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# INTERNATIONALIZATION OF TEACHER EDUCATION: A CASE STUDY OF DUTCH AND GERMAN GEOGRAPHY STUDENTS' UNDERSTANDING OF SPATIAL PLANNING

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## Abstract

The topic of spatial planning incorporates the teaching of central spatial, environmental and social problems, and promotes participation in democracy. The aim of this article is to analyse how Dutch and German geography students understand teaching about spatial planning. The students participated in seminars on spatial planning in their home countries and during an international exchange programme. They completed questionnaires as part of a pre-test-post-test-design. The data collection was complemented by a fishbowl discussion, video recorded lessons and an observation sheet. The case study identifies different challenges for incorporating educational aspects into courses on spatial planning. Furthermore, it reveals the potential of an international exchange for geography teacher training.

***Keywords***: *EUROGEO 2017, spatial planning, internationalization, teacher education, exchange, geography education*

## 1. INTRODUCTION

Spatial planning-related aspects are being taught in geography lessons. A number of studies and official documents with focus on urban planning and planning processes show that spatial planning is a topic involved in planning conflicts, argumentation, political participation in local planning sites and sustainable awareness in environmental planning sites (e.g. Keßler et al. 2005; Council of Europe, 2015; González González 2017). Spatial planning is relevant in adopting peaceful conflict resolutions with regards to our environment and society. Pupils should acquire competencies in geography lessons in order to be able to understand spatial planning processes and to participate in them. They need to learn how to use maps to analyse spatial conditions of an area that should be changed in a planning process, and to identify involved stakeholders and understand their arguments. They should also develop their own design ideas, opinions and defend them in discussions.

If educators teach spatial planning, they should know how to deal with complex topics, ambiguity and solutions that are part of spatial planning. However, a lack of studies that

focus on students and their understanding of teaching spatial planning can be noticed. There is also no international comparison available for this specific research field. In this study we focus on the teaching of spatial planning by Dutch (Tilburg) and German (Cologne) geography education students. The participating students attended courses on spatial planning and teaching spatial planning at the University of Cologne and the Fontys University of Applied Science in Tilburg. Both groups met each other twice during an international exchange. They taught spatial planning in their hometown schools and observed and discussed geography classes on this topic at the partner university. Since this is a case study, the results cannot be generalized. Our research questions were:

1. To what extent did the international exchange influence the students in teaching spatial planning?
2. What are enablers and barriers in teaching spatial planning encountered by the Dutch and German geography education students?

## 2. THEORETICAL BACKGROUND

In the following chapter we highlight the relevance of spatial planning, its implementation in geography lessons, and summarise existing research in the topic. Furthermore, we explain the importance of internationalization in higher education.

### 2.1 Spatial planning in geography education

In Dutch and German geography curricula, spatial planning is mentioned in a number of contexts. In the German Education Standards in Geography for Intermediate School Certificate, planning is mentioned as an occupation field; as a way to organize different connected regions in new construction (e.g. Euroregios); in the context of different perspectives of spatial conflict in urban planning; and in participation in public projects (DGfG 2014, 5–26). Furthermore, competence in evaluation, spatial orientation, communication and action is important for acquiring spatial planning skills. However, these standards are not mandatory in Germany, as every federal state has its own curriculum. For example, the authors of the curriculum for secondary level I in the federal state of North Rhine-Westphalia consider planning as a contribution to economic education and citizenship education (Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen 2007, 15). In the Netherlands, geography is integrated with economy and history, which are collectively named "people and society". According to the Dutch design of the core objectives in lower secondary education in regards to learning aspects of the subject "people and society", planning belongs to local and national environmental issues, local traffic challenges, combating water, and developments in pupils' own environment (SLO 2007, 18–37). Following these ideas, spatial planning in geography lessons is an opportunity to teach more than memorizing legislative texts, different spatial planning levels and planning concepts. We work with the following definition:
*„Planning in geography classes can be understood as a spatial, value-orientated and creative shaping practice of the future. As a preparation for decisions, it is part of a problem-solving process" (Maier & Budke 2016a, 10).*

This definition combines approaches from different disciplines, in respect of the multidisciplinary character of planning (Parker and Doak 2012, 1). In the field of geography, planning is considered as a spatial concept (Castree et al. 2013, 376) because it represents the

main focus of the subject (Wardenga 2006, 32–42). Different individual and social values conduct the planner and result in a value-orientated preparation of decisions (Foucault 1982, 220; Luhmann 2007, 67). Planning is viewed as a creative and problem-solving process due to the complex and ill-defined problems in planning (Rittel 1972; Schuy 1985, 22; Kofsky Scholnick and Friedman 1987). Planning is always future-orientated because it focuses on possible alternative goals (Hall 1992, 9).

Maier & Budke (2016) analysed geography school textbooks with regard to planning tasks. The findings show that only 4 % of the analysed tasks in German textbooks and 10 % of the tasks in English textbooks are planning-related tasks. Considering global challenges and the assumed possibilities that teaching spatial planning offers, this is a surprising result. The English textbooks under analysis focus more on natural disasters and climate change, whereas the analysed German textbooks concentrate rather on tourism and travel (Maier and Budke 2016, 19). Furthermore, only around 1/3 of the existing planning tasks in the analysed German textbooks refer to methods applicable in the process of planning. In the analysed English textbooks, approximately 2/3 of existing planning tasks refer to methods that are applicable in planning (Maier and Budke 2016, 22). These methods, for example a roll-play to implement spatial planning in geography lessons at school and at university, are discussed in some current publications (Ives-Dewey 2009; Vogler et al. 2010; Asamer and Jekel 2011).

Teaching spatial planning is part of citizenship education, which helps to enlighten "citizens who participate in decisions concerning society" (UNESCO 1998, 1). Child participation is an important research field with respect to children's rights and citizenship education. Ohl (2009) identified barriers in the participation of children in spatial planning. These barriers were related to the difficult cooperation of different administrative factors and the adaption of official planning proceedings in the context of children. However, children's particular perception of spatial issues is often mentioned as a huge benefit for spatial planning (Reicher et al. 2006, 8ff; Ködelpeter and Nitschke 2008, 12ff). Perception of spatial issues by children has led to the promotion of democracy, contributed to children's identification with the local community and engagement with new and unknown views of important social groups with interests that should be taken into account (e.g. Bertelsmann Stiftung 2007). However, a German study with 12.000 participating children and teenagers shows that the possibilities of participating differ at home, at school, and in their own community (Fatke and Schneider 2005). Children have the greatest opportunities participating at home through discussions with their parents, for example when arriving at home, whilst they have less in school and within their own community. Reasons for these differences are based on antidemocratic structures at school, due to the high amount of teacher-centred teaching. Decision-making methods could be applied in lessons about spatial planning, which would enable children to participate more at school. In the community there is a lack of confidence in politics and a lack of information about possibilities to participate (Fatke and Schneider 2005, 44).

## 2.2 Internationalization in higher education

Internationalization of higher education is one of the aims of the Dutch Ministry of Education, Culture and Science; the purpose is that that every student should be guided in developing intercultural competencies. However, there is currently a lack of institutional policy testing these competencies (Van Gaalen and Gielesen 2014, 13; de Wit et al. 2015, 127ff). The German Rectors' Conference (Hochschulrektorenkonferenz) developed an international strategy to educate young people "not only to make them employable but also to

equip them to be global citizens" (HRK 2008, 3). A global citizen is "someone who identifies with being part of an emerging world community and whose actions contribute to building this community's values and practices" (Israel 2012, 79).

Including internationalization in teacher training is the appropriate answer to challenges based on an increase in internationalized working areas (Leutwyler et al. 2011, 12). In particular, geography teachers could enrich their teaching subject with international views. For this strategy to succeed, the desired attitude needs to be learned prior to teacher training. Several articles have shown that there is a lack of internationalization in German teacher training programs (e.g. Baedorf 2015, 33; Barsch and Dziak-Mahler 2015, 9). In the Netherlands internationalization in teacher education is increasing, but it is accompanied by some challenges (Beelen 2007). Schneider (2007) undertook interviews with 400 administrators, faculty, students and teachers in the USA. She found that teacher-training programs are often the least internationalized programs in the United States educational system. These examples highlight some challenges on internationalization in teacher education and, at the same time, the potential for improvement in this area.

Baedorf (2015) emphasizes the teacher role as a multiplier of knowledge and attitudes for pupils. He indicates that international mobility opens up the possibility to develop positive effects on self-confidence, flexibility, openness, higher tolerance of ambiguity and more intercultural competencies (Baedorf 2015, 43f).

School education systems and teacher training are nationally or even federally organized (Baedorf 2015, 44). As a consequence, international exchange or cooperation is difficult because various institutions have to be involved. In Germany, the university is the main location in which teacher training takes place, followed by 18-24 month internships at centres for practical schoolteacher training (Ausbildungsseminare). In the Netherlands, there are also different institutions responsible for teacher training. For example, universities for applied science (HBO=Hoger Beroepsonderwijs) and schools are responsible for teacher training for middle-level schools. In addition to a number of systemic reasons, there are also individual factors responsible for the low international mobility of teacher training students, such as presumptions about the lack of time, financial problems, language problems, problems in crediting the courses, and expectation that there will be no benefit from such exchanges (Baedorf 2015, 44ff). One approach for increased internationalization is international exchange embedded in seminars. These seminars can face the mentioned challenges of internationalization in teacher education, strengthen the stated positive aspects and avoid the indicated individual reasons for not participating in an international exchange as a teacher trainee. The structure of the analysed seminar draws on these aspects and is explained subsequently.

## 3. METHODOLOGY

### 3.1 Research design

To understand the influence of an international exchange embedded in seminars on spatial planning and teaching we used a pretest-posttest design based on a survey. Figure 1 presents the entire process.

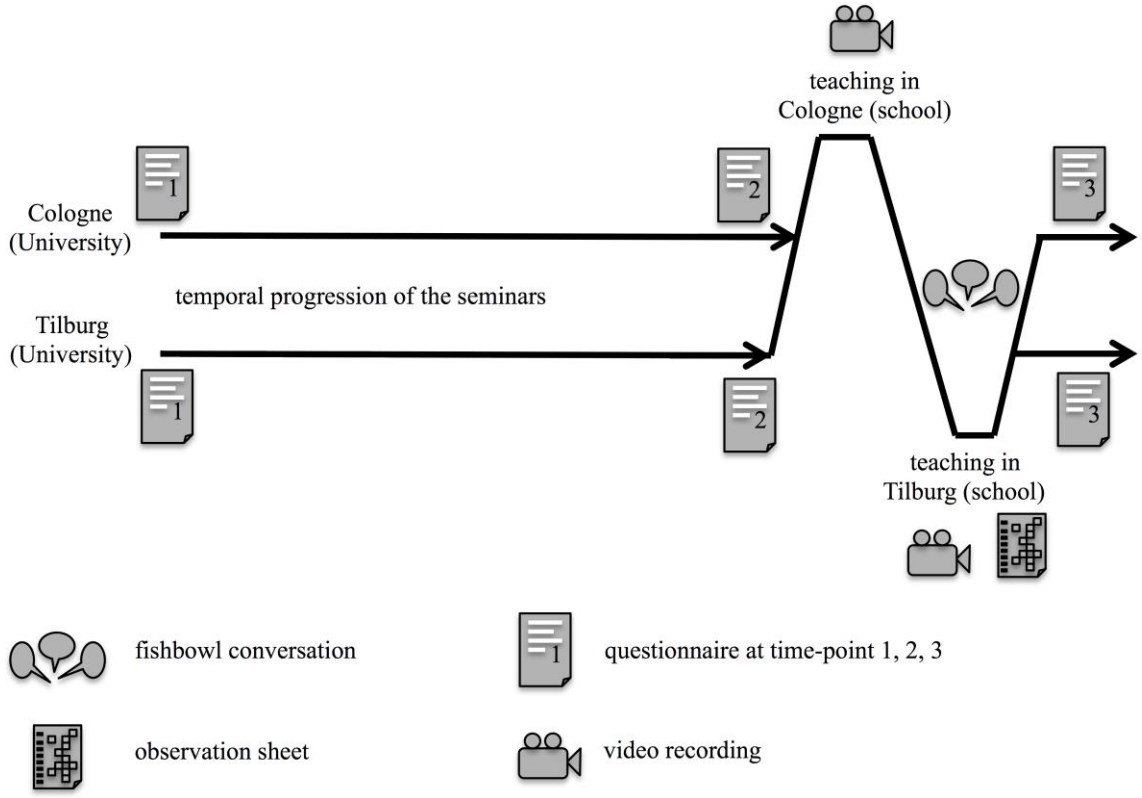


**Figure 1.** Temporal progression of the seminar and data collection (own graphic).

Spatial planning was the focus of the courses in Tilburg and Cologne, but the structure and conduction of the course was dependent on the different teachers who held the classes. The course in Cologne primarily focused on teaching of spatial planning, whereas the course in Tilburg focused on the content of spatial planning. Both groups prepared for teaching a geography lesson on spatial planning at an unknown school. The students from Tilburg observed the teaching of the Cologne students in Germany, and vice versa. The participants made video recordings of the lessons, which were subsequently analysed in groups during the exchanges alongside the corresponding teaching material. The benefit of this approach was that all students and researchers gained an insight into all the lessons taught at each of the participating schools (3 in Cologne and 5 in Tilburg). For the recorded groups it was an intense experience, and they also gained new perspectives on their own teaching and received feedback (Rosenstein and Sheva 2002; Keuffer 2010, 197). Furthermore, the results of the video analyses influenced the subsequent fishbowl conversation organised in the second part of the exchange. A fishbowl discussion is similar to a group discussion, but with the advantage that even in large groups students are able to join the discussion due to a free chair. The fishbowl conversation included discussion about quality criteria teaching of spatial planning in geography lessons, and the differences and similarities in the observed lessons.

To collect data from the students and compare the results, we developed a survey, which helped ensure that all participants answered the same questions. Nevertheless, we could not make certain that all students spent the same time and were equally accurate in filling out the survey, as they answered the questions on a computer and sent the results by email to a given address to guarantee anonymity. We developed the questionnaire in cooperation with scientists from the Netherlands and improved it in iterative cycles. The students completed the first questionnaire before the seminar started, to gauge their previous knowledge

(uninfluenced by the seminars) on spatial planning and its inclusion in school teaching. We distributed the second questionnaire before the exchange, to collect data about the level of knowledge after the preparation of lessons at universities. The participants completed the third survey after the exchange, to find out the influence of the exchange programme (see figure 1). The standardized questionnaires contained both closed-ended and open-ended questions and were filled out in Dutch, English or German. We used video and teaching material to explain the context of some of the answers in the questionnaires. Furthermore, the whole discussion was audio recorded and the transcript of the fishbowl conversation was used as context material to gain a better understanding of the statements given in the questionnaires (Mayring 2004, 268f). For observation purposes, the students prepared an observation sheet in the seminar, and subsequently developed and improved the observation form iteratively. We used the observation sheet in this analysis for explicating the answers from the survey (Mayring 2004, 268f).

### 3.2 Participants

Geography students from Fontys University of Applied Science in Tilburg (Netherlands) and from the University of Cologne (Germany) participated in this study. Both student groups were being trained to teach geography at middle-level schools. The graduates from Tilburg taught at VMBO (voorbereidend middelbaar beroepsonderwijs) and the graduates from Cologne taught at Haupt-, Real- and Gesamtschulen. The German students were at the beginning of their master degree and had a mean age of 23. Approximately 2/3 of the students were women. The students from the Netherlands had a mean age of 21.3 and were at the end of their undergraduate degree. Approximately 1/3 of them were women. Eighteen of the students from Tilburg completed all the questionnaires, compared to 9 students from the University of Cologne.

### 3.3 Data analysis

We combined qualitative and quantitative analyses to interpret the questionnaires. Due to the qualitative content analysis, we identified the content of each statement and the spectrum of all expressions. We applied 15 different deductive categories and compared them with the answers in the questionnaires. These categories were deducted from the theoretical background, illustrated below. Furthermore, based on the 881 answers we developed 151 subcategories divided on 3 different levels and defined 1798 items in iterative cycles (see table 1). A category is an analytic label that is a placeholder for text passages with the same content (Kuckartz 2010, 58f). In short, summarizing, explicating and structuring guided the categorization process (Mayring 2004, 268f). For reliability, we discussed the coding and the results separately with four different scientists of the working group, and presented the results at an international conference. We chose the MAXQDA software for the analysis. We used the additional video material, the teaching material, the transcript of the fishbowl discussion and the observation sheet to explain and interpret the answers from the survey. The quantitative analyses enabled us to show what category is particularly frequent. We illustrated the different categories developed via qualitative analysis by contextualization (Mayring 2001). Furthermore, the quantitative analysis helped to compare pupils' understanding of spatial planning from both groups at different points in time. Due to the possibility of multiple answers, *n* is not the sample size but the total number of statements. We did not count repeated statements from the same participant in the same survey.

**Table 1.** Section of the categories and example of the coding

| Category | | | Example (personal code-country and survey) |
|---|---|---|---|
| **Category (deductive)** | **Subcategory 1 (inductive)** | **Subcategory 2 (inductive)** | |
| Difficulties in teaching spatial planning | Related to pedagogical ideas | Reducing abstraction level | *"[…][the conflict], […] it's abstract" (H412-NL3)* |
| | | Openness of solution | *"[…]it is hard to test […] someone's opinion […]" (C42-NL3)* |
| | | Reduction of complexity | *"[…] it's hard to explain the complicity[…]" (I8-NL3)* |
| | | Citizenship education | *"[…] elections are not always democratic, [...]" (C48-D3)* |
| | | Topicality and future orientation | *"New developments […], new parties […], new technology […]" (M119-NL2)* |
| | | Find a good example (based on everyday life) | *"It is difficult to find an example from everyday life [...]" (M20-D3)* |
| | | Other pedagogical ideas (action, creativity) | *"The pupils must be enabled to act […]" (M20-D3)* |
| | Related to framework | | *"Very time-consuming in the preparation […]"(N23-3D)* |
| | Related to the pupils | | *"[…] beginning is difficult […] because students […] don't know much about the topic. (A35-3D)* |
| | No answer/ no idea | | *"-"* |

## 4. RESULTS

### 4.1 Evaluation of the course and the exchange

The majority of the participating students found the course and exchange highly enriching, exemplified by the following quote from a Dutch student:

*"The course and the exchange were such an interesting experience because you learn a lot about spatial planning, but also about the differences in countries and school systems. The combination of both factors made it a very meaningful module." (P46-NL3)*

Figure 2 shows the answers to the question "How far did the course help you to integrate spatial planning into your lesson?". We asked this question before and after the exchange.

Therefore, the answers before the exchange concern the courses, whilst the answers after the exchange concern both the courses and the exchange.

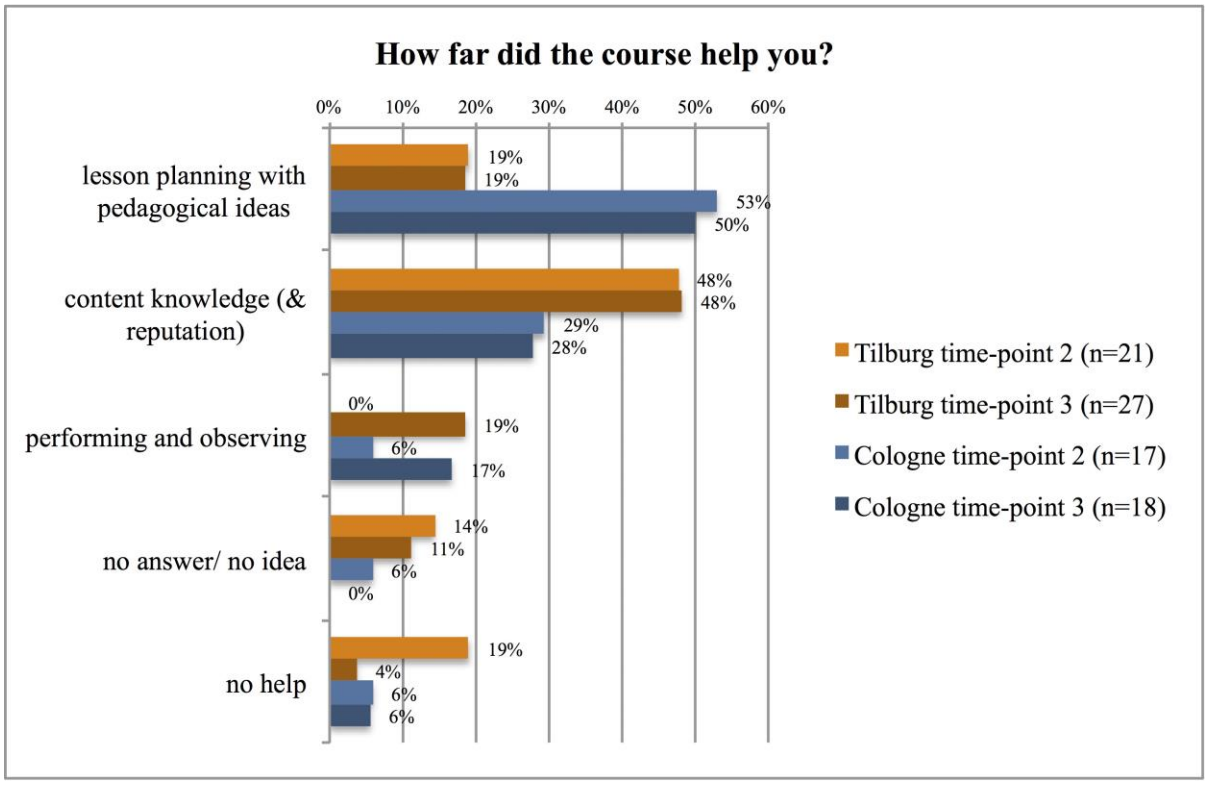


**Figure 2.** Answers to "How far did the course help you?" (own graphic)
(time-point 2= before exchange, time-point 3= after exchange; n= amount of statements)

The category "lesson planning with pedagogical ideas" summarizes the answers regarding class preparation with pedagogical ideas, such as everyday life orientation, or topicality, that support teaching about spatial planning. The following statement is an example of a German student who emphasizes the importance of pedagogical ideas.

*"Through the seminar, I realized that spatial planning affects our life and the lives of our pupils. This is a great opportunity for more pupils' involvement. […] the seminar showed me different important aspects of teaching like topicality."(M20-D3)*

We noticed a higher percentage of statements from the Cologne group than from the Tilburg group corresponding to the category "lesson planning with pedagogical ideas". The students from Cologne learned pedagogical aspects in their seminar, which they later incorporated into their lessons. For instance, topicality plays an important role in achieving lively and applicable lessons (Haversath 2013, 7f). However, the students from Tilburg received more content-related input on spatial planning in their preparation phase and therefore they did not consider that they developed the same awareness for these pedagogical ideas (see Figure 2).

The answers to the category "content knowledge (& reputation)" were focused on factual knowledge about spatial planning and positive reputation of spatial planning. The following quote offers an example in this regard:

*"It […] gave me information about the Netherlands itself and its history in spatial planning […]" (I8-NL2)*

This category contains more answers from the students from Tilburg than from the Cologne students. One explanation for the difference between the two groups could be that the subject of spatial planning was given more focus in the preparation course in Tilburg than in Cologne. Nevertheless, the result from the Cologne group is, in comparison with the other developed categories, relatively high.

The category "performing and observing" emphasizes the field of activities in the classroom during the exchange. The following example from a Dutch student identifies some challenges in teaching spatial planning and in gaining new ideas during the observation and during course.

*"Thanks to all the students for giving me new ideas and inspiration for my future lessons. Not only the idea of HOW I can discuss spatial planning, but also the smaller things I've seen that I can use." (P46-NL3)*

Both groups identified positive aspects of their performance in the classroom and in observing the lessons, particularly after the exchange.

The category "no help" stands for critical statements about the spatial planning courses. A small number of students did not see any relevance in the teaching preparation seminar. There is a relatively low number of statements in this category, likely to be related to the positively received exchange.

Consequently, it is apparent that the focus of the preparation seminars influenced the perception of the lessons and the positive experience gained during the exchange was based on the preparation seminars. Due to the character of this case study, the results cannot be generalized.

## 4.2 Barriers and enablers in teaching spatial planning

To understand the barriers and enablers in teaching spatial planning, as the Dutch and German geography teacher training students experienced them, we asked them for the challenges they encountered and possible solutions to these problems. The answers would potentially enable us to develop important aspects for subsequent courses on teaching spatial planning.

### *4.2.1 Difficulties in teaching spatial planning*

Figure 3 shows the answers to the questions addressing the difficulties that students in geography education expected to experience in teaching spatial planning (for time-point 1 and 2) and what they found after teaching and observing the topic (time-point 3).

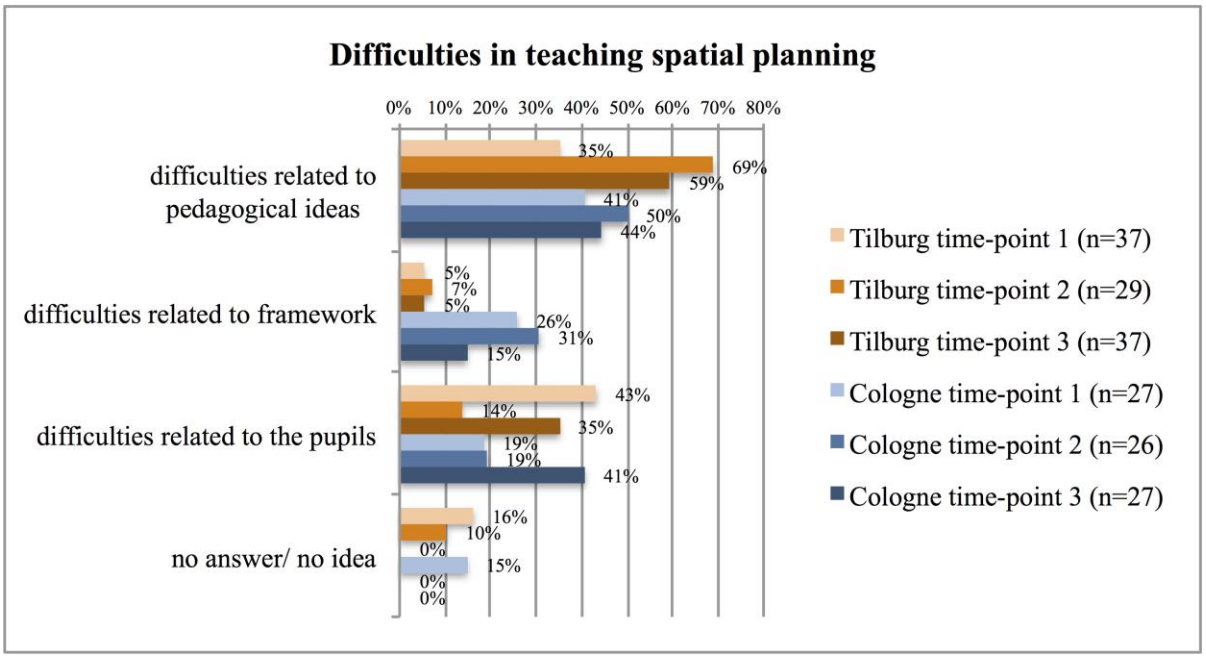


**Figure 3.** Difficulties in teaching spatial planning. (own graphic)
(time-point 1= before seminar, time-point 2= before exchange, time-point 3= after exchange; n= amount of statements)

The category "difficulties related to pedagogical ideas" includes difficulties regarding different pedagogical guidelines that influence teaching spatial planning and problems in realization. We consider pedagogical ideas as a collection of decisions based on pedagogy related to the theoretical background mentioned above. Problems with these ideas occur in lesson planning and during teaching. The following example emphasizes the problem of implementing openness that allows different solutions, related to the teaching material.

*"I think it is complicated preparing the material (…) and allowing different solutions." (M20-D2)*

Openness in solutions is a particular challenge in spatial planning lessons. Solutions within spatial planning cannot be divided into "right" and "wrong" as with other topics, because the problems are ill-defined (Rittel 1972). Hence, other quality criteria for spatial planning lessons need to be developed, such as including different stakeholders' opinions or originality. The fact that we can draw conclusions from the majority of answers in the category "difficulties related to pedagogical ideas", especially at the second time-point of the survey, suggests increased awareness of theses pedagogical ideas during the seminar. A detailed analysis is displayed in Figure 4.

The category "difficulties related to framework" (Figure 3) includes the challenges in teaching spatial planning caused by the available time and resources. The following answer from a Dutch student is an example that shows the technical requirements for teaching spatial planning:

*"Very time-consuming in the preparation and possibly high technical conditions (Web-GIS account, GPS devices, […], written permission for excursions, …)" (N23-3D)*

The category "difficulties related to the pupils" focuses on the difficulties caused by pupils, their previous knowledge and skills, and their influence on the lessons on spatial planning. For pupils to be successful in spatial planning, they should be able to analyse spatial situations and the interests of involved stakeholders. Therefore, they need previous factual information and methodological knowledge, and they should be able to understand the different stakeholders' circumstances. The following statement from a German student mentions this:

*"In addition to previous geographical knowledge, pupils need some empathy and enough general knowledge." (A53-3D)*

The number of statements allocated to "difficulties related to the pupils" increased in both groups after the exchange (Figure 3). It appears that the participations undervalued the pupils' influence before the seminar and before the exchange.
Figure 4 shows in detail the answers regarding the difficulties related to "pedagogical ideas" that influence teaching.

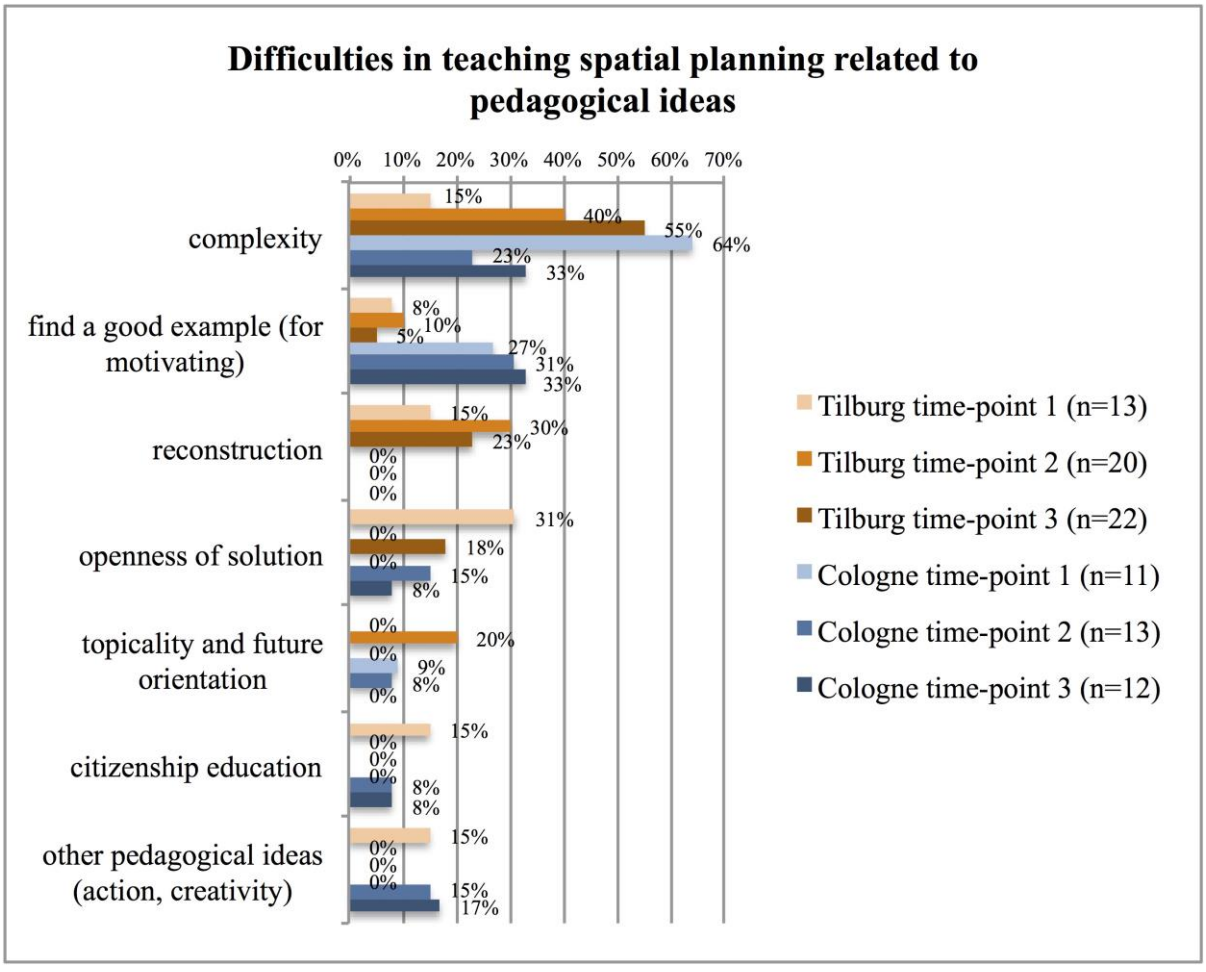


**Figure 4.** Difficulties in teaching spatial planning, related to pedagogical ideas. (own graphic)
(time-point 1= before seminar, time-point 2= before exchange, time-point 3= after exchange; n= amount of statements)

"Complexity" is the challenge most mentioned both by the Tilburg and Cologne students in the category "difficulties related to pedagogical ideas". In the surveys from Tilburg, the number of answers in this category increased across the study period. We assigned answers to this category based on their focus on the diversity of perspectives and stakeholders that have to be taken into account, and other aspects that make spatial planning more complex, such as the spatial, temporal, legal and financial framework. Different perspectives could help learners understand that there is more than one truth (Rhode-Jüchtern 2013, 214f). The following example from a Dutch student highlights the complexity of a solution including "all" perspectives.

*"Also it's hard to explain the complexity of the topic and how many perspectives are involved. It needs to be clear that it's important that all those perspectives are happy with the decision […]." (I8-NL3*)

This statement unveils an unrealistic target of spatial planning, as it is often impossible to include all stakeholders' interests equally. However, in classroom, compromises could be found by including as many interests as possible. In both groups, the view on difficulties with regards to complexity increased after the exchange. We discussed this aspect with the students who realized that they had to prepare very demanding lessons. In these lessons pupils are asked to analyse the given material by considering different actors, weighing up the arguments, developing planning decisions creatively and defending them in discussions with their colleagues. Another challenge we labelled as "complexity" is the problem of distinguishing relevant and irrelevant perspectives.

In the category "find a good example (for motivating)" there are a number of answers from students who found it difficult to identify real life examples of teaching spatial planning. The following quote is from a German student:

*"It is difficult to find an example from everyday life of the pupils that is also realistic […]" (M20-D3)*

Many of the students involved in the project were apparently aware that planning competencies should be developed through examples that are part of public discussion, particularly examples that are authentic and close to the pupils' environment. However, these examples are not used in current school materials such as schoolbooks. Teachers have to develop these materials based on public discussions that could be found, for instance, in newspapers. The students viewed this task, identifying suitable spatial examples, and developing their own materials, as challenging. The observation of the lessons demonstrated to the students that it is particularly difficult to motivate pupils for topics where the chosen examples are not closely related to the pupils' environment. The students from Cologne found the category "find a good example (for motivating)" more difficult than the students from Tilburg. One explanation for this difference could be that the students from Tilburg paid more attention to dealing with these difficulties and reducing thematic complexity, whilst the German group were more focused on the execution (teaching the classes in school) and on finding motivating examples. It seems that the different seminars influenced this result.

The category "reconstruction" includes statements with a focus on the difficulty to clarify or visualize the abstract character and different values involved in spatial planning conflict. Only Dutch students noticed challenges related to this pedagogical idea.

*"…You have to visualize it [the conflict] somehow with the pupils. I think that would be the most difficult part of spatial planning in geography lessons because it's abstract." (H412-NL3)*

The category "openness of solution" includes difficulties in teaching openness in spatial planning and the accompanying consequences, such as tolerance of ambiguity (see Figure 4). Openness in solution allows creative planning answers, although the solutions have to be fact-based. This seems to be an important question in light of post-truth politics and so-called fake news in politics.

Current news is an important basis for teaching geography. Current planning developments could motivate pupils to take action that influences their future and sensitize them to their environment. Answers within this field were gathered under the category "topicality and future orientation", with a focus on currency. The following example shows awareness for these aspects.

*"New developments playing a role, new parties getting involved, new technology making compromises possible." (M119-NL2)*

The mentioned different renewals show the difficulty in dealing with unpredictability in regards to spatial planning processes. There were a few statements in the category "topicality and future orientation". This category was mentioned only before the seminar and before the exchange. A possible explanation could be that students in both groups see topicality only as a difficulty with regard to information acquisition. The quote above is along the same line, in favour of taking new aspects into account when planning a lesson.

The category "citizenship education" focuses on students' understanding of spatial planning as a political and democratic process. The following example from a German student suggests that in a democratic system, it is money that influences elections and political decisions and thereby planning decisions.

*"It is difficult for students to understand that elections are not always democratic, often money determines success." (C48-D3)*

Only a small number of students estimated citizenship education as a challenging aspect of teaching spatial planning, which could be viewed as most participants trusting democracy. Nevertheless, the result is a sign for conducting interesting discussions in teaching spatial planning with regards to capitalistic developments in our democracy.

Lessons in spatial planning by the students from Tilburg were more influenced by difficulties with regards to the reduction of the content, whilst the lessons by the students from Cologne were characterized by problems in realization of spatial planning. Due to the limited character of this case study, the results cannot be generalized.

### *4.2.2 Proposed solutions for difficulties in teaching spatial planning*

We asked the students for solutions to the identified problems in teaching spatial planning in schools. Figure 5 shows the answers to the question "how would you solve difficulties in teaching spatial planning?".

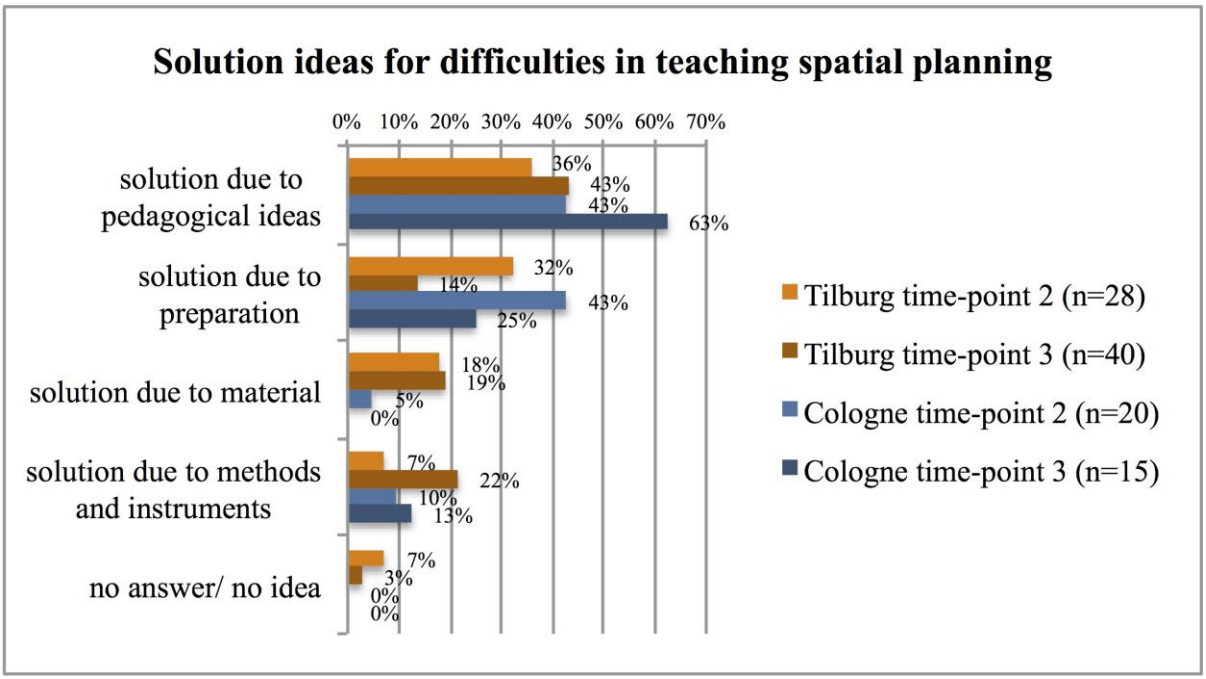


**Figure 5.** Suggestions of solutions for difficulties in teaching spatial planning. (own graphic) (time-point 1= before seminar, time-point 2= before exchange, time-point 3= after exchange; n= amount of statements)

The category "solutions due to pedagogical ideas" includes participants' statements on solving problems in teaching spatial planning by pedagogical conventions (Figure 5). The following quote from a German student describes a possible solution to the pupils' lack of interest in the topic by including the everyday life of the learners into teaching.

*"The topics should be linked to everyday life as much as possible, that problems of disinterest do not even occur." (U98-D3)*

In both groups, the amount of answers in this category increased after the exchange, suggesting that both Tilburg and Cologne students learned to solve problems in teaching spatial planning using pedagogical ideas. In particular, the group from Cologne identified different pedagogical ideas like "creativity" or "problem-orientation" as solutions. The pedagogical idea of creativity supporting the development of new solutions is one of the goals in spatial planning (Schuy 1985, 22). Problem-orientation and problem-based learning are important pedagogical ideas in teaching spatial planning, where the aim is to focus on a problem, followed by searching for appropriate strategies and reflect on possible solutions (Maier and Budke 2016, 14).

In the category "solutions due to preparation" we included statements about solving problems in teaching spatial planning that focus on lesson planning. The chosen example below is a statement from a Dutch participant who showed new awareness in lesson planning with respect to teaching goals.

*"I would solve these by having clear goals. The teaching goals can give the answers to how deep we should look into a certain situation." (p109-NL3)*

It seems that the participants from both groups concluded that preparation is an important aspect for solving the problems that occurred in teaching spatial planning in school. This aspect is mentioned especially in the surveys following the seminar. The answers from both groups were similar with regards to preparation, possibly because the experiences enabled new solutions for the difficulties in teaching spatial planning.

The category "solution due to material" included statements from students who identified teaching materials that were helpful in solving problems related to teaching spatial planning. The following statement from a Dutch student suggests varying the input through the use of different teaching aids. Theses could help pupils to change their perspectives, as a key goal of spatial planning is to learn to respect and to consider opinions from different stakeholders.

*"Different positions can be a great input for class discussions or expert groups. […] Modern media can help to […] see different satellite pictures from different years, showing progress." (W9 - NL3)*

It appears that the students from Tilburg used teaching materials as a way to solve problems in teaching spatial planning more often than the students from Cologne. This suggests that the Tilburg students used their technical ability to solve teaching problems, whereas the students from Cologne missed this opportunity. Nevertheless, well-prepared material via quantitative and qualitative reduction seems to be an important way to address problems in teaching spatial planning.

The category "solutions due to methods and instruments" includes statements with a focus on methods for solving problems in teaching spatial planning. The statement below belongs to a Dutch student who mentions business games as a way to deal with difficulties with different perspectives and pupils' lack of motivation.

*"[…] let [the pupils] play the perspectives and personalize their stories." (I8- NL3)*

The results show that both groups consider, to a certain extent, methods and instruments as possible solutions to problems in teaching spatial planning. In both groups, the number of statements in the category "solutions due to methods and instruments" increased between the surveys.

In conclusion, the results show that the majority of participants learned to use pedagogical ideas as a way to solve difficulties in teaching spatial planning. Problem-solving or creativity were highlighted by the students and could be used in the development of new ideas. These have already been mentioned in this context in previous studies by Maier and Budke (2016, 10). Nevertheless, due to the limited character of this case study, the results cannot be generalized.

## 5. CONCLUSION

The aim of this article was to understand the benefit of a geography student exchange with regards to teaching spatial planning. Furthermore, we wanted to determine barriers and enablers in teaching spatial planning, which can help in the identification of challenges in implementing spatial planning for geography students in higher education. With regards to the qualitative character of this study, the results have a limited general validity. The key points of the study are:

1. **Internationalization as opportunity:** The investigation showed that students found the seminar and exchange with emphasis on international comparison particularly useful. We can therefore revise the conclusion that internationalization is useless, as summarized in Baedorf (2015, 44ff). Furthermore, not understanding everything in the foreign language was not a hindrance, but a benefit that worked like a filter and enabled the students to sharpen their focus.

2. **Transferability:** In respect to the analysed questionnaire and the video recorded lessons, we identified the attention given to everyday life aspects as a pedagogical idea and a helpful strategy in teaching spatial planning. However, we found that students considered that linking an example connected to the pupils' environment to general insights into spatial planning processes as complicated. The students viewed transferability in specific aspects of a particular case as complicated to instruct or to teach. One group tried to ask a number of questions on a specific concept towards the end of a lesson, but the pupils could not identify the underlying idea. A solution to this problem could be that students learn in seminars to structure their understanding of concepts using the planning definition of Maier and Budke (2016, 10).

3. **Creativity in consideration of reality**: One guiding idea in teaching spatial planning is supporting pupils in generating creative ideas, while facing and regarding reality, facts, laws and local circumstances. How teachers can enable and support creativity in spatial planning, without negatively affecting the understanding, could be an enormous challenge and might be a topic of further research. We observed in one creative lesson how pupils worked on the task of transforming an old industrial area into the city centre. Some pupils set their creativity free in planning an airport downtown. This example shows that spatial, temporal and financial frameworks have to be taken into account in spatial planning lessons, to achieve realistic planning. Teacher training on spatial planning should include developing awareness of different values and perspectives in using appropriate methods to deal with this balancing role, such as simulation games.

4. **Empathy and own opinion**: Some students identified pupils' involvement as a helpful idea in teaching spatial planning. Allowing learners to adopt new perspectives is an exciting tool to support this process. However, how do teachers enable pupils to adopt new perspectives and, at the same time, maintain their own opinion and learn to argue? Teachers should put pupils in the position to decide for themselves which aspects of a different view could be included in their own opinion. In one observed lesson, the pupils were given the perspective of a specific stakeholder and were asked to discuss and sustain this perspective rather than develop their own opinion. Teacher training should include strategies for strengthening empathy (for example by visualizing various stakeholders' perspectives), and, at the same time, for creating the context for expressing personal opinions.

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