teachers both in the lesson plans and teaching materials. In addition, there were no mentionable differences between the German ($n$ = 5) and Dutch groups ($n$ = 3) regarding the consideration of multiperspectivity in the lesson plans and teaching materials.

**Table 3.** Results of the analysis of the implementation of multiperspectivity in lesson plans and teaching materials for geography ($n$ = 8).

| Category | Subcategory | Fully Considered | Partially Considered | Not Considered |
|---|---|---|---|---|
| Depiction of the multiperspective issue | Defining an overall question | 7 | 0 | 1 |
| | Identifying the controversy in the issue | 4 | 3 | 1 |
| | Demonstrating the complexity of the issue | 4 | 3 | 1 |
| | Showing the spatial or place references of the issue | 3 | 4 | 1 |
| Consideration of the perspectives involved | Selecting involved perspectives | 7 | 1 | 0 |
| | Considering the actors' targets | 2 | 5 | 1 |
| | Considering the actors' scale | 2 | 5 | 1 |
| | Analysing the actors' assertiveness | 0 | 3 | 5 |

**Table 3.** *Cont.*

| Category | Subcategory | Fully Considered | Partially Considered | Not Considered |
|---|---|---|---|---|
| Evaluation of the perspectives | Elaborating the actors' arguments | 5 | 2 | 1 |
| | Arguing from the points of view of the actors | 3 | 2 | 3 |
| | Assessing the issue (value and/or factual judgements) | 3 | 1 | 4 |
| | Developing an own opinion | 3 | 0 | 5 |
| Reflection of the perspectives | Reflecting on the points of view | 1 | 1 | 6 |
| | Reflecting on the own view | 1 | 0 | 7 |
| | Reflecting on of the material | 0 | 1 | 7 |
| | Reflecting on the absolute view (metareflection) | 1 | 0 | 7 |

We now present the results per category (depiction of the multiperspective issue, consideration of the perspectives involved, evaluation of the perspectives, and reflection of the perspectives, see Table 3). The results of the analysis of the lesson plans and teaching materials are also juxtaposed with some points with the results of the prequestionnaires ($t_0$) and postquestionnaires ($t_1$).

#### 5.2.1. Depiction of the Multiperspective Issue

In seven of the eight lesson plans analysed, the students chose an overall question to be considered or answered in the lesson, such as *"Why is a country poor or rich, and what factors determine the wealth of a country?"* (Group 6-NL). The overall question was a precondition to enable an issue to be defined and to consider it from multiple perspectives. The student teachers were nearly all able to accomplish this precondition, although they did not mention the necessity of the overall question in the questionnaires ($t_0$ = 96%; $t_1$ = 96%).

In 50% of the analysed lesson plans, the complexity and controversy of the topics was fully considered by using different perspectives to show the conflict. The groups also paid attention to avoid a pro–contra view of the conflict, to show the contradictory objectives, and/or to use authentic material, such as for the topic "Spaces of conflict in the Alps" (group 5-DE) in which different actors (Citizens' Association Friends of the Alps, winter vacationers, sustainable tourists, environmental activists, hoteliers, and climate researchers) were chosen to show the complexity. In three of the eight analysed teaching materials and lesson plans, the presentation of the complexity and controversy was partially considered, such as for the topic *"Different cultural views"* (group 7-NL). Although different perspectives were chosen (relativism, universalism, pluralism, and ethnocentrism), the controversial character of the discussion about cultures was not fully presented because the controversy was not apparent. This result was largely in agreement with the results of the pre- and postquestionnaires. In the questionnaires, the student teachers either explicitly or partially mentioned that a multiperspective approach can be used to show the complexity of an issue ($t_0$ = 50%, $t_1$ = 46%). In contrast, the consideration of the controversy in an issue was not deemed to be connected with multiperspectivity by most student teachers ($t_0$ = 81%, $t_1$ = 92%).

A space or place reference was fully considered in three of the eight analysed lesson plans, as in Group 3-DE, which focused on the megacity Tokyo and the inner city. In 50% of the analysed lesson plans, a space or place reference was partially considered, such as with the topic *"The journey of a pair of jeans–effects of global supply chains"* (group 4-DE). Here, it was not clear to which exact space the issue was assigned. This made it more difficult to understand the connections between different perspectives.

5.2.2. Consideration of the Perspectives Involved

Overall, in almost every lesson plan, several perspectives were used to present the issue ($n = 7$). For example, for the topic *"Opportunities and risks of online trading"* (Group 2-DE), the actors chosen were Anna Staudigel (retail), Daniel Müller (Greenpeace), Fatma Körugallari (employee), Mr/Mrs X (politician), Jeff Bezos (founder of Amazon), Henriette Schmidt (employee), and Paul Müller (Amazon customer). The student teachers were able to choose different perspectives and to show these clearly in the teaching material. In addition, in the pre- and postquestionnaires, the student teachers mentioned the necessity to consider several perspectives when using a multiperspective approach ($t_0 = 100\%$, $t_1 = 96\%$).

In contrast, the students rarely presented the actors' targets and interests in the lesson plans and teaching materials. The actors' targets were presented in two of the eight analysed lesson plans in detail, such as in the material from Group 2-DE, in which Daniel Müller (Greenpeace) commented on his opinion and targets: *"In addition, many of the products are produced overseas. This creates huge amounts of $CO_2$ during the long transport routes to the customer's door. These dimensions of environmental pollution must be limited by all mail order companies and they must do something positive for our earth, our environment".* In five lesson plans, the actor's targets were presented partially, as in the following: *"Gated communities are defined as privately managed housing complexes that are not accessible for the public"* (Group 1-DE). Here, the targets were mentioned but not further elaborated on, which is why it was difficult for the students to identify the conflict of interest. In the questionnaires, most student teachers did not consider the actors' targets ($t_0 = 92\%$, $t_1 = 71\%$).

Also, the scale on which actors view a conflict and on which actors can primarily act was presented in only two of the eight lesson plans and teaching materials analysed. In five lesson plans, the criteria of the actors' scale were only partially considered. For example, in the lesson plan and material *"The journey of a pair of jeans–effects of global supply chains"* (Group 4-DE), national perspectives (different countries) and local perspectives (seamstresses in Bangladesh) were chosen to consider the issue, but it seems that the perspectives were chosen randomly and did not follow the aim of viewing the problem on different scales, as these perspectives were not further considered in the lesson plan. Overall, the student teachers rarely presented the perceptions of the issue on different scales with the help of the different perspectives. In addition, most student teachers did not consider the actors' scale as a part of multiperspectivity in the questionnaires ($t_0 = 88\%$, $t_1 = 92\%$).

Respectively, the student teachers barely considered the assertiveness of the actors in the lesson plans and materials. The students were not required to work out the assertiveness of the actors in five of the eight analysed lesson plans and teaching materials. However, a targeted analysis regarding the actors' ability to assert their interests would lead to a better understanding of the issue.

5.2.3. Evaluation of the Perspectives

In five of the eight analysed lesson plans and teaching materials, students were asked to elaborate on the arguments of the actors in the tasks. For example, in the formulated task of Group 2-DE: "*Elaborate the arguments for your actor in your group*". Two of the teaching materials partly included tasks in which students were asked to work out the arguments of the actors, such as in the lesson plans of Group 4-DE: "*Explain the social, environmental, economic impact of jeans production, taking into account the following aspects: extraction of raw materials, production, logistics, consumption*". The criterion was not fully met, as the students were not asked to elaborate on the arguments of the different perspectives specifically. Here, the opportunity to elaborate on the arguments of the respective actors specifically was not completely taken. Nevertheless, in 88% of the lesson plans and teaching materials analysed, the student teachers considered the elaboration of the actor's arguments either fully ($n = 5$) or at least partially ($n = 2$).

The students were asked to make a factual judgement and/or a value judgement in only three of the eight analysed lesson plans and teaching materials. As noted in the

lesson plan of Group 6-NL, the students had to make a judgement: "*To judge the fairness of the system, they have to use their newly acquired geographical knowledge in combination with multiperspectivity to achieve a judgement*". The students were not asked to make a factual judgement and/or value judgement through tasks in 50% of the analysed lesson plans and teaching materials. It seems that a lot of student teachers did not perceive judgement as an important aspect to consider taking a multiperspective approach. The results of the analysis show that a factual judgement and/or a value judgement was at least considered by some student teachers in their lesson plans and teaching materials, although it was not linked to multiperspectivity by most student teachers in the questionnaires ($t_0$ = 77%, $t_1$ = 75%).

In five of the eight analysed lesson plans and teaching materials, the student teachers either fully ($n$ = 3) or partially ($n$ = 2) considered the argumentation from the actor's point of view. Hence, the student teachers aimed to promote the students' understanding of the issue by arguing from the perspective of the actors, such as in the following task from Group 5: "*Present the actor's point of view in the panel discussion*". Arguing from the perspective of the actors may help to better understand the trains of thought of other actors and to discuss the solution approaches in a nuanced way. A precondition is that the interests and values are known by the students so that the argumentation does not become superficial. Identifying the actors' assertiveness by analysing the actors' targets and/or actors' scale, for example, was only partially demanded from the students ($n$ = 3). Overall, the student teachers did not use the opportunity to promote the students' deeper understanding fully because they were not requested to argue from the perspectives of the different actors. In the prequestionnaire, the student teachers did not mention that arguing from the different perspectives of the actors belongs to a multiperspective approach ($t_0$ = 88%). In contrast, 42% of the student teachers explicitly or at least partially mentioned that criterion in the postquestionnaire.

The students were asked to develop their own opinion in only three of the eight analysed lesson plans, such as in the task of Group 3: "*Comment on the following statement: Megacity–space to live in the future?*". In five lesson plans and teaching materials, the students were not asked to develop their own opinion via the tasks. Thus, the majority of the student teachers did not use the opportunity of incorporating a multiperspective approach to an issue into a lesson to promote the students' skills in forming opinions. In the questionnaires, the promotion of one's own opinion was also only mentioned as an aspect of multiperspectivity by about one third of the student teachers ($t_0$ = 35%, $t_1$ = 42%).

#### 5.2.4. Reflection of the Perspectives

In six of the eight analysed lesson plans and teaching materials, the reflection of the points of view was not considered by the student teachers in their lesson planning. The reflection of the own standpoint was required from students in only one of the eight analysed lesson plans and teaching materials. In addition, in only one of the eight analysed lesson materials were students partially asked to reflect on the depiction of the perspectives. Likewise, only in one of the teaching materials analysed were students asked to complete a metareflection. Overall, the student teachers did not consider the reflection aspect as an essential part of multiperspectivity or faced difficulties when trying to implement it. This was also apparent in the pre- and postquestionnaires, as the reflections were hardly mentioned by the student teachers.

## 6. Discussion

The aim of this explorative qualitative study was to gain an initial insight into what student teachers know about multiperspectivity and how they implement multiperspectivity in geography lessons because there are currently no empirical studies in this area of research. For this reason, the student teachers' knowledge of multiperspectivity was gathered in a prequestionnaire ($n$ = 26) and postquestionnaire ($n$ = 24). In addition, lesson plans and teaching materials that were developed in student teachers' groups ($n$ = 8) were

analysed. Based on theory and empirical results, a set of criteria for multiperspectival lesson planning were derived (see Figure 1) and used for the analyses.

Overall, the analysis of the lesson plans and the teaching materials showed that the student teacher groups were able to form a multiperspective topic didactically. The groups chose not only several but a variety of different perspectives. Also, the perspectives were not presented in an oversimplified didactic way, which means that the complexity of the conflict and the controversial character could still be at least partially identified. Also, the actor's targets and scales were considered in the lesson plans and teaching materials at least partially. Interestingly, these results did not correspond completely with the results of the pre- and postquestionnaires. While the student teachers mentioned that a multiperspective approach can be used to show the complexity of an issue in the answers to the pre- and postquestionnaires, the consideration of the controversy of an issue and the consideration of the actors' targets and scales were mostly not associated with multiperspectivity. Overall, the results show that student teachers could have procedural knowledge in this area based on experience and practice, and they are able to consider at least partially the controversial character of an issue with different perspectives, as well as the actor's targets and scales in the teaching material, but could not verbalise their practical knowledge in the questionnaires. At the same time, it could also identify the problem that declarative knowledge, which includes theoretical knowledge, about multiperspectivity is still necessary for considering the controversial aspect of an issue and the actor's targets and scale in lesson planning. As cognitive psychology theories and studies have already shown, it can be assumed that there is a correlation between declarative and procedural knowledge [85,86]. Therefore, theoretical knowledge must be taught to the student teachers, but the application of the knowledge must also be practised with them.

Although all eight topics that were prepared by the groups can be classified as wicked problems (see Section 4.1.3), the potential to discuss the topics as such in lessons was not fully utilised, as it was not implemented thoroughly enough. An explanation could be that the student teachers did not have a high level of topic knowledge or topic affinity and therefore could not fully implement a multiperspective approach. As already shown in other studies, the teachers' topic knowledge and topic affinity are important prerequisites for teaching [7,68] (pp. 656–658). If issues are not discussed thoroughly in lessons, there may be a risk of oversimplifying the conflict and promoting a stereotypical view among students. After all, multiperspectivity is about more than just viewing an issue from several perspectives.

The results also show that not all groups had considered promoting evaluation competence in lesson planning. Also, only a few student teachers mentioned the evaluation as a part of multiperspectivity in the pre- and postquestionnaires. The judgement and the development of one's own opinion help to discuss different solutions and, at the same time, to realise that there is no one right solution, especially for wicked problems [45] (p.166). The potential to promote students' competence in higher-order thinking regarding Bloom's Taxonomy [32] was thus not considered by the student teachers through evaluating the actor's arguments and their ideas to be able to form students' own opinion afterwards. One explanation, following the study of Bickmore/Parker [5] (p. 326) could be that the student teachers do not feel adequately prepared to discuss controversial issues with their students. Therefore, it might be that student teachers need more support in learning to deal with controversial issues in lessons.

Reflection was hardly considered by the groups in the lesson plans and teaching materials analysed. It can be assumed that the implementation of reflection in lessons is a challenging task for student teachers, as it is part of higher-order thinking. Our findings can be partly aligned with the results of the study of Miri et al. [35] (pp. 365–367), which also showed that the promotion of higher-order thinking in the form of critical thinking is a difficult task for teachers. In addition, in the pre- and postquestionnaires, almost all student teachers did not associate reflection as a part of multiperspectivity. However, reflection is a very important aspect following the discussion of an issue from different perspectives,

when solutions have been presented and opinions have been formed. It could be assumed that the student teachers do not associate multiperspectivity with reflection because they already considered the multiperspectival discussion of an issue as a reflective discourse because the issue is not presented in a monoperspectival way. It is therefore even more important to convey to the student teachers in their teacher training that reflection is an essential part of multiperspectivity.

Overall, the results show that it was a challenging task for the student teachers to plan multiperspectival geography lessons. Especially in the subject of geography, multiperspectivity is fundamental because many topics discussed can be assigned to perspectivism. Although the students answered in the pre- and postquestionnaires that they considered multiperspectivity to be important or even very important in geography lessons, they were not able to fully implement the principle of multiperspectivity in lesson planning and in the teaching materials. Therefore, the question must be asked whether the student teachers have not really internalised the importance of multiperspectivity for geography or if the student teachers have not understood the principle in depth. Furthermore, student teachers might have a different understanding of geography and geography teaching, which makes it difficult for them to include the principle of multiperspectivity more extensively despite its stated importance.

Beyond that, no differences could be found between the German and Dutch students in terms of professional knowledge and the consideration of multiperspectivity in the pre- and postquestionnaires, or in the lesson plans and teaching materials. Regarding the project, the student teachers mentioned in the postquestionnaire that the mutual reflection during the exchange phase helped them to question multiperspectivity more closely (see Figure 2). However, many student teachers said they would prefer a real exchange in person within the project compared to the digital setting, which had to be implemented due to the pandemic. It is apparent from the answers that exchanges in the higher education sector benefit more from in-person meetings.

## 7. Conclusions

Overall, the results of this study show that the professional knowledge of student teachers in terms of multiperspectivity was not extensively represented or apparent from the answers to either the pre- or the postquestionnaire. The lack of knowledge could explain why consideration of multiperspectivity in the lesson plans and materials was sometimes superficial.

Although a problem was presented in the teaching materials that incorporated different perspectives, there was often a lack of deeper discussion and subsequent promotion of the students' understanding. The student teachers often reduced the issue didactically further than it was necessary, meaning the controversy and complexity could not be taught to the students as the issue had been oversimplified [50,54] (p. 163). It could therefore be helpful to support student teachers in didactic reduction, to help them learn how to maintain the multiperspectivity of an issue by learning to consider the controversy and complexity of a topic whilst still simplifying the issue.

Additionally, the students' evaluation competence was weakly promoted in the lessons, and reflection competence was almost not considered at all. The competences of evaluation and reflection are certainly challenging competences [5,35], but they can be promoted in lessons in a sustainable way, especially through multiperspective approaches. It can also be assumed that one semester with a theoretical and practical part of multiperspectivity was not enough time, as planning lessons that incorporate multiperspectivity is complex because it requires student teachers to have pedagogical content knowledge [8–10] that includes dealing with wicked problems, powerful geography knowledge, higher-order thinking, and perspective-taking [26,31,39–41,45,46]. Therefore, multiperspectivity should be embedded more strongly in several modules in higher education so that student teachers learn to consider multiperspectivity through repetition. To generate a sustainable growth of professional knowledge, a learning opportunity must be provided in higher education in

which the student teachers receive various forms of assistance. The analyses indicate that student teachers need assistance in the theoretical discussion of multiperspectivity because multiperspectivity also corresponds to a complicated philosophical approach that is not directly accessible for everyone. Furthermore, the student teachers might need even clearer guidance for the planning of multiperspectivity. It is therefore possible that guidelines would help them to focus on aspects such as judgement and reflection skills.

Our developed criteria for multiperspectivity in geography lessons (see Figure 1) could therefore help student teachers to better understand and consider multiperspectivity when planning lessons. Nevertheless, further analyses are necessary to be able to capture whether guidelines can help student teachers, or whether they need another type of support when planning multiperspectivity in geography lessons. Using our criteria for multiperspectivity in geography lessons, a (quasi-experimental) study could therefore be designed to investigate whether guidelines can help student teachers to plan their lessons in a more multiperspective way in more detail.

Furthermore, in our explorative qualitative study, the focus was not on analysing the differences between the Dutch and the German student teachers in terms of knowledge and implementation of the principle of multiperspectivity. Therefore, in a study with a larger sample size, it could be analysed whether there is a different understanding of geography and whether this has an influence on how multiperspectivity is implemented in geography lessons. In addition, the extent to which the study programme has an influence on how multiperspectivity is implemented in geography lessons could be analysed.

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