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The Paper Implementation of the German Educational Standards in Geography for the Intermediate School Certificate in the German Federal States

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Abstract

Up to the publication of the results of Germany's first participation in the PISA study in 2001, there had been no national educational standards in Germany's 16 federal states. In the aftermath of the discussions about the disappointing outcomes, Germany's federal states decided to develop national standards, yet focusing on "core subjects" and leaving geography disregarded. Consequently, the DGfG, which is the governing body of all professional geography associations in Germany, agreed on solving the problem on its own and published its own Educational Standards in Geography in 2006. Even though there have been countless efforts to foster the implementation of these widely-accepted, yet without legislative validation, standards we do not know exactly to what extent they have been implemented in the particular German federal states. The study presented here addresses this research gap bifid: Firstly, a research tool designed to analyze the paper implementation (i.e. putting into place new policies and procedures with the adoption of an innovation as the rationale for the policies and procedures, Fixsen et al., 2005, p. 6) of standards in curricula is introduced. Secondly, the results of a thorough examination of all curricula valid for the grammar schools in Germany are presented and discussed. As it becomes obvious, the Educational Standards have become increasingly implemented within the past years despite a lack of support by the legislations of the 16 federal states. However, there are some gaps that remain to be closed in order to ensure a complete, entirely successful paper implementation, ranging from particular areas of competence within the curricula in some states that have not adopted standards based geography instruction.

Keywords

Paper Implementation , Educational Standards in Geography, Curricula , Federal States of Germany

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Due to the fact that Germany is a federal republic of 16 individual states, the German education system is not organized on a national level, but on a federal one. As a consequence of this complexity, 16 different kinds of educational sub-systems exist, each one consisting of a particular variety of different school types and tracks. While primary education is most commonly settled in primary schools with grades 1-4, secondary education may differ significantly from federal state to federal state. While some states offer comprehensive schools for all kinds of students, others separate their students according to their abilities, achievements and aims from grade 5 on, be it in middle schools, secondary modern schools or grammar schools, i.e. *Hauptschule*, *Realschule*, or *Gymnasium* (Sekretariat der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland KMK, 2015). Due to this complexity, standardized testing had barely been implemented in the German school system up to the beginning of the 21st century (Neumann, Fischer, & Kauertz, 2010).

However, as the German federal states participated in the Program for International Student Assessment (PISA) for the first time, results revealed only average levels of students' performances in the international comparison, whilst inner-German comparisons showed a particular portion of low-performing students and occasionally significant disparities within and between the different federal states (Klieme, 2009; Neumann et al., 2010). As a first reaction, severe public discussions led to a categorical questioning of the efficiency of the Germen education system. Policy makers were shaken up, felt the pressure and decided to address substantial alterations within the system (Böttcher, 2003). As a consequence, the Standing Conference of the Ministers of Education and Cultural Affairs of the Laender in the Federal Republic of Germany (short: KMK) decided on developing national standards, starting from the primary school level and intermediate school level up to the secondary school qualification (Klieme, 2009; KMK, 2005). The major aim was to develop a means to compare and scrutinize the performance at certain levels within the German education system. Prior to that decision, state-wide curricula described and defined the contents to be covered in a particular subject, leaving it up to the teachers to set the educational agenda within these limitations and to assess the students' performances accordingly (Neumann et al., 2010).

As the KMK is a voluntary, yet standing conference, with no imminent legislative or executive power, the federal states had to agree on the suggested national standards and to promise to implement them, which followed immediately and without exceptions (KMK, 2005, 2013, 2014). However, as the national standards developed by the KMK comprised only certain school subjects such as German, maths, English and science due to financial restraints and strategic considerations, other subjects such as geography were not included (Hemmer, 2012; Colditz, Hemmer, Hemmer, Hoffmann, & Ringel, 2007; Ringel, 2005).

The Educational Standards in Geography for the Intermediate School Certificate

As national standards had not been developed by the KMK for geography, the geographical community in general and the geographical professional associations in

particular criticized the lack vehemently. National standards developed for subjects such as maths, English and science were increasingly used as the referential basis for new federal curricula. Consequently, an increasing impact on everyday school practices in these subjects was anticipated. The question facing geographers remained: How should standardization in geography lessons be facilitated without national standards, and how should geography as a school subject be able to integrate into standardized education concepts on such an insufficient basis (Hemmer & Hemmer, 2013a; Hemmer, 2012; Colditz et al., 2007)?

As a consequence, the German Association for Geography (Deutsche Gesellschaft für Geographie, short: DGfG), decided on producing its own national standards, making geography the first school subject with national standards outside the KMK (DGfG, 2007). In 2006, the Educational Standards in Geography for the Intermediate School Certificate (further Educational Standards) were published. An English translation followed in 2007. By 2016, eight editions had been released, reaching a nation-wide distribution level. By 2016, every geography teacher and every educational institution in Germany has been presented with the Educational Standards by the DGfG (Hemmer & Hemmer, 2013a; Hemmer, 2012; Colditz et al., 2007; DGfG, 2007).

The Educational Standards were designated to mirror the concepts employed within the KMK education standards in maths, German, etc. Therefore, the team of authors for geograhy agreed on adapting the most common definition of general competences for German students as a theoretical foundation of their work. According to Weinert (2002), competences are regarded as the cognitive abilities and skills available to individuals and applied by them to solve specific problems including associated motivational, volitional, and social readiness abilities. The ability to apply those problem solutions successfully and responsibly in various situations was expections of the standards (DGfG, 2007, p. 8). Further, a hierarchic structure was developed to comprise the full complexity of competence-based geography education, ranging from geography's contribution to education in general to specific content competencies. Sample assignments to demonstrate the particular standards and areas of competence in geography were included in the standards document (DGfG, 2007).

The most essential and groundbreaking aspect of the Education Standards was the geographical competence model, which was designed to provide information on how particular areas of competence are internally structured, what dimensions were included, and what performance levels are expected (Hemmer & Hemmer, 2013a, 2013b). From an overall perspective, this geographical competence model theoretically described the facets within the domain of geography education (Klieme, 2009; Bundesministerium für Bildung und Forschung, 2008). It can be regarded as a radical alternative to the curricula common in 2006, which were based on input to students rather than being output-oriented, for example, a product of learning such as a model or display, or an action based on new knowledge that is produced by the student.

The competency model is comprised of six areas of learning (Table 1). It includes 24 competences and 77 standards, which are set to describe the learning outcomes for students up to the completion of the Intermediate School Certificate. Fourteen sample

assignments are included to give examples of a productive implementation of the competence model (DGfG, 2007, p. 8). According to Schecker and Parchmann (2006), the Educational Standards (DGfG, 2007) can be regarded as a normative competence model, since it represents the (cognitive) preconditions necessary to solve tasks and problems within a certain given standard level.

Table 1
Areas of competences and central competences included as developed in the Educational Standards in Geography (DGfG, 2007, p. 9)

Area of competence	Central competences
Subject-specific Knowledge	Ability to understand spaces at different scales as physical and human geographical systems and to analyze the interrelations between man and environment.
Spatial Orientation	Ability to orientate oneself in space (topographical orientation, map-reading competence, orientation in real spaces and reflection upon spatial perceptions).
Acquisition of Knowledge/Methodology	Ability to collect and evaluate geographically/geoscientifically relevant information in real space and in media, as well as to describe the steps in the gathering of information in geography.
Communication	Ability to understand geographical information, to express and present it and to discuss it appropriately with others.
Evaluation	Ability to evaluate spatial information and problems, information in the media and geographical insights in terms of specific criteria and in the context of existing values.
Action	Ability and willingness to act in accordance with natural and social conditions in various fields of action.

Is there an Implementation Gap Concerning the Educational Standards in Geography?

Even though the competence model of the Education Standards in Geography has been criticized and discussed intensively on a broad base both prior and after its first publication, it has evolved into a widely accepted document (Budke & Kanwischer, 2015; Dickel, 2011; Rhode-Jüchtern, 2011). Alternatives have not been issued so far. On the contrary, the Education Standards in Geography have been subject to teacher professional development, presentations, lectures, key notes and publications on a both national and international level. Implementation measures in particular have so far included the direct and indirect addressing of decision and policy makers, the distribution to all universities and further institutions engaged in teacher training and the development and publication of numerous best-practice examples (Hemmer, 2012; Colditz et al., 2007). Despite these implementation efforts, little is known about the precise impact of the Education Standards in the federal curricula, teacher trainings, and everyday school-practice (Schöps, Haußner, & Linden, 2014; Hemmer, 2012).

Researching the Implementation of the Educational Standards in Geography

***Implementation Research*.** As Porter (1994) has shown in his scrutiny of the introduction of national standards in the USA in the 1990s, the overall benefits from standard setting are hardly predictable, as they depend heavily on the quality of implementation. According to Fixsen and Ogden (2014b, p. 5), implementation can be defined as "[…] a specified set of activities designed to put into practice an activity or program of known dimensions". Accordingly, implementation processes are purposeful and described sufficiently so outside observers are able to detect the "specific set of activities" related to implementation (Fixsen & Ogden, 2014b, p. 5).

It is undisputable that innovations such as national standards can only unfold their inherent potential if they are implemented properly. Thus, well-considered and tailored-to-the-task implementation measures should be a vital part of every innovation put into practice (Hall & Hord, 2006). In the past, implementation research has tried to develop a variety of means designed to ensuring proper implementation, ranging from diffusion-based (Rogers, 2003) and system-theory-based approaches (Hall & Hord, 2006; Sashkin & Egermeier, 1992) to the concept of planned behavior (Ajzen, 1991). Others addressed implementation from a hierarchic perspective and lay focus on the way innovations are put into practice, be it bottom-up, top-down or symbiotic (Gräsel & Parchmann, 2004; Sabatier, 1986) or distinguish between process and performance implementation (Hernandez & Hodges, 2003). Ostentatious, application-oriented approaches considered implementation a vital part of school improvement and offered general implementation advice, often bare of a proper empirical foundation (Rolff, 2000).

Rimehaug (2014, p. 58) summarized the state of implementation research in 2014. He concluded that the standards implementation literature is based on rather scant evidence and has to be considered beliefs and hypotheses rather than profound knowledge (Rimehaug, 2014, p. 58). Even though his assessment has been commonly shared (Fixsen & Ogden, 2014a, 2014b), only scant standards implementation processes have been tested and evaluated, and implementation research can still be considered an academic field to be developed further. In short, researcheres have concluded that "[f]ew standardized measurement instruments with defined psychometric qualities are available, and the contextual complexity of real-world practice makes it difficult to control for all potentially confounding variables" (Fixsen & Ogden, 2014a, p. 1).

"Implementation research is a relatively new research area with an impressive growth curve" (Rimehaug, 2014, p. 58). Even though there has been groundbreaking progress in standards development (Fixsen & Ogden, 2014b), implementation research is still a theoretical and empirical approach barely common in education sciences in Germany. Moreover, the systematic, theory based standards-related approaches were developed in the 2000s, following the first PISA-study (Klieme, 2004; Krapp, 2004). Within this relatively young German academic field, most efforts have so far focused on the national standards developed by the KMK (Oelkers & Reusser, 2008; cf. Pöhlmann, Pant, Frenzel, Roppelt, & Köller, 2014; Zeitler, Asbrand, & Heller, 2012, 2013; Zeitler, Asbrand, & Pöhlmann, 2009; Pant, Vock, Pöhlmann, & Köller, 2008a, 2008b).

Alternative approaches based in educational governance research have not been addressed national-standards-related research questions (Rürup & Bormann, 2013; Rürup, 2011; Altrichter & Maag Merki, 2010; Altrichter, Brüsemeister, & Wissinger, 2007). School subjects relying on national standards outside the KMK such as religious education or chemistry have been subject to few implementation studies (Fischer & Feindt, 2010; Demuth, Gräsel, Parchmann, & Ralle, 2008).

As for the school subject geography, the research community has stressed the importance of making implementation research related to the Educational Standards in Geography a high priority (Hemmer, 2012). Nonetheless, implementation research outcomes are still limited to some specific research focusses such as geographical information systems (Fögele, Hofmann, & Mehren, 2014; Höhnle, Schubert, & Uphues, 2012), Education for a Sustainable Development (Bagoly-Simó, 2013a, 2013b, 2014) and competence-based teacher training (Fögele & Mehren, 2015). From a meta-perspective, Horn and Schweizer (2015) have examined the ideas and knowledge of teachers about competence-based geography lessons in some federal states. However, there has been no overall scrutiny of the implementation of the Educational Standards within the 16 German federal states (Schöps et al., 2014).

Paper Implementation Research. From a general perspective, implementation research can be defined as the research on the reasons for divergences and differences between innovation and reality. What is an innovation made of, what is its potential and what does reality make of it? In the German school system, what you make of innovations highly depends on the individual teachers, as they have a far-reaching freedom of decision considering everyday school practice (Neumann et al., 2010). However, their actions are regulated and restrained, as there are school laws and decrees setting norms that must be followed. The decree most commonly and strongly affecting everyday practices is the curriculum, which regulates both content and standards of school subjects and lessons. In all federal states of Germany, curriculum is approved by the state departments of education or the *Landtage*, i.e. the state parliaments (Sachsenröder, 2011a, 2011b). All schools receive the curriculum and have to set their school agenda according to it, and all textbooks have to be written to allign with the curriculum. Thus, if an innovation such as The Educational Standards is accepted into these curriculum decrees, it has then passed an essential precondition and has a promising basis for further implementation into class-instruction. Proper paper implementation in these curricula is of vital importance in order to ensure eventual long-lasting, high-impact implementation in everyday school-practice. From a legal perspective, the curricula can be considered a legal process. This may occur via the legislative process or via a decision made by the executive departments of education ministries. This particular legal status puts extra weight on the importance of curricula in Germany. Other than non-formal publications offering hints, advice or best-practice-examples, German curricula are formal legal norms, or paper implementation, with the greatest impact. Their abidance is mandatory, and non-compliance can be sanctioned. Other than moral norms or common behavior, legal norms such as the German geography curricula are *ius positivum*, laws willfully put into practice by the people, integrating certain educational aims (Röhl & Röhl, 2008, 291-293). Thus, research on

the implementation of the Educational Standards in the German geography curricula can provide valuable insight into the nationwide consideration of standard-based geography education as such.

In order to scrutinize the implementation of innovations into decrees, the research field of "paper implementation" is most promising. However, in education sciences, only little research has been conducted in this field so far, even though it has been agreed on that paper implementation is an essential part of every formal implementation process (Fixsen & Ogden, 2014b). Paper-implementation-related studies published so far showed that the integration of innovations in norms such as curricula can be essential for a successful overall implementation. On the other hand, results have also made clear that paper implementation on its own is rarely sufficient and requires both institutional and individual acceptance and support (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; McDermott, 2006; Sabatier & Mazmanian, 1979; Vandenberghe, 1987).

Research Aims. As we have no concrete idea of the implementation of the Educational Standards in schools for the 16 German *Länder*, the most decisive research task is to learn more about the current normative basis for the geography standards. Three major research aims were developed:

1. What research tool can be developed and utilized to learn about paper implementation on a both analytical and comparative basis?
2. To what extent have the Educational Standards in Geography by the DGfG been implemented into the curricula currently valud in the 16 German federal states?
3. What conclusions can be drawn from an analysis if the current state of paper implementation of the Educational Standards in Geography by the DGfG as to optimizing further implementation efforts?

We can address furthers research such as on the question of what particular preconditions might have led to certain paper implementation outcomes, or how is the implementation process of the Educational Standards optimized at schools. Moreover, all research efforts aiming at standard-related everyday school practices would be significantly restrained and limited if concrete knowledge about the normative, legal basis of standardized geography instruction remains unavailable.

Methodology

Purpose of Curriculum-based Paper Implementation Analysis. The analysis of curricula can help us find out in what way and to what extent the Educational Standards in Germany have been implemented on a normative level. The geography curricula of the 16 German federal states which have been published since 1998 and are all still legally valid can further help us understand how the different German federal states have adapted to the concepts of standards and competences. In addition, we can learn about positive or negative implementation trends and use this knowledge to trigger adequate implementation-supporting measures.

Sample Material. To scrutinize the paper implementation of the Educational Standards in Germany, all relevant curricula of the 16 federal states of Germany were consulted as a first step. All curricula referring to the secondary school level (grades 5-10) were singled out. Within that group, all curricula referring to the German *Gymnasium* (i.e. grammar school, respectively secondary school, where students can pass the intermediate exam after a total of 10 years and gain direct access to universities after a total of 12/13 years) were eventually used as a comparative basis. The decision to refer to the school type of *Gymnasium* is based on the following reasons:

1. The *Gymnasium* offers the highest degrees in secondary education, including the intermediate school certificate. Not all other school types (cf. certain types of middle schools) within the structured German school system offer the intermediate school certificate.
2. The *Gymnasium* is most commonly regarded as the "flagship" of school development efforts (Spaenle, 2012; Janke, 2011; Friedrich-Heinrich, 2008). If innovations can make it there, they are most likely to make it anywhere within the structured German school system.
3. The *Gymnasium* is still the secondary school type most German students attend. Approximately one third of all German secondary school students visit this type of school. In contrast to the other popular secondary school types, middle schools and secondary modern schools, the numbers of students attending the *Gymnasium* have been constantly increasing since the first publication of the Educational Standards in Germany in 2006 (Malecki, Schneider, Vogel, & Wolters, 2014, pp. 11-14).

Table 2
Geography curricula examined concerning the paper implementation of the Educational Standards (Source: author's representation)

Federal State	**Curriculum**	**Year of Legal Validity**
Baden-Württemberg	Bildungsstandards für Geographie im Rahmen des Fächerverbundes Geographie – Wirtschaft – Gemeinschaftskunde Gymnasium. Klassen 6,8,10, Kursstufe	2004
Bavaria	Lehrplan Geographie für das achtjährige Gymnasium in Bayern	(2004) 2009
Berlin	Rahmenlehrplan für die Sekundarstufe I. Geografie. Jahrgangsstufen 7-10	2006
Brandenburg	Rahmenlehrplan für die Sekundarstufe I. Jahrgangsstufen 7-10. Geografie	2008
Bremen	Welt-Umweltkunde, Geschichte, Geografie, Politik. Bildungsplan für das Gymnasium. Jahrgangsstufe 5-10	2006
Hamburg	Bildungsplan Gymnasium Sekundarstufe I Geographie	2011
Hesse	Lehrplan Erdkunde. Gymnasialer Bildungsgang. Jahrgangsstufen 5G bis 8G und gymnasiale Oberstufe	2010

Federal State	Curriculum	Year of Legal Validity
Mecklenburg-Western Pomerania	Rahmenplan Geografie für den Unterricht in den Jahrgangstufen 5 und 6 der allgemein bildenden Schulen	2002
	Rahmenplan Geographie. Gymnasium. Integrierte Gesamtschule. Jahrgangsstufen 7-10	
Lower Saxony	Kerncurriculum für das Gymnasium. Schuljahrgänge 5-10. Erdkunde	2008
North Rhine-Westphalia	Kernlehrplan für das Gymnasium - Sekundarstufe I (G8) in Nordrhein-Westfalen. Erdkunde	2007
	Kernlehrplan für die Sekundarstufe II. Gymnasium/Gesamtschule in Nordrhein-Westfalen. Geographie.	2014
Rhineland-Palatinate	Lehrpläne Lehrbereich Gesellschaftswissenschaften. Erdkunde, Geschichte, Sozialkunde. Hauptschule, Realschule, Gymnasium, Regionale Schule. Klassen 7-9/10	1998
	Richtlinien zur Umsetzung der Lehrpläne Erdkunde für die Klassenstufen 5 bis 9/10 und für Grund- und Leistungsfach im 8-jährigen Gymnasium mit Ganztagsschule (G8GTS)	2012
Saarland	Lehrplan Erdkunde Gymnasium 5-9 und Oberstufe inkl. 10	2014
The Free State of Saxony	Lehrplan Gymnasium Geographie	(2004/2009) 2011
Saxony-Anhalt	Fachlehrplan Sekundarschule Sachsen-Anhalt Geographie	2012
Schleswig-Holstein	Lehrplan für die Sekundarstufe I der weiterführenden allgemeinbildenden Schulen Hauptschule, Realschule, Gymnasium Erdkunde	2002
	Lehrplan für die Sekundarstufe II Gymnasium, Gesamtschule Erdkunde	2002
The Free State of Thuringia	Lehrplan für den Erwerb der allgemeinen Hochschulreife Geografie	2012

From an overall perspective, it is most likely that a closer look at the implementation of standard-based geography instruction within the school type of the *Gymnasium* can provide significant hints regarding the development in the German school system in general.

In total, the sampled materials included the geography curricula of all 16 German federal states (Table 2). As some states have more than one valid geography curriculum (most have options), all valid variations were included into the research.

Data Identification. Data identification and analysis were based on the general concept of qualitative content analysis as developed by Mayring (2002, 2010) and combined with basic principles of structural semantics (Greimas, 1971). Most importantly, this approach preserves the advantages of quantitative analysis as it has been developed within communication science. It transfers and refines them towards qualitative-interpretative steps of analysis. According to Becker and Lißmann (1973),

various levels of content can be defined, ranging from themes and main ideas as primary content to context information as latent content and including formal aspects of the texts as well (Mayring, 2010).

Classical quantitative content analysis has often been criticized due to the fact that the categories found and developed within texts have not been based on intersubjective, reproducible research (Krippendorff, 2013). However, this problem appears to be solved in modern qualitative approaches, making qualitative content analysis a tool which fulfills essential preconditions of research and which has become widely accepted and widespread in recent years (Mayring, 2002, 2010; Lamnek, 2005).

In the case study presented here, the categories most essential for the scrutiny of an implementation of the Educational Standards are not modified by the author, but simply transferred from the Educational Standards. The six areas of competence of the subject geography are used as categories which are analyzed regarding their paper implementation into the curricula of the 16 German federal states. Therefore, a three-step-approach has been developed:

1. Development of semantic profiles (Table 3): The semantic profiles of the six particular areas of competence of the school subject geography provide a semantic structure for the further analysis of their implementation in the curricula further examined (cf. steps 2 and 3).
2. Examination of the particular curricula and marking of all relevant text passages that refer to one or all aspects of the particular semantic profiles. The analysis software MAXQDA is used as technical tool.
3. Examination and evaluation of all relevant text passages marked concerning the semantic restatement of the semantic profiles of the six particular areas of competence of school geography. Again, the analysis software MAXQDA is used as technical tool.

Table 3
Semantic profiles of the areas of competence examined (Source: author's representation)

Subject-specific Knowledge	**Spatial Orienta-tion**	**Acquisition of Knowledge/ Methodology**	**Communi-cation**	**Evaluation**	**Action**
Central criterium: output-orientation					
An ostentatious definition as an area of competence can be detected for all six areas					
Peripheral criterium: Students are required to…					
learn to regard Earth as a system comprising both physical and human (sub)systems and from a spacial	acquire topographic knowledge and abilities	handle proficiently methods and media of various kinds	get to know communicatio n as means of articulating geographical contents	evaluate various problems via geographical knowledge and criteria	develop the ability to engage in particular fields of action by refering to geographical knowledge and competences

perspective

learn about the interrelations of man and environment	acquire spatial patterns of orientation and structure	develop the ability to apply specific geographical methods	communicate in various social contexts	evaluate media	develop a value-based readiness to act in particular fields of action
regard space as a system by means of basic conceptualizations (structures, functions, processes)	use and interpret maps properly	develop the ability to properly handle various kinds of media	develop the ability to communicate using geographical knowledge	develop the ability to evaluate the relevance of geographical research outcomes	
regard Earth combining common geographical and regional geographical approaches		develop the ability to systematically interpret data		develop the ability to consider the idea of sustainability	

Semantic restatement comprises all referential connections between the semantic profiles of the areas of competence of the subject geography as identified in step 1 with the text passages found via step 2. In this context, restatement can be considered as a connection through expressions of identical object references, be it verbatim repetition, substitution or via linking to an antecedent (Bussmann & Gerstner-Link, 2002, p. 748).

In order to reduce the possibilities of individual flaws and misinterpretations, three security measures have been installed:

1. Steps 2 and 3 are repeated three times.
2. All interpretations are scrutinized by a second set of eyes.
3. All prototype restatements are gathered in a "catalogue of prototype restatements" in order to retrace the evidence leading to a particuar conclusion.

Data Analysis. The analysis of the data made it possible to judge the quality of restatement for each area of competence specified by the Educational Standards. This was completed by analyzing the geography curricula of the 16 German federal states. Two major kinds of restatement were distinguished, based upon Brinker (2005, p. 27):

1. Explicit restatement, which comprises a complete referential identity between the particular area of competence of the Educational Standards in Geography and the particular text passage of the curriculum examined by repetition, synonyms or according pronouns.
2. Implicit restatement, which refers to connections between the particular area of competence of the Educational Standards in Geography and the particular

text passage of the curriculum examined that feature no referential identity, yet semantic relations such as "parts-of-relations" or "contained-in-relations" (Brinker, 2005).

Based on this categorical distinction, a research model was developed which allowed a data analysis that was useful for both description and comparison of various curricula (Figure 1).

Starting with the identification of relevant text passages, the quality of restatement of the corresponding area of competence was assigned a value, which ranged from 1 (no restatement at all) through 2 (implicit restatement) and 3 (quasi-explicit restatement) up to 4 (explicit restatement). In order to be able to consider interstages, in-between-values were integrated. As a result, the data enabled us to observe and rate the particular area of competence being implemented and to what particular extent within which particular curriculum. The data provided both a detailed picture and overall comparison of different curricula.

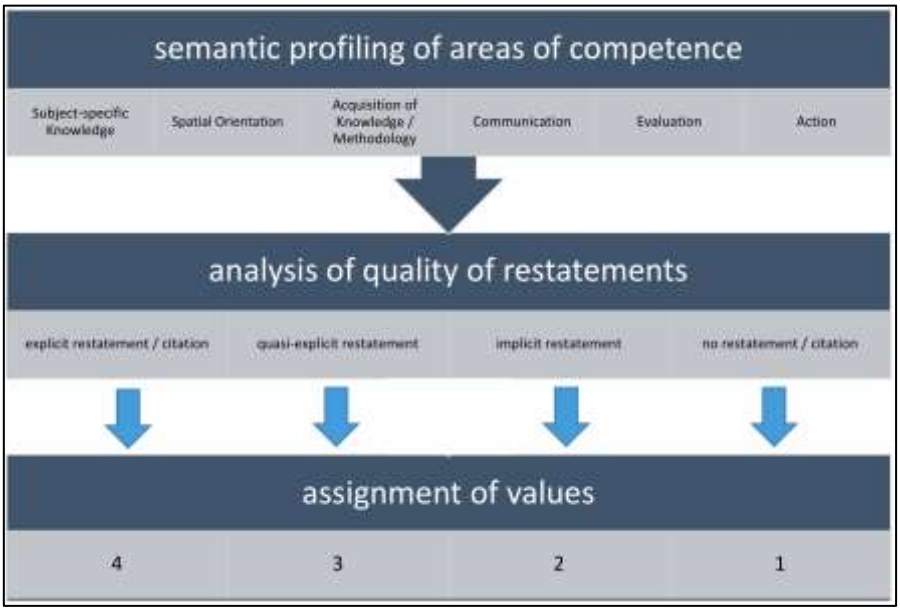

Figure 1. Research model for the analysis of the quality of curricula-related restatements (Source: author's representation)

Data interpretation based on the model of data analysis identified maximum paper implementation. This resulted from an explicit restatement of all particular areas of competence of the Educational Standards in Geography in a specific federal state curriculum. The model enabled the researcher to idenfiy the process of paper implementation across the state curricula analyzed.

Conclusion

In the following, the findings of the comparative study of the paper implementation of the Educational Standards into the particular curricula of the 16 German federal

states are described and discussed. A distinction among curricula is presented which focuses on three major aspects of the research.

- Overall trends show the development of the mean paper implementation values (i.e. the mean values of all six areas of competence) in the currently valid curricula in all 16 federal states of Germany;
- Area-of-competence-related ranges show the spectrum of paper implementation values of the particular areas of competence in all of Germany's currently valid curricula (i.e. the mean and median values of all particular areas of competence of all 16 federal states of Germany);
- State-specific ranges show the spectrum of paper implementation values within the six areas of competence in the particular states.

Overall Trends

Figure 2 shows the average overall implementation of the six areas of competence (i.e. the mean values of the six areas of competences) into the legally valid curricula of the 16 German federal states. The values assigned range from 1.5 (Rhineland-Palatinate, 1998) up to 3.7 (Rhineland-Palatinate, curriculum supplement of 2012). Consequently, a broad range of paper implementation for the standards areas of competence in the curricula of the states can be observed. The overall observation of Figure 2 clearly shows that there has not been a common level of adoption for the standard-orientation across Germany. Overall implementation fluctuates from (barely) implicit implementation in Rhineland-Palatinate (1.5), Schleswig-Holstein (1.7), Mecklenburg-Western Pomerania (1.8), and Bavaria (1.9) to explicit implementation in federal states such as Hamburg (3.2), Saxony-Anhalt (3.3), Saarland (3.4) and Niedersachsen (3.6).

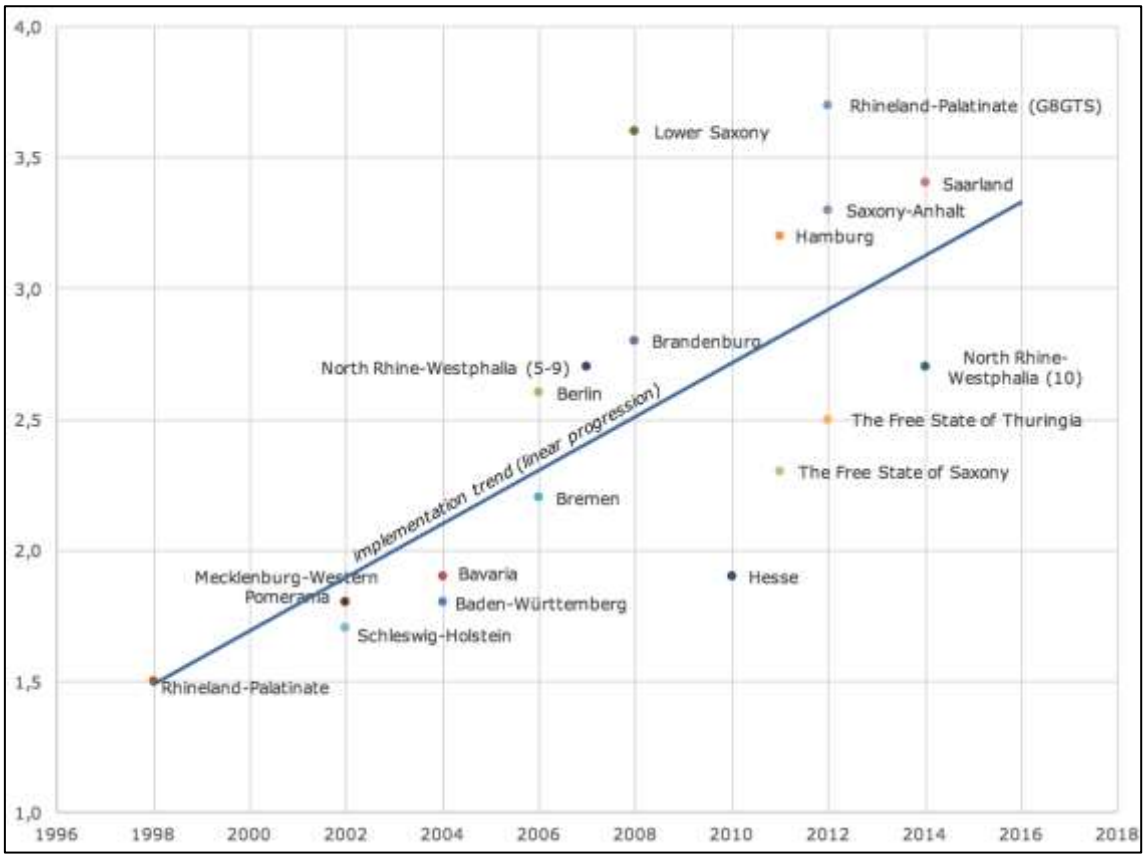

Figure 2. Overall paper implementation trends for the six areas of competence in the German Geography Standards (Source: author's representation)

Nonetheless, a temporal trend can be observed. Early curricula tend to be less standard-oriented, whereas more recent curricula tend to be more standard-oriented. High implementation values demonstrate the post 2006 revisions of the geography curricula that benefitted from the publication of the Educational Standards. The mean paper implementation values of the six areas of competences give evidence that there was a great leap from 1.9 (curricula written until 2006) to 2.9 (curricula written after 2006). Still, the areas of competence of the Educational Standards in Geography are also detectable in the curricula published prior to their first release in 2006. This reveals that the Educational Standards were in some cases incorporated withing the earlier curricula. The subsequent innovations, were not radical, and did not replace completely prior curriculum and teaching practices.

Still, there are some federal states such as Hesse, Bremen and The Free State of Saxony that have not yet adapted to standard-based geography education. Reasons for this are likely to vary, ranging from conscious refusal of standard-orientation to lacking familiarity with the Educational Standards as an adaptable concept. This latter instance is an example of the need for an informative, convincing implementation plan. In federal states, such as Lower Saxony, Hamburg and Saxony-Anhalt, the authors involved in the development of the Educational Standards have also been part of the teams that wrote the concepts for the curricula, making a straightforward transfer from

Educational Standards to curriculum very likely. In this case, the implemtation was based on familiarity with the standards and a commitment to their implementation.

Area-of-competence-related Ranges

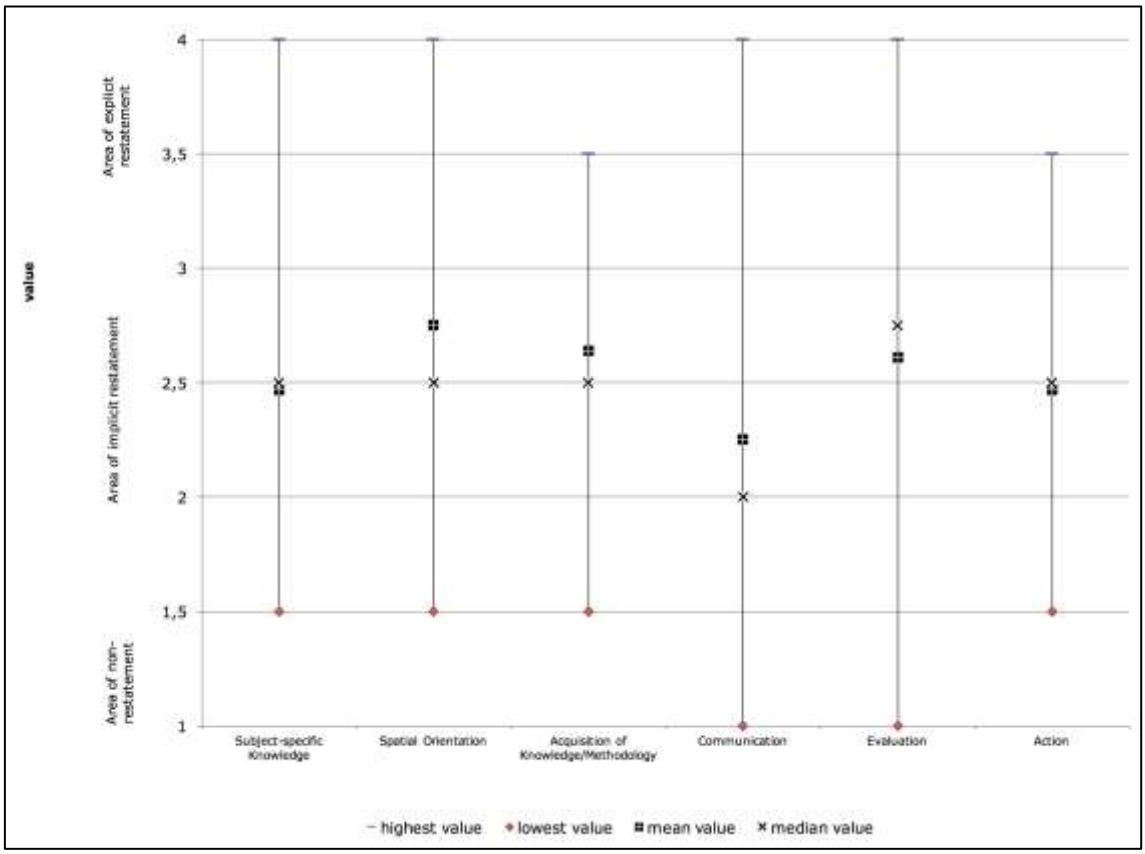

Figure 3. Area-of-competence-related ranges of the Standards for the 16 Federal States (Source: author's representation)

Figure 3 shows the area-of-competence-related ranges as they have been analyzed in all curricula currently valid in Germany. Both "Communication" and "Evaluation" feature the broadest range. "Communication" as an area of competence is not part of the curriculum of Rhineland-Palatinate (1.0), and is barely implemented in states such as Bavaria, Schleswig-Holstein, Mecklenburg-Western Pomerania and Hesse (1.5). Communication has strong implementation in the curricula of Lower Saxony and Saxony-Anhalt (4.0). A similar spectrum can be stated for the area of "Evaluation", which is not yet implemented in the curricula of Baden-Württemberg (1.0) and barely implemented in Rhineland-Palatinate, The Free State of Saxony and Schleswig-Holstein (1.5), but explicitly implemented into the curricula of Lower Saxony and Saxony-Anhalt (4.0). All remaining areas of competences have narrower ranges starting at a minimum of 1.5, revealing that the areas of Subject-specific Knowledge, Spatial Orientation, Acquisition of Knowledge/Methodology and Action have been at least implicitly incorporated in all currently valid curricula in Germany. As a consequence, (and from a minimalistic point of view), curriculum restraints given for these areas of

competence are at least not in contradiction to teaching according to the Educational Standards in Geography by the DGfG.

In general, both mean and median values show that the implementation of the areas of competence is within the "implicit implementation" indicator value. The lowest value refers to Communication (2.25 mean / 2.0 median), the highest ones to Spatial Orientation (2.75 mean / 2.5 median) and Evaluation (2.61 mean / 2.75 median). This provides insight into the traditions of geography in Germany. Communication is a relatively new educational aim, whereas Spatial Orientation and Evaluation are traditional parts of geography instruction, making them intellectually most easily-accessible areas for each curriculum invention team.

State-specific Ranges

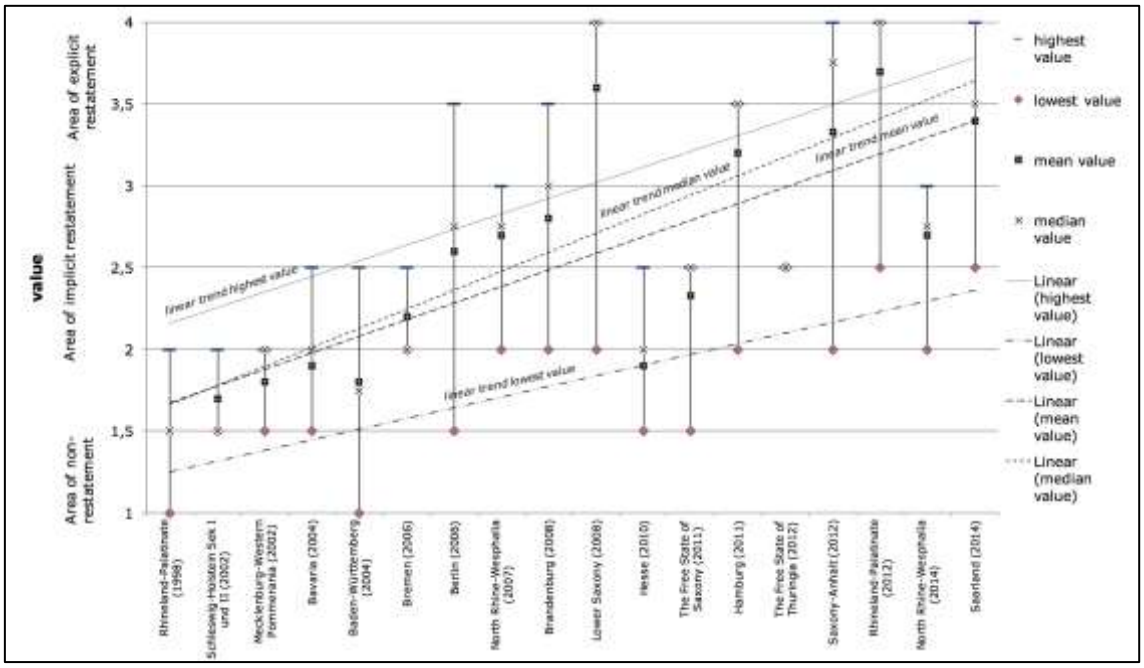

Figure 4. Ranges of area-of-competence-implementation within the particular federal state curricula (Source: author's representation)

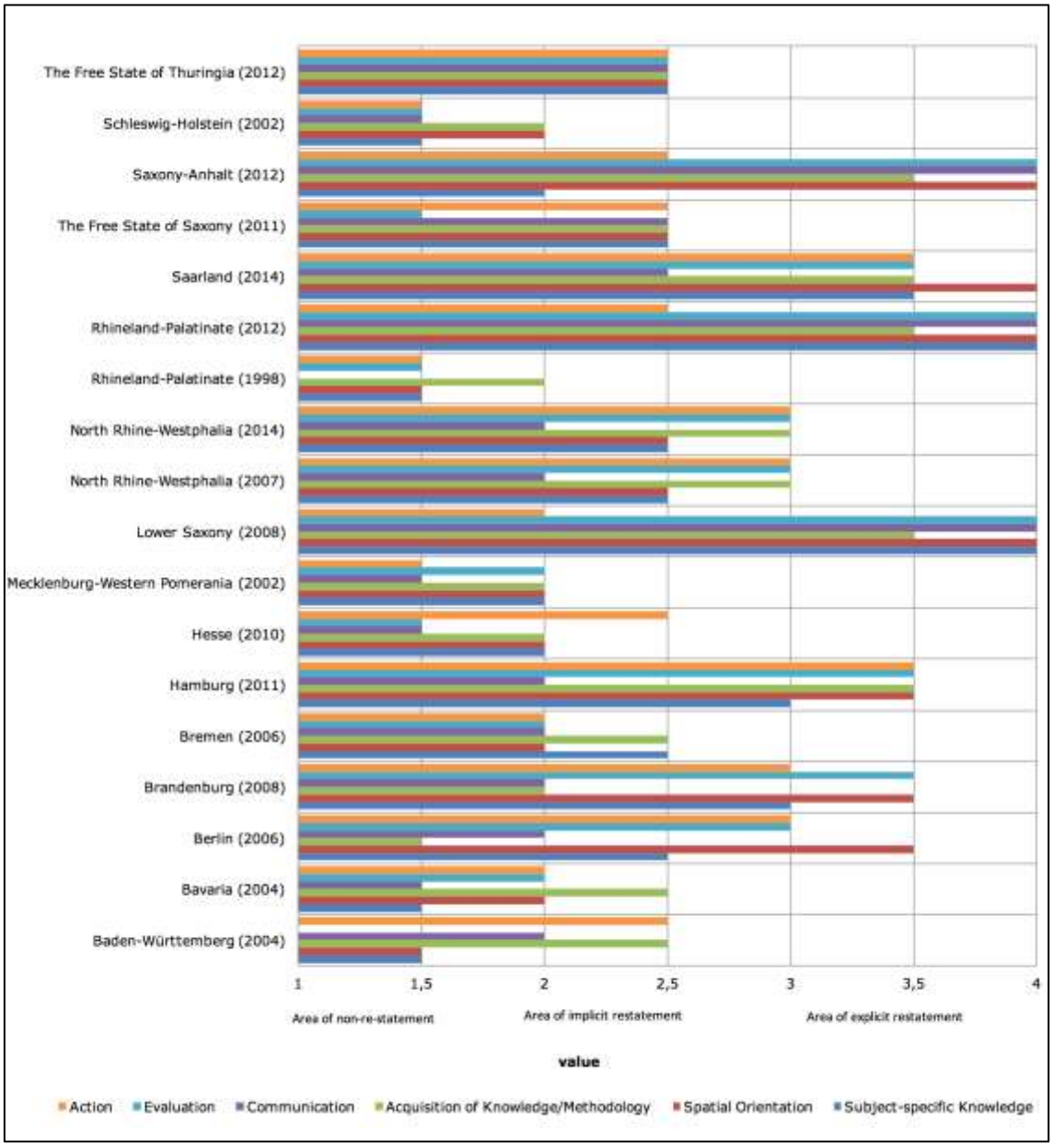

Figure 5. Area-of-competence-implementation within the particular federal state curricula (Source: author's representation)

Figures 4 and 5 present the implementation of the six areas of competence in the particular curricula of the individual German federal states in temporal progression. Most strikingly, all linear trends are positive for the minimum, the mean, the median, or the highest values. Interestingly, the range from lowest to highest values increases parallel to the temporal progression: Most curricula validated prior to 2006 (i.e. the year of the first publication of the Educational Standards in Geography) feature a rather narrow range of 0.5 (Schleswig-Holstein, Mecklenburg-Western Pomerania) or 1.0 (Rhineland-Palatinate, Bavaria) on a lower general level, whereas most curricula

validated after 2006 feature a much wider range of up to 2.0 (Lower Saxony, Saxony-Anhalt) on a higher level. This confirms that not all areas of competence have made their way into curricula published after 2006 and that implementation efforts have not been universally successful. More work is ahead in order to infuse the complete package of the Educational Standards in Geography into the curriculum.

Discussion

The aims of this article were twofold: First, it introduced a research tool designed to analyze paper implementation. Secondly, the tool was used to examine the paper implementation of the Educational Standards by the 16 German federal states within the curricula of the *Gymnasium*.

The research evidence regarding the paper implementation of the Educational Standards into the various curricula demonstrates a thorough and successful implementation of the standards. This is especially striking as the Educational Standards have no legal basis and have solely been produced by a team of authors endorsed by the professional geographical association, Deutsche Gesellschaft für Geographie (DGfG). The educational standards for subjects such as maths, science, German and English have been produced by the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany, which implies a much stronger potential federal impact. For the publishers of the geographical standards, the implementation levels attained so far can be considered as a huge success.

However, the process is not yet complete. Among the 16 state curricula scrutinized, the pre 2006 curriculum documents lack evidence of implementation, be it a single area competency or based on all six competencies. On the positive side, a number of federal states have implemented standardized geography instruction. In doing so, they have relied on curricula developed and validated post 2006. As a somewhat middle ground, there are other federal states that have not implemented each of the areas of competence covered by the Educational Standards. Those states recognize the importance of some competencies, but have not accepted the full range of competency areas in their official curriculum documents.

Conclusions and Recommendations

The conclusions and recommendations that can be drawn from the findings presented have to be separated into two different major aspects: First of all, the research tool used to analyze the paper implementation has proven its methodological value in analyzing the 16 curricula. However, it is a qualitative tool, and has the risks of being influenced by the context of the research. Normal precautions were applied in the multiple checking of the data and their meaning. The paper implementation research tool must be tested in various similar contexts related to curriculum implementation research for its complete validity to be substantiated. Secondly, the data observed and results of the research can help foster the implementation process in two different ways:

- On the one hand, they can provide differentiated insight into the potential level of standardized geography instruction in schools within the particular federal states. Thereby, we have the possibility to compare what could

happen and what is actually happening in geography classes concerning standardized geography instruction. The data may also guide future implementation measures based on discrepancies observed.

- On the other hand, the data can lay the foundation for further studies, which can help us find out exactly why there has been a successful implementation in some states and much less success in others. This should include interviews with decision and policy makers as well as in-class-research, providing insight into students' and teachers' ideas and preferences.

More generally, we can use the research tool and the data gathered to determine if the Educational Standards has been successful. We can also determine what gaps persist and what process is necessary to address the discrepancies. From an implementation research point of view, this seems essential in order to eventually ensure a high standard of instruction and student performance in geography.

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