

DIVERSITY IN GEOGRAPHY – AN ANALYSIS OF TEXTBOOKS

LEONI DÖRFEL, RIEKE AMMONEIT and CARINA PETER

With 4 figures and 9 tables

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Summary: Diversity can be defined as multidimensional as it involves considering the diverse characteristics of individuals and societies. Geography as a subject has great potential to teach about diversity in a sensitive manner because diversity addresses complex interactions in spaces on different scales. In times of globalization and migration processes, school students are becoming increasingly diverse. The diverse reality of students' lives must be reflected adequately in education. Thus, both educational standards and curricula demand an adequate representation of diversity, e.g., by reducing stereotypes that are related to different cultures. Thus, it is necessary to discuss the representation of diversity in textbooks within their role as the primary teaching medium in schools in Germany. We use a model with 13 diversity dimensions to assess such representation in geography textbooks. We examined all 11 licensed geography textbooks used in grades 5 to 13 in Hesse, Germany, using qualitative content analysis and analyzed the results quantitatively. Despite all the analyzed dimensions of diversity being found in the textbooks, the results show an inadequate, partly arbitrary, representation of diversity that contradicts the reality of students today. The representation of diversity depends on the topic and is less present in books for lower grades.

Zusammenfassung: Diversität kann als mehrdimensional definiert werden und berücksichtigt unterschiedlichste Merkmale von Individuen und Gesellschaften. Das Fach Geographie hat ein großes Potenzial, diversitätssensibel zu unterrichten, da Diversität komplexe Interaktionen in Räumen auf verschiedenen Skalen anspricht. In Zeiten von Globalisierung und Migrationsprozessen werden die Schülerinnen und Schüler immer diverser. Die vielfältige Lebenswirklichkeit der Schülerinnen und Schüler muss sich in der Bildung angemessen widerspiegeln. So fordern sowohl die Bildungsstandards als auch Curricula eine adäquate Darstellung von Vielfalt, z.B. durch den Abbau von Stereotypen, die mit unterschiedlichen Kulturen verbunden sind. Aus diesem Grund ist es notwendig, die Darstellung von Vielfalt in Schulbüchern zu diskutieren, da sie das primäre Medium in deutschen Schulen sind. Wir verwenden ein Modell mit 13 Diversitätsdimensionen, um die Repräsentation von Diversität in Geographieschulbüchern zu bewerten. Wir haben alle 11 lizenzierten Geographieschulbücher der Klassen 5 bis 13 in Hessen, Deutschland, mit Hilfe einer qualitativen Inhaltsanalyse analysiert und die Ergebnisse quantitativ ausgewertet. Auch wenn alle untersuchten Diversitätsdimensionen in den Schulbüchern zu finden sind, zeigen die Ergebnisse eine unzureichende, teilweise willkürliche Darstellung von Diversität, die der heutigen Lebenswirklichkeit von Schülerinnen und Schülern widerspricht. Die Darstellung von Vielfalt hängt vom Thema ab und ist in Büchern für untere Klassenstufen weniger präsent.

Keywords: Diversity, dimensions of diversity, geography teaching, textbooks, qualitative content analysis

1 Introduction

Diversity-sensitive teaching is beneficial for the following reasons: It positively affects students socially and emotionally (PEVEC & SCHACHNER 2020) and leads to higher motivation and psychological well-being (SCHACHNER et al. 2016) as well as positive attitudes toward ethnic groups (JUVONEN et al. 2018). Thereby, intergroup contacts in class account for a reduction in stereotyping (PEVEC & SCHACHNER 2020). Consequently, diversity is enriching (WEARMOTH 2017, DHUNGANA 2020). Moreover, differences in school achievement between immigrants and non-immigrants decrease with positive attitudes toward cultural diversity in schools (CELESTE et al. 2019).

In the context of globalization and migration, but also due to changing values and social movements, societies and school classes are becoming increasingly diverse (STOICOVY 2002, DOLLMANN et al. 2022, VERTOVEC 2021) regarding different characteristics, e.g., their national origin, their ethnicity, their gender and their family background (GARDENSWARTZ & ROWE 2003). In Germany, 27% of the population had a migration background in 2021 (FEDERAL STATISTIC OFFICE 2022), and in schools, the proportion of children with a migration background is about 33% and is likely to increase (FEDERAL STATISTIC OFFICE 2018). This increasing diversity requires a new learning culture that adapts classroom activities to the prerequisites of individuals (RUIN & GIESE 2018).

The increasing diversity has an impact on students as it influences the way children learn (STOICOVY 2002). “The more a teacher understands (..) aspects of diversity in a classroom, the more likely the teacher can provide a classroom context that will result in (..) high-quality education for (...) diverse students” (STOICOVY 2002).

This rapid change is accompanied by the increasing complexity of the requirements for teaching activities and the need to investigate the relevance of diversity for these activities (ALTUNAS 2014, FEDERAL COMMISSIONER FOR MIGRATION, INTEGRATION, & REFUGEES 2015). This paradigm shift and the relevance of diversity issues in society, politics, and education claim a fundamental recognition and appreciation of diversity (BLOCK et al. 2017). Since 2012, the HESSIAN MINISTRY OF EDUCATION AND CULTURAL AFFAIRS in Germany has demanded a corresponding approach and the consideration of diversity in the sense of individual support. However, students with a migration background still have a disadvantageous educational situation compared to their peers without one (ABACIOGLU et al. 2019).

Internationally, especially in the U.S. and as a result of the country’s immigration history with more racially, ethnically and culturally diversity as ever before, requirements have existed for decades regarding culturally sensitive pedagogy (STOICOVY 2002). Culturally sensitive pedagogy can be defined as “(..) a student-centered approach to teaching that includes cultural references and recognizes the importance of cultural backgrounds and experiences in all aspects of learning” (SAMUELS 2018). Teacher training should include culturally sensitive pedagogy (STOICOVY 2002) since the school culture could differ from students’ cultural backgrounds (STOICOVY 2002). In the U.S. teachers should learn a more sensitive approach to high diversity. (STOICOVY 2002). HOUTSONEN (2002) specifies ethnic, racial, and cultural diversity, especially in the subject of geography. Geographic education should achieve an understanding of global cultures (HOUTSONEN 2002). The *International Charter on Geographical Education* emphasizes the importance and potential of this subject in the diversity discourse by the following aspect of the contribution of Geography to education: “Understanding and respect for all peoples, their cultures, civilizations, values and ways of life, including domestic ethnic cultures and cultures of other nations” (IGU.CGE 1992: 13). A lack of diversity and inclusion is identified even in the U.S., despite its history of immigration (GATES et al. 2019).

With regard to German educational standards, the subject of geography has various requirements related to the adequate handling of diversity (DGFG 2020, HESSIAN CURRICULA 2021, 2022). The Hessian curricula define diversity as an independent competence area (HESSIAN CURRICULA 2021, 2022). The national standards and the Hessian curricula demand that cultural diversity is considered during the active configuration of a sustainable environment (DGFG 2020, HESSIAN CURRICULA 2021, 2022). However, in general, projections about concepts of cultural diversity have been very insufficient in German schools and resemble mainstream culture (CIVITILLO et al. 2019). Without appropriate consideration, neither equity nor pluralism can be promoted (CIVITILLO et al. 2019).

Textbooks play a significant role in imprinting the image of a particular social group through their visual and textual representation (FEDERAL COMMISSIONER FOR MIGRATION, INTEGRATION, & REFUGEES 2015). This enhances stereotyping. Moreover, textbooks transfer society’s values, norms, attitudes, and behaviors (POGORZELSKA 2016). Thus, they are an important source of cultural elements (WEN-CHENG et al. 2011). Textbooks should therefore be didactically devised to benefit the required multiperspectivity (FEDERAL COMMISSIONER FOR MIGRATION, INTEGRATION, & REFUGEES 2015). The federal government has explicitly remarked that textbooks must reflect the reality of students’ lives in all content to represent social diversity (FEDERAL COMMISSIONER FOR MIGRATION, INTEGRATION, & REFUGEES 2015).

An analysis of the current representation of diversity is inevitable to support diversity-sensitive teaching in German geography education. So far, an analysis of geography textbooks based on the broad diversity dimensions derived from the literature is missing. This study will analyze geography textbooks according to these diversity dimensions to fill the existing research gap.

2 Theoretical framework

2.1 Diversity and diversity dimensions

Diversity generally refers to individuals representing more than one national origin, skin color, religion, economic status, etc. (OMER 2021). These different characteristics are usually conceptualized as different diversity dimensions (BÜHRMANN 2021). Focusing on a single dimension of diversity is criticized in the context of the “transformative diversifi-

cation of diversity” brought by migration (VERTOVEC 2007). Within the concept of super-diversity, these diversifications include a wide variety of dimensions, which are all in a confluence to each other (VERTOVEC 2007). Therefore, this paper will focus on a wide variety of dimensions. One of the best-known models (KARAY et al. 2018, DEMARTOTO 2018) for a simple representation of different diversity dimensions is the 4 layers of diversity model by GARDENSWARTZ & ROWE (2003): (1) The innermost level represents the individual/personality (GARDENSWARTZ & ROWE 2003). (2) Internal dimensions define a person’s physical and characteristic features, which are difficult to change and therefore usually referred to as core dimensions (FRANKEN 2015, BÜHRMANN 2021). The internal dimensions are represented in the General Equal Treatment Act 2006 and Charter of Fundamental Rights (EU) because they are at the core of historical inequality treatments (MEIER 2022). (3) External dimensions describe changeable, secondary characteristics of individuals that represent the results of experiences and decisions (BÜHRMANN 2021). (4) The outermost level comprises organizational dimensions (GARDENSWARTZ & ROWE 2003). Although the model originates from diversity management in companies, the classification of the dimensions, the level

of detail, and the representation of different levels have been used in higher education contexts with only slight modifications (e.g., KARAY et al. 2018, NAAMAN 2021).

We created our own model that was inductively adapted to the material following the classification of internal and external dimensions by GARDENSWARTZ and ROWE (2003) (Fig. 1). Because the focus is on the representation of diversity in describing individuals, countries, and continents in geography textbooks, these are in the middle of our model to illustrate the target of analysis. The organizational dimensions are not relevant in this context. For the internal dimensions, the national origin was added to the model, as 33% of the students in Germany’s classes have a migration background (FEDERAL STATISTIC OFFICE 2022). Since the research is situated in the context of globalization and migration, it is essential to also consider the representation of national origin as part of diversity. Many external dimensions will not be considered in this research, as all non-considered external dimensions (e.g., marital status or work experience) of GARDENSWARTZ & ROWE belong to another stadium of life since their model was developed for organizations and companies and the mapping of a diverse workforce (GARDENSWARTZ & ROWE 2003).

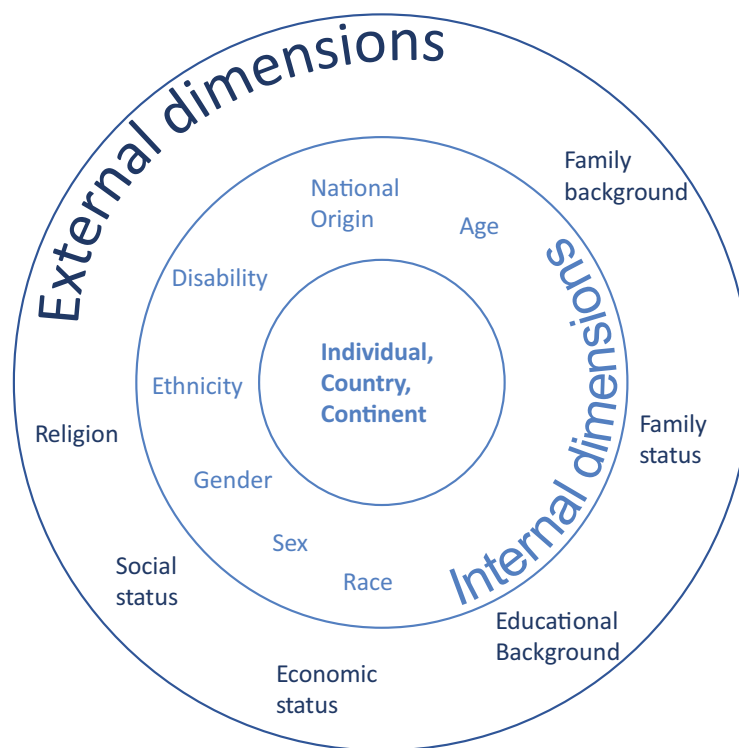


Fig. 1: Dimensions of diversity (own illustration 2023, based on GARDENSWARTZ & ROWE 2003)

2.2 Textbook analysis in the content of diversity

A wide range of studies exists on the representation of dimensions in educational media, such as textbooks. For decades, diverse analyses of various aspects, research currents, and studies on single or multiple diversity dimensions have been conducted. This applies not only to the general study of these aspects but also to their representation in the textbooks of different subjects and countries.

GRABBERT (2010) conducted an analysis of migration and its representation in German textbooks. In addition to geography textbooks, the study considered social studies, history, historical-social world studies, politics, political economics, physical education, values and norms, and philosophy textbooks (GRABBERT 2010). The results showed an inadequate and one-sided representation of migrants in textbooks, resulting in a reinforcement of supposed cultural stereotypes (GRABBERT 2010). In the context of migration, studies concerning the issue of interculturality specify various aspects of diversity, such as cultural diversity, and more specifically, ethnicity, race, and national origin (ZHANG et al. 2022, DAVIDSON & LIU 2020). These international textbook analyses are consistent with the results of a unidirectional representation in German textbooks. The studies confirm that the students addressed do not experience a realization and representation of the values of a globalized world through the mode of representation used (DAVIDSON & LIU 2020). This is particularly interesting concerning the dimensions of race, ethnicity, and national origin.

A Canadian textbook analysis of the depiction of race found continuous racist ideologies and false statements (MONTGOMERY 2005). Only the quantity of these statements decreased in the 2000s compared to analyses of the 1950s and 1960s (MONTGOMERY 2005). A qualitative content analysis on various aspects of anti-racism, especially on multicultural coexistence and racial and cultural conflicts, was conducted by MÖNTER & SCHIFFER-NASSERIE (2007) with regard to geography textbooks of Bavaria, Saxony, and North Rhine-Westphalia. A central result is the contrast between 'us' (Germans) and 'them' (migrants). Consequential alienation as well as the overall low success of the anti-racist pedagogy can be determined based on the qualitative results (MÖNTER & SCHIFFER-NASSERIE 2007). In addition, considerable differences were found between the three federal states analyzed (MÖNTER & SCHIFFER-NASSERIE 2007). This agrees with the results of the Irish textbook analysis by USHER 2023. The Irish

textbooks mostly show a one-sided homogenization of the whole continent Africa by only representing Africa in context of disaster, poverty, undeveloped and uneducated (USHER 2023). Textbook analyses provide insights into increasingly recognizable static identity concepts, stereotyping, and related unidirectional representations of individuals in textbooks (ALLEMANN-GHIONDA 2013). This salvages the risk of ethnicization and often leads to an unreflective Eurocentric representation of the dominant culture of the educational system, as evidenced by a Portuguese analysis of history textbooks (ARAÚJO & RODRÍGUEZ MAESO 2012). Thus, the current instructional media reproduces colonial modes of representation and, thereby, transports racist ideologies (MARMER 2013, FEDERAL COMMISSIONER FOR MIGRATION, REFUGEES, AND INTEGRATION 2015, MÖNTER & SCHIFFER-NASSERIE 2007).

Static concepts are also found in gender discourse as part of diversity. A Ugandan textbook analysis (subject: English) found that female role models are underrepresented and that the texts often do not include women at all (BARTON & SAKWA 2012). When women are represented, it is associated with a high degree of stereotyping (BARTON & SAKWA 2012). LUCY et al.'s (2020) analysis of American history textbooks confirmed these results. Women are mentioned almost exclusively within the contexts of marriage, home, and work (LUCY et al. 2020). These results contradict the currently demanded gender equality and gender-conscious education in schools and contemporary educational media (OTT 2021). An American analysis of physical geography textbooks combined two different dimensions of diversity: the representation of race and gender (BUSH & MATTOX 2020). The results revealed a limited or even no representation of women of different races and identified gender and racial bias in current textbooks (BUSH & MATTOX 2020).

People with disabilities are entitled to universal equality in school and society through the Convention on the Rights of Persons with Disabilities (UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS DISABILITY 2006, KMK (The Standing Conference of the Ministers of Education and Cultural Affairs) 2011, ABU-HAMOUR et al. 2019). In Germany, 7.8 million people had a severe disability in 2021, representing 9.4% of the total population (FEDERAL STATISTIC OFFICE 2022). Against this background, HEINEMANN (2020) investigated the appropriate representation of people with disabilities in German English language textbooks. The results show that the statistical value is not reflected

(HEINEMANN 2020). Moreover, the textbooks do not have a reflective approach concerning disability (HEINEMANN 2020). International textbook analyses show the same results (e.g., the Jordanian textbook analysis by ABU-HAMOUR et al. 2019 and the Spanish study on the representation of disability in sport textbooks by GONZÁLEZ-PALOMARES & REY-CAO 2022). However, in addition to the purely medical model of disability, a social model, “which views disability as rooted in environmental and attitudinal barriers,” has existed for some time (OLNEY et al. 2004). The social model of disability is particularly interesting with regard to geography education and is included in the analysis of disability as a diversity dimension.

Despite many different, but mostly one-dimensional, views on the development and consideration of diversity in the international school context, the results provide a common direction: They highlight the need to analyze textbooks from a diversity-conscious perspective (FEDERAL COMMISSIONER FOR MIGRATION, REFUGEES, AND INTEGRATION 2015). Moreover, no study has conducted a comprehensive textbook analysis of a wide variety of diversity dimensions within the subject of geography. Accordingly, the overarching research concern of this article is dimensions of diversity in geography textbooks.

2.3 Geography textbooks in the German educational system

In Germany, secondary education is normally structured based on a lower level (grades 5–6), a middle level (grades 7–10), and a higher level (grades 11–13). Education at all levels is organized within the country’s federal states – this includes the configuration of curricula and the admission procedure of textbooks as the primary medium in schools (BÖLSTERLI et al. 2010). Private publishers provide textbooks adjusted to the specifics of each individual state. For standardized reasons regarding the analysis of textbooks and differences between the states. We chose Hesse as it is the only federal state that has permissions for all geography textbooks for every grade.

The German Geographical Society (DGFG 2020) defines the aim of the school subject as bridging natural and social sciences under a spatial perspective. This definition results in a broad spectrum of thematic content that considers physical and human geography and human-environmental research. Geography textbooks are structured according to different thematic sequences within these fields (MÖNTER & SCHIFFER-NASSERIE 2007).

In Hessian textbooks, governmental approval is only granted when publishers follow the curricular requirements (HEINEMANN 2020). Hessian geography education is structured based on two curricula: one for grades 5–10 and another for grades 11–13. Both curricula contain requirements regarding their appropriate handling, including the following:

- capturing social reality in its diversity
- adopting different points of view
- building a differentiated and appropriately complex view of the world: In geography lessons, students practice recognizing diversity by changing their perspectives
- including cultural diversity as part of one’s judgement competency (HESSIAN CURRICULA 2021)
- supporting intercultural competence (HESSIAN CURRICULA 2021, 2022)

Thus, diversity should find adequate representation in approved textbooks. Since Hesse offers geography education at the three secondary education levels and provides a catalog of approved textbooks, this state provides a good context for a comprehensive analysis.

2.4 Research aim and research questions

Our research analyzes the representation of diversity dimensions in Hessian geography textbooks. More specifically, our analysis addresses the following research questions.

Two research questions arise from the theory and systematization of the diversity dimensions:

RQ1: With what frequency do the different diversity dimensions occur?

Existing research has focused on single diversity dimensions. However, with regard to the super-diversity addressed by VERTOVEC (2007), the dimensions do not act independently, but instead, interact. This implies that a mere representation of the individual dimensions without consideration of the others would not come close to the diversity concept. Thus, we will analyze how the quantities of occurrences differ between the dimensions.

RQ2: Do the dimensions classified as internal and external occur evenly?

The systematization of the internal and external dimensions adapted by GARDENSWARTZ and ROWE (2003) is another aspect of the analysis in this research. External dimensions (e.g., economic status, educational level, social status) are central content

of the subject geography (HESSIAN CURRICULA 2021, 2022). Nevertheless, the multiple nominations of internal dimensions in the different regulations implies the appropriate appreciation and representation of these individual aspects. With regard to the super-diversity addressed by VERTOVEC (2007), the internal and external dimensions do not act independently, but rather, interact. Two more research questions are proposed regarding the structure of the textbooks:

RQ3: How is the representation of diversity related to the textbook grade?

Hessian textbooks address specific grades (5–6, 7–8, and 11–13). The orientation of the textbooks to specific grades institutes the possibility of differentiated views of diversity dimensions and their occurrence based on the level of secondary education. Thus, we analyze how the occurrence of diversity dimensions is related to the textbook grade.

RQ4: How is the representation of diversity related to the geographical topic?

Contrary to previous research, this textbook study deliberately includes all the approved and licensed geography textbooks in Hesse. Diversity should be addressed in all geographical topics, considering the curricular guidelines of the subject. Because geography textbooks are structured based on different topics, a further focus of analysis is the relationship between diversity representation and these topics.

3 Methods

3.1 Sampling

The study material comprises all the licensed German-language geography textbooks in the current textbook catalog of Hesse, Germany (as of 01.08.2022) (see Tab. 1), the only federal state that has licensed geography textbooks for all grades (5–13). The selection is limited to textbooks and not does not include, for example, map media, such as atlases.

Hessian textbooks have to comply with the curricular requirements. Thus, similar topics are found in all the textbooks. However, the names of the chapters vary slightly. To analyze the occurrence of the dimensions according to the thematic subfields, we assigned the chapters to a topic in two ways:

- Directly = based on identical wording
- Indirectly = based on meaning

Only four of the chapters covered two subfields (3 & 4, see Tab. 2). All the coding units within a chapter were accounted for by the respective subfields. The coding units of the four chapters with double classifications were counted twice (once for each subfield). We then calculated the relative occurrence of each subfield. Tab. 2 illustrates a description of each subfield and its range of coding units.

Tab. 1: All the licensed German geography textbooks in Hesse (Source: HESSIAN CURRICULA 01.08.2022)

No.	Title	Publisher	Year of publication	Grade/s
1	Unsere Erde (Gym)	Cornelsen	2018	5–6
2	Unsere Erde (Gym)	Cornelsen	2020	7–8
3	Terra Erdkunde Hessen	Klett	2022	5–6
4	Terra Erdkunde Hessen	Klett	2013	8
5	Seydlitz Geographie (Hessen)	Westermann	2020	5–6
6	Seydlitz Geographie (Hessen)	Westermann	2019	7–10
7	Mensch & Raum	Cornelsen	2016	11–12
8	Fundamente Geographie	Klett	2015	11–12
9	Terra Geographie	Klett	2020	11–12
10	Seydlitz Geographie Hessen	Westermann	2016	10
11	Diercke Geografie	Westermann	2017	11–12

Tab. 2: Thematic subfields of analysis

No.	Thematic subfield	Geographic discipline	Description	Coding units embraced (total: 4689)
1	Planet earth	Physical geography	Natural processes & life on earth; Geofactors; Ecozones	1289
2	Resources	Physical geography	Resources (e.g., energy)	410
3	Economy	Anthropogeography	Agriculture, industry, & services	825
4	Urban & rural spaces	Anthropogeography	Life in urban & rural spaces: Urbanization, peripheral spaces, urban development & area planning	692
5	Tourism	Anthropogeography	Tourism	93
6	Population	Anthropogeography	Population geography & migration	127
7	Globalization	Anthropogeography	Fragmented world; “One world”; Consequences of globalization & global disparities	975
8	Countries & continents	Anthropogeography	Chapters that are directly focused on a spatial example (country or continent)	707

3.2 Content analysis

The textbook content was examined using category-guided text analysis (GUEST et al. 2012, KUCKARTZ 2019). The core of qualitative content analysis is the deductive-inductive formation of a category system (KUCKARTZ 2019). An overview of the research design is summarized in Tab. 3.

3.3 Coding framework

The dimensions were repeatedly adapted to the material following several runs, resulting in a coding framework. The coding framework includes the definition of each category and specific coding rules based on the definitions. All the unit sections were assigned according to the coding rules based on the definitions of the subcategories. Tabs. 4a & 4b show the coding framework. In the analysis, we

included the complete text body from our sample by structuring it based on coding units ($n = 4689$). Each coding unit encompasses self-contained content. To guarantee an objective procedure for defining the coding units, we selected them based on their headings, sub-headings, and paragraphs. We then analyzed the coding units one by one using the coding framework (Tabs. 4a & 4b), which specified the diversity dimensions previously derived from the theory on coding categories. All the coding units were analyzed for all the categories. The following three possibilities can occur with this approach:

- the coding unit is not assigned to a category
- the coding unit is assigned to one category
- the coding unit is assigned to two or more categories.

Based on this coding, the absolute occurrence of each category can be recorded. When the coding

Tab. 3: Research design

Research approach	Qualitative-quantitative (mixed methods)
Data gathering method	Qualitative procedure (KUCKARTZ 2019).
Sampling	All licensed geography textbooks in Hesse (grades 5–13).
Methods of analysis	Deductive-inductive building of categories according to KUCKARTZ (2019). Quantitative evaluation: occurrence of each category. Qualitative: reference to the theory.

Tab. 4a: Coding framework - internal dimensions

Main category	Subcategory	Coding rule
Internal dimensions	Race	Not represented - skin color (black/white) - nations, which are indirectly related to skin color (e.g., Hispanics, Afro-Americans)
	Gender	Not represented - gender-specific role models - responsibilities of men and women
	Sex	Not represented - biological sex (female/male) is mentioned or arises in the content
	Ethnicity	Not represented - ethnic groups/ethnic minorities - groups are depicted that identify as such based on a common culture and/or language and/or behavior - groups with common ancestry - culture, language, values, and norms or a specific ethnicity are highlighted as a cause of or reason for something - cultural diversity is described
	National origin	Not represented - migrants or people with a migration background are picked out - national origins of individuals or groups (e.g., “Germans,” “Indians,” “Canadians”) are named in the context of migration - national origin is used for a comparison (e.g., Chinese and South Africans are different/similar in ...) - countries of origin and destination are mentioned - the flow of refugees is mentioned (e.g., “Due to refugee flows to Germany, ...”) - the juxtaposition of national origins by contrasting them using pronouns such as “we” and “the others”
	Disability	Not represented - the terms physical/mental or sensory impairments are mentioned. - social impairments are described in more detail using a specific example (countries and continents) (e.g., famines, epidemics, child mortality, natural disasters)

procedure is completed, the relative occurrence can be calculated. A second person coded 36% of the material (4 of the 11 textbooks). The overall inter-coder reliability was satisfactory (0.83).

3.4 Anchor examples

In this section, representative anchor examples are given for selected categories to demonstrate the coding framework. In addition, anchor examples are provided that show the salience of multiple dimensions interwoven within one context.

3.4.1 Race

One example of the representation of race in the analyzed textbooks is shown below:

“One in four blacks, one in six Hispanics, and one in thirteen whites live in severe poverty in the U.S. (2015). In U.S. metropolitan areas, this number shifts even further to the disadvantage of minorities. The inner city of Chicago currently experiences the most ethnic and social segregation nationwide” (translated from DIERCKE).

Furthermore, additional dimensions are addressed in the context of *race* (skin color), namely *eth-*

Tab. 4b: Coding framework - external dimensions

Main category	Subcategory	Coding rule
External dimensions	Economic status	Not represented - economic crisis/prosperity - low/high GDP - low/high unemployment - lower/higher developed - low/high standard of living - comparison of different economic statuses
	Educational background	Not represented - no/low access to education - lowly educated - undereducated labor force; low educated labor force - access to education - more highly educated - skilled workforce; highly educated workforce
	Religion	Not represented - religion mentioned as a term - expression resp. different religions are mentioned (e.g., Hinduism, Christianity)
	Family background	Not represented - parental income, parental education level, parental social status, and/or parental origin
	Social status	Not represented - social status (also pension or social system) of a person/group of people/countries/continents is mentioned - crime status, security status, population structure, political situation, unemployment rate, and/or the social structure of countries or continents are named
	Family status	Not represented - family planning, formation, or founding is written about - one-child policy (as a reference to marital status) - family planning is mentioned in connection with other dimensions - children are mentioned in the context of family (without describing more concrete tasks/meanings of children)
	Age	Not represented - naming or describing certain age groups (also in the form of children, adults, and seniors) and possibly accompanying internal differentiation - indications that suggest ages are named: being young/old

nity, and through statements regarding social status.

“Even though slavery had been abolished in 1865, blacks in particular, as the largest minority, remained disadvantaged in daily life. Their wages were lower, they were often denied the right to vote, and advancement through school and college was not affordable” (translated from TERRA 2 – grades 7–8).

3.4.2 National origin and economic status

There are also examples of contrasting juxtapositions of ‘us’ in Europe, and especially ‘we’ in Germany, versus ‘them’/‘the others’. This anchor example shows the representation of the dimension *national origin* combined with that of *economic status*.

“The injustice in the world, expressed in the growing gap between a ‘society in abundance’ and a ‘society in poverty’, calls for action - and not only from a moral point of view. Too little do we here in the ‘rich North’ seem to be aware that the problems in the ‘poor South’ are also our problems” (translated from FUNDAMENTE: 306).

3.4.3 Gender

The following is one of many examples representing the depiction of females in the textbooks studied:

“Favelas applying to a place of violence and crime. But cleaning ladies and factory workers, janitors and cabdrivers, and sometimes teachers and architects, also live there” (translated from SEDYLITZ 2).

In addition, the category *gender* was often depicted conspicuously within the topic area *Globalization and the fragmented world* ($n = 21/41$), as reflected in the examples below:

“While equality in our country, however, is more a question of the equality of men and women, in developing countries it is a question of the fundamental recognition of women as social beings, sometimes even as ‘human beings’” (translated from FUNDAMENTE: 310) or, similarly, taken from the DIERCKE textbook (translated from p. 417), “There is also a gender problem in industrialized countries. But while there it is rather about a general equality of man and woman, in developing countries it is about the basic acceptance of the woman as a social and often even as a human being.”

3.4.4 Disability

Two main options exist for coding *disability*. Coding can be assigned to disability a) in the form of diseases (AIDS) or b) as a result of environmental disasters, based on which long-term damage often follows.

a) “While in the countries of the North prosperity-related circulatory diseases and cancer are the most frequent causes of death with 47% and 22%, in the countries of the South the so-called ‘diseases of poverty’ predominate, especially infectious and parasitic diseases, e.g. diarrheal diseases, tuberculosis, malaria, cholera and above all AIDS” (translated from FUNDAMENTE – grades 11–13).

b) “The Jabotabek region, formed by Jakarta, Bogor, Tangerang and Bekasi, the three cities surrounding the capital, is one of the largest global densely populated areas, with an estimated population of 20 million. However, the hopes of immigrants are often disappointed. Instead of social advancement and wealth, the reality is usually life in slums with unemployment, lack of social security, poor sanitation, patchy utilities and waste disposal, and high environmental pollution” (translated from MENSCH & RAUM – grades 11–13).

3.4.5 Several dimensions within one context

Overall, it is noticeable that several of the dimensions often occur together ($n = 431 > 1$ vs. 341 = 1), such as in the following anchor example that encompasses the categories of *family background*, *social status*, *national origin*, *educational background*, and *economic status*:

(Berlin): “The increasing polarization into poor and rich population strata leads to the fact that the urban society differentiates itself socio-spatially to an ever-greater extent: On the one hand, urban neighborhoods are emerging in which social problems are accumulating, such as: Unemployment, poverty, lack of education, a high proportion of foreigners and immigrants, poor housing conditions and a high crime rate. This is contrasted with neighborhoods where affluent population with high purchasing power is concentrated” (translated from MENSCH & RAUM).

3.5 Quantitative analysis

The content analysis results were analyzed quantitatively to answer research questions 1–4. The number of codes per category was counted to determine the occurrence by category (RQ1), and each coding unit could be assigned to multiple categories. The total number of coding units was 4689.

The categories in the coding framework were derived from our diversity model (see Chapter 2.1, Fig. 1). Thus, each category belonged to the internal or external dimensions of diversity. We used this classification to evaluate the relationship between the internal and external dimensions regarding their representation in geography textbooks (RQ2). In total, seven categories were classified as internal, and six categories as external. We counted the total number of codes for each category and normalized the occurrences to the number of categories.

The relationship between the representation of diversity and the grade (RQ3) needs to take into consideration the target group of each textbook. Each textbook is written for specific grades (see Tab. 1). We used this information to calculate the ratio of the total occurrence to the occurrence of each category by grade. Therefore, we normalized the occurrences in each grade to their coding units.

Regarding the relationship between the representation of diversity and the topic (RQ4), the coding units were assigned to the geographic subfields by referring to the textbooks' chapters. Specifically, we assigned each textbook chapter to one of the eight subfields. The occurrences were normalized to the coding units of each subfield (see Tabs. 4a, 4b).

4 Results

We will now present the results of the quantitative analysis followed by the qualitative results.

4.1 Occurrence frequencies for each dimension

First, the textbooks were examined for occurrences of the 13 dimensions. The highest occurrence relates to the *economic status* category ($n = 485$), followed by a large gap to the next highest category of *social status* ($n = 203$). *Race* is the least represented category ($n = 16$) (s Tab. 5). All the other categories are widely distributed in terms of their occurrences. Fig. 2 shows the relative occurrence of each dimension.

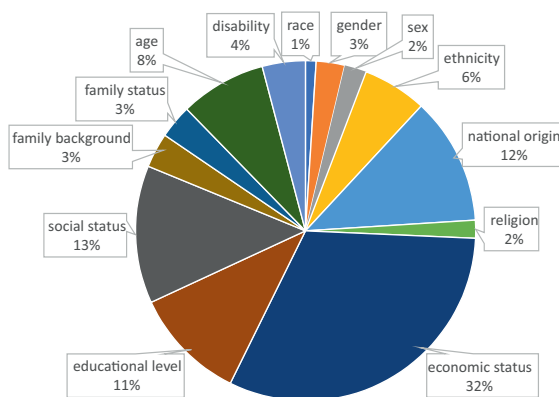


Fig. 2: Relative quantities of all the dimensions in the geography textbooks

4.2 Dimensions classified as internal and external

The analysis of the internal and external diversity dimensions gave the following results: The number of external dimensions (abs. = 977) is almost twice as high as the occurrence of internal diversity dimensions (factor: 1.7) (see Fig. 3). Since the number of internal dimensions (7) is higher than the number of external dimensions (6), the relative occurrence of the external dimensions is even higher (factor: 2.0). The dimensions with the highest overall absolute occurrences (*economic status* and *educational background*) are external diversity dimensions and account for a relative share of over 50%.

4.3 Relationship between the represented diversity and the grade

Next, the relationship between the diversity dimensions and the grade is presented by standardizing the occurrences based on the coding units of each textbook. A key result reveals a meager share of the total representation of diversity (13%) in the lower grades (grades 5–6) (see Tab. 6). More than double (about 30%) is found in the upper grades (10–13) and the majority (57%) were observed in the middle grades (grades 7–8).

4.4 Relationship between the represented dimensions and topics

The following passage presents the correlation between the diversity dimensions and topics. After standardizing the absolute results related to the coding units of each subfield, the relative occurrences reveal the following results: Depending on the coding units, most of the codes are found within the topic area of *population* (38%), followed by the subfields of *globalization and the fragmented world* (18%), *countries and continents* (13%), and *urban and rural spaces* (11%) (see Fig. 4). *Tourism*, *economics*, and *resources* (8%, 6%, and 5%, respectively) contain each a medium share of the codes. The lowest relative share is assigned to the topic area *earth* (1%) (see Fig. 4). Additionally, Table 7 shows the relative distribution of each dimension in all eight subfields and it is striking, that 7 out of 13 dimensions are most represented in the thematic topic area of *population* (see red marks in Tab. 7). Overall, it is noticeable that the dimensions of *race*, *gender*, *ethnicity*, *national origin*, *economic status*, *family background*, *so-*

Tab 5: Absolute quantities of all the dimensions in the geography textbooks

Dimension	Race	Gender	Sex	Ethnicity	National Origin	Age	Disability
Abs. occurrence	16	41	32	94	193	126	61
Dimension	Religion	Economic status	Educational background	Social status	Family background	Family status	
Abs. occurrence	27	485	164	205	50	46	

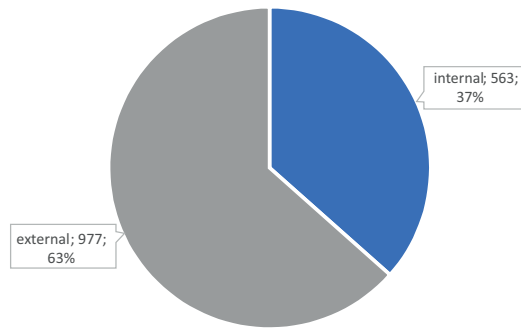


Fig. 3: Internal vs. external dimensions

cial status, and disability are each shown to have a high occurrence in one of the eight specific subfields (see Tab. 7). For illustrative reasons, the results of each relative occurrence were multiplied by 100.

Due to the fact that the textbooks are positioned with regard to curricula and, therefore, specific subfields, the relationship between the coding units and each thematic subfield was related to each textbook. As the relationship between the dimensions and subfields shows, the planet earth, resources, and economy subfields have the lowest occurrences of the dimensions. All the others contain higher occurrences of the dimensions. Tab. 8 shows the proportions of the lower (subfields 1–3) and higher (4–8) occurrences of the dimensions in each textbook. This enables one to see whether the different thematic orientations of

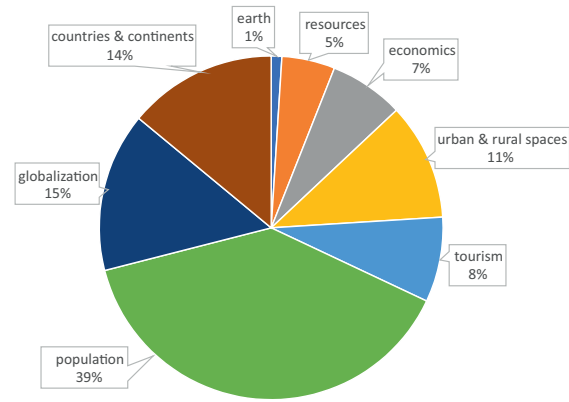


Fig. 4: Standardized occurrences of the dimensions per sub-field

textbooks related to their grades are related to the varying occurrences of the dimensions in the textbooks of different grades in general.

5 Discussion

Concerning the overall research goal of investigating diversity dimensions in geography textbooks, it can be stated that diversity is represented in the textbooks analyzed. However, the mean variation in the results regarding the overall frequencies of

Tab. 6: Correlation between the internal and external dimensions and the grade

	Grades 5–6	Grades 7–8	Grades 11–13	Total
Abs. occurrence	74	323	1144	1541
Coding units	558	557	3573	4689
Occurrence per 100 units	13	58	31	103
Standardized share of codes (%)	13	57	30	100

Tab. 7: Occurrences of each dimension in the thematic subfields – standardized by coding units (in %)

Subfields/ dimensions	Planet earth	Re- sources	Eco- nomy	Urban & rural spaces	Tour- ism	Popu- lation	Globali- zation	Countries & continents
Race	0	0	0	17	0	24	12	47
Gender	0	0	10	0	13	36	28	13
Sex	0	8	4	7	0	61	11	9
Ethnicity	5	7	7	25	6	3	13	18
National origin	1	2	8	8	3	58	8	12
Religion	3	11	3	32	0	18	2	31
Economic status	1	7	9	11	11	22	23	16
Educational background	0	1	10	9	10	40	17	13
Social status	0	6	7	17	7	33	16	14
Family background	2	2	9	15	9	46	12	5
Family status	0	0	2	8	7	66	6	11
Age	0	2	3	9	16	54	10	6
Disability	5	21	11	0	0	29	26	8

Tab. 8: Proportion of coding units and thematic subfields in each grade range

	Grades 5–6	Grades 7–8	Grades 11–13
Number of coding units in subfields 1–3	241	300	1921
Number of coding units in subfields 4–8	314	266	1662

occurrence is very high. The dimensions with the highest representation are *economic status* (32%), *social status* (13%), *national origin* (12%), and *educational background* (11%). However, it appears striking that *economic status* is coded more than twice as often as *social status*, because *social status* and *economic status* are two equally important sustainability dimensions and, thus, of particular importance to the subject geography (DGFG 2020, HESSIAN CURRICULA 2021, 2022). Of the dimensions, 7 have a share of under 5%. For example, disability (4 %) and gender (3 %) are strongly underrepresented, confirming results from Spanish and German textbooks concerning disability (HEINEMANN 2020, GONZÁLEZ-PALOMARES & REY-CAO 2022), as well as Ugandan and American textbooks concerning gender (BARTON & SAKWA 2012, LUCY et al. 2020). In most codings, disability is related to natural events or natural disasters that

result in certain people suffering from hunger, etc. Furthermore, the results of this study provide occurrences of role attributions in which women are ascribed to certain work areas and functions, as already noted by LUCY et al. (2020). Race experiences the lowest representation (1%), which is striking evidence of its underrepresentation and makes a one-sided consideration (GRABBERT 2010) probable.

The high difference in the representation of internal and external dimensions (abs. = 585 to 993) does not indicate an interplay of internal and external dimensions. More precisely it argues for an arbitrary illustration of diversity dimensions. These results are also astonishing against the background of the model of diversity (Fig. 1) based on theory (GARDENSWARTZ & ROWE 2003) and the adoption by VERTOVEC 2021 that no category is bounded, but there is a confluence of all several categories. Even

the curricula include the requirements of an equal representation of economic and social geographic aspects (as external dimensions) and cultural diversity (as an internal dimension) (Hesse curricula 2021 & 2022). The limited illustration of internal dimensions, in general, contradicts the FEDERAL COMMISSIONER FOR MIGRATION, REFUGEES, AND INTEGRATION'S (2015) demand for a realistic portrayal of the diversity among pupils, as well as for its importance to be highlighted by various national and international legalities (e.g., UNESCO 2017, 2023; EUROPEAN UNION AGENCY FOR FUNDAMENTAL RIGHTS 2019, COUNCIL OF THE EUROPEAN UNION 2000, FEDERAL OFFICE OF JUSTICE 2006). This finding is also interesting against the background of the subject requirements for geography in school and points to the need for a way of representing countries and continents that replaces the current stereotypical representation.

Due to the curricular requirements for the subject of geography, the results regarding the occurrences of the dimensions in grades 5–6, 7–8, and 11–13 are conspicuous. The separation of the curricula in grades 5–9 and 10–13 did not reveal any different claims about the handling of diversity in terms of content. Both curricula address the aspect of (cultural) diversity and call for an open-minded attitude on the part of the students: “The learners (...) grasp social reality in its diversity” (HESSIAN CURRICULA grades 5–9, 2021: 5) or “meet people from different socio-cultural contexts and cultures without prejudice and with reflection in their actions” to acquire intercultural competence (HESSIAN CURRICULA grades 10–13, 2021: 9). The requirements with regard to diversity do not match the wide difference in terms of the occurrences of the dimensions in each grade. Furthermore, it is very dubious that grades 7–8 have the highest representation of diversity of all the grades when they follow the same curricula as grades 5–6. The further analysis of the subfields that are represented in each textbook as a reason behind the varying occurrences of the dimensions in grades 5–6, 7–8, and 10–13 does not reveal a match. The number of coding units of the subfields with the most represented dimensions (4–8) in grades 5–6 is the highest of all the grades and, simultaneously, of the grade with the lowest occurrence of all the dimensions in general. Therefore, the division of the subfields in the lower grades (5–8) has no influence on the occurrence of the dimensions. This supports the conclusion regarding a non-examination of represented diversity in textbooks by the Hessian Ministry of Education. This result is very interesting because, so far, no studies have pointed out a cor-

relation between the grade and the representation of diversity (e.g., ZHANG et al. 2022, DAVIDSON & LIU 2020, ARAÚJO & RODRÍGUEZ MAESO 2012).

Another striking feature is that the highest incidence of the *economic status* category is not to be found for the most part in the *economy* subject area, but rather, is coded more frequently in three other subject areas (cf. Tab. 7): *countries and continents*, *globalization and the fragmented world*, and *urban and rural spaces*. These results suggest that the illustration of diversity dimensions strongly depends on the subject areas of the textbooks. This corresponds with the results of other studies that found that (socio-) economic status is related to academic achievement and family resources as well as educational issues etc. (REARDON et al. 2013, BROWN et al. 2016, MORGAN et al. 2009). This affects whole societies (AMERICAN PSYCHOLOGICAL ASSOCIATION 2017).

The results may indicate that, despite demands, the representation of diversity in textbooks is not being examined by the Ministry of Education. This is supported by the varied results in terms of the frequencies of occurrence, both in general (RQ1) and specifically within the contexts of the internal and external dimensions (RQ2), the grades (RQ3), and the thematic subfields (RQ4).

6 Conclusion

The requirements of the current diversity discourse concerning an adequate representation of the reality of students' lives in a contemporary globalized world cannot currently be sufficiently found in Hessian geography textbooks. The postulated surplus profit of diversity (GAY 2010; WEARMOTH 2017; DHUNGANA 2020) remains absent, also in educational settings, due to the result of a unidirectional representation of individuals, population groups, countries, and continents. The problems and consequences related to such diversity representation in geography textbooks are reinforced primarily by subject requirements, especially with regard to the promotion of cultural diversity (DGF 2020, IGUCGE 2018). The mainstream culture, which CIVITILLO et al. (2019) already identified in German textbooks in general, is also reflected in the current licensed geography textbooks of Hesse, thus promoting not least a Eurocentrism (ARAÚJO & RODRÍGUEZ MAESO 2012) and the reinforcement of concepts of the enemy (MÖNTER & SCHIFFER-NASSERIE 2007). However, since textbooks can figure prominently in shaping certain social groups, stereotyping is thereby rein-

forced rather than reduced. The current representation of diversity in the analyzed textbooks is even more questionable.

Last but not least, it should be mentioned that in the analysis of the results, certain patterns could be identified, which can point to conclusions regarding inferences about the different dimensions and their occurrences in particular, as well as a very unidirectional use of different spatial examples, especially regarding countries and continents. As an implication of this research, it seems necessary to check German geography textbooks for the representation of diversity according to the curricular requirements during the admission procedure. This inadequate representation implies that some students will not find themselves represented in the textbooks. There is also a need to check for a systematic bias in the representation of continents. Therefore, it is necessary to analyze how continents are represented in the context of diversity dimensions, which should be focused on in the following research processes.

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Authors

Leoni Dörfel
Leoni.doerfel@geo.uni-marburg.de
Philipps-Universität Marburg
Department of Geography
Deutschhausstr. 12
35032 Marburg
Germany

Dr. Rieke Ammoneit
Ammoneit@leibniz-ipn.de
Leibniz Institute for Science and
Mathematics Education
Olshausenstraße 62
24118 Kiel
Germany

Prof. Dr. Carina Peter
carina.peter@geo.uni-marburg.de
Philipps-Universität Marburg
Department of Geography
Deutschhausstr. 12
35032 Marburg
Germany