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Research article

# Investigating subject-specific writing skills and historical reasoning in historical explanations: a study of 7th- and 8th-grade comprehensive school students in North Rhine-Westphalia, Germany

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Submission date: 17 August 2022; Acceptance date: 14 July 2023; Publication date: 19 September 2023

## How to cite

Husemann, C. (2023) 'Investigating subject-specific writing skills and historical reasoning in historical explanations: a study of 7th- and 8th-grade comprehensive school students in North Rhine-Westphalia, Germany'. *History Education Research Journal*, 20 (1), 6.

DOI: <https://doi.org/10.14324/HERJ.20.1.06>.

## Peer review

This article has been peer-reviewed through the journal's standard double-anonymous peer-review process, where both the reviewers and authors are anonymised during review.

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## Open access

*History Education Research Journal* is a peer-reviewed open-access journal.

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## Abstract

The purpose of this study was to examine the writing skills of 7th- and 8th-grade students with a high proportion of migration background in North Rhine-Westphalia, Germany. The study was part of the SchriFT project (2017–20), funded by the Federal Ministry of Education and Research. A writing task was given on the topic: *Why can we only make assumptions about many past events?* As an answer to the task, the students had to write a historical explanation that took into account the epistemological principles of historical reasoning. The students' writing was analysed using a category system, and their historical knowledge was assessed through a knowledge test. The results showed that the students possess diverse levels of writing skills, with few producing elaborate explanations, and most struggling with the subject-specific language and reasoning skills. The study also

highlights the potential for genre-based writing approaches in history education. The results suggest that many students perceive history as an image of the past and have limited understanding of historical reasoning. Further research is needed to investigate the influence of motivation and interest on language learning.

**Keywords** history education; explanation; subject-specific language skills; writing skills; historical reasoning; comprehensive school students; empirical research

## Introduction

Historical reasoning is a multilayered activity. It involves describing historical change, and comparing historical events, persons and facts. It takes into account the use of subjective and second-order concepts, for example. Also, explaining historical phenomena is a central element in the modelling of historical reasoning (Van Drie and Van Boxtel, 2008). Without explanations, we would not be able to understand history. How students write historical explanations depends on several aspects: their historical knowledge, their linguistic skills, their procedural knowledge, and their grasp of topic and discipline (Nokes and De La Paz, 2018). On top of that, epistemological beliefs concerning the historical cognitive process are reflected in the way in which historical explanations are composed. While historians 'make plans, take a position, anticipate sceptical reactions' and so on, students 'view history as ... factual, fixed and indisputable' (Nokes and De La Paz, 2018: 560). Therefore, they might fail to understand the need for explanations or argumentations in history lessons.

Writing can engage and support the process of historical reasoning (Monte-Sano and De La Paz, 2012). For example, it can improve content understanding and skills in transforming information (Wiley and Voss, 1999), or foster planning and reviewing skills (Nokes and De La Paz, 2018). At the same time, writing is considered challenging for students, especially when lacking a representation of an ideal text (Nokes and De La Paz, 2018).

In the study discussed in this article, the question of how German comprehensive school students write historical explanations was investigated. The corresponding data were collected in the project SchriFT (Schreiben im Fachunterricht der Sekundarstufe I unter Einbeziehung des Türkischen / Writing in Secondary School Subject Classes with the Inclusion of Turkish Language) (2017–20), funded by the Federal Ministry of Education and Research. To elicit subject-specific language negotiation skills in students' explanations, learners' text products ( $n = 216$ ) were obtained on two subject-specific situated writing tasks. The writing products were then evaluated using a category system developed in the project. The focus was on both historical reasoning skills and subject-specific writing skills. Results of the study are presented and critically discussed at the end of the article.

## Theoretical framework

### The role of explanations in historical reasoning

In the modelling of historical reasoning, explanation is a central element, alongside the description of change and the comparison of historical events (Stoel et al., 2015; Van Drie and Van Boxtel, 2008). In this article, historical reasoning is understood as 'an activity in which a person organizes information about the past in order to describe, compare, and/or explain historical phenomena' (Van Drie and Van Boxtel, 2008: 89). Explanations serve as procedures to explore different aspects and implications of historical problems, statements or theories in order to evaluate their validity claims (Pandel, 2009). Coffin (2004: 246) concludes that 'being able to express causal relations is a key aspect in the progress of learning history'.

According to Hempel and Oppenheim's (1948) scheme, deductive-nomological explanation can be considered as the basic type of scientific explanation. However, even though 'the history that students encounter at school has a structure which is almost as solid as the structure of science subjects' (Hallidén, 1997: 203), there are usually no regularities or laws to explain human actions in the past. Therefore, another scheme is needed to classify historical explanations.

One such scheme is intentional (or hermeneutic or motivational) explanation. This allows conclusive explanations without having to rely on general or statistical laws, instead tracing human action back to the motives and intentions of those acting (Jacott et al., 1998). In a critical examination of this scheme, Chapman (2016) asks whether and to what extent developments that cannot be explained as the direct consequence of subjective, explicit and purposeful motives are specifically historical. Consequently, there must be another scheme that can be applied to historical explanations without bringing regularities or intentions into the field. This scheme is the narrative explanation, which regards the narration itself as a form of explanation (Rüsen, 1997).

A prerequisite for writing explanations or arguments is the correct understanding of the epistemological underpinnings of history (Maggioni et al., 2004; Nokes and De La Paz, 2018). However, as research has shown, it is not clear to younger students why they should study history at all (VanSledright, 1997), or what the purpose of argumentative historical writing is (Nokes and De La Paz, 2018). Therefore, it seems important to write not only factual or event-related accounts, but also explanations that explore the process of historical thinking itself. Through these explanations, students could learn to understand the epistemological principles of the subject. In this study, we can gain insight into their (causal) historical reasoning through a task that promotes an epistemological explanation.

## Writing in history education

In teaching history, great importance is attached to tasks that stimulate historical reasoning (Adamski, 2017; Barricelli et al., 2012; Günther-Arndt, 2014). Instructional keywords implemented in tasks, so-called 'operators', are supposed to initiate action and 'signal what activities are expected' (EPA, 2005: 7). The use of operators is intended to 'trigger predefined and trained actions for processing a task' (Kühberger, 2011: 14). 'Explain' is one of the most frequently used operators in lower secondary school history classes. Teachers then often (but not always) expect a written explanation.

'Writing is an important means for expressing historical reasoning', state Van Drie et al. (2021: 204), while Nokes and De La Paz (2018: 558) point out that it 'is central to the discipline of history'. Although writing in history shares some similarities with writing in language or science classes, there are subject-specific challenges that must be addressed. For example, the writer needs to address biases in sources, present different perspectives (Monte-Sano and De La Paz, 2012) and rely on evidence, so that the historical text becomes plausible and convincing (Van Driel et al., 2022a, 2022b).

The specific structures that must be fulfilled are determined by the genre to be realised. 'Genre' refers 'to the recognisable and recurring patterns of everyday, academic and literary texts that occur within particular cultures' (Hammond and Derewianka, 2001: 186). It describes 'the way texts are structured to fulfil their overall purposes, such as ... explaining past events' (Coffin, 2004: 268). Coffin (2004, 2006) identifies three main genres of writing history: record, explanation and argumentation. In addition, Derewianka (1990) identifies explanation as one of six main genres of school writing.

## Models of student development in historical reasoning and explanation

There are a number of models that examine students' development of epistemological beliefs (Alexander, 2003, 2005), historical expertise (VanSledright and Limón, 2006), historical literacy (Dickinson, 1998; Lee, 1998; Lee et al., 1997) or the progression in causal explanations (Lee and Shemilt, 2009).

Of these models, the results of the CHATA project (Concepts of History and Teaching Approaches: 7 to 14) (Lee and Ashby, 2000) appear to be particularly useful for the present study. They suggest that by Year 8 only a minority of students grasp the essence of a critical approach to history and historical reasoning. Learners then often see history as synonymous with the past. At the second level of students' conceptions, Lee and Ashby (2000) differentiate the view of the past as being inaccessible. Only at the third level does it become clear that history is conditioned by the information available in the present. According to Van Drie and Van Boxtel (2008), only one-quarter of students reach this level. At the fourth level, which is mainly reached from Grade 12 onwards, students perceive history as a tendentious representation of the past, possibly distorted by lies or exaggerations. Learners at the fifth level then gain insight into the constructed character of history. They see the author's intentions as a crucial factor influencing the emergence of controversial interpretations. Finally, learners at the sixth and most sophisticated level understand controversy and multiperspectivity as specific features of historical narratives.

Another model that is considered particularly useful is the level model of historical explanations (Brauch et al., 2020). It is based on the model of competencies in historical thinking from German history didactics (Körber, 2007; Körber and Meyer-Hamme, 2015). Brauch et al. (2020) distinguish between: (1) the basic, a-conventional level; (2) the intermediate level; and (3) the elaborated, transconventional level. Learners who do not possess 'concepts, categories, operations and procedures of historical thinking' (Körber, 2007: 459) are assigned to the first level. They fail in their attempt to express historical explanations 'due to of their lack of knowledge of linguistic concepts' (Brauch et al., 2020: 149). Students at the second level manage to apply these categories and concepts without further reflection. Accordingly, they can explain historical events and circumstances using 'socially given terms, concepts and experiences' (Brauch et al., 2020: 149). Only students who have reached the third level are able to deal with history in a reflective and reflexive way. They are therefore capable of adapting, transforming and criticising historical explanations.

## Challenges in writing historical explanations

As a subject-specific genre, an explanation has a distinct beginning, middle and end (Coffin, 2004). First, the question or object of investigation is presented in an introductory sentence. Depending on the historical problem, the author formulates a hypothesis and mentions contextual information. In the body of the text, causal relations are expressed and connected, supported using argumentative strategies and evidence (De La Paz et al., 2012). The reasons presented should represent the circumstances as completely as possible, and be both understandable and plausible (Rüsen, 1983; Seixas, 2015). Finally, the author reaches a conclusion, answering the question presented in the introduction or depicting 'new' knowledge.

In most instances, a single reason is not sufficient to shed light on a historical fact. Instead, various reasons must be included, which is particularly challenging for lower-grade students, as Chapman (2016) points out. They often view reasons as independent facts, not as connections between historical events, and also present them in a unilinear, mechanical and cumulative context. Furthermore, Ruck and Memminger (2019) postulate that students often regard the facts as the inconceivable and inevitable consequences of the causes they determine, or as pure coincidence. Lee (1998) and Borries (2002) conclude that students in lower-grade classes are overburdened by the variety of reasons illuminated in historical explanations, as well as by their structural conditions. In addition, learners find it particularly difficult to elaborate their own position, use evidence (McCarthy Young and Leinhardt, 1998; Nokes and De La Paz, 2018) and include counter-arguments (Van Driel et al., 2022a, 2022b) when composing explanations.

On a linguistic level, explanatory texts are also challenging for students (Brauch et al., 2020; Chapman, 2016). Causal relations are expressed by verbs such as 'underpin', 'drive', 'erupt' or 'incite' (Stoel et al., 2015: 55), conjunctions of manner (for example, 'by', 'through'), conjunctions of consequence (for example, 'as a result of', 'because', 'thus'), purpose (for example, 'in order', 'so as to') or condition (for example, 'as long as', 'if'). In addition, causal relations can be expressed by nouns such as 'reasons', 'factors' or 'consequences', which make the explanation more abstract (Coffin, 2004: 271–6). However, not only these nouns, but also specialised historical terms that represent, for example, second-order concepts, pose a challenge for students when writing argumentative texts (Stoel et al., 2017; Van Drie et al., 2021).

## Aim of the research

The aim of the research was to explore students' subject-specific writing skills. These skills were investigated regarding the genre of explanation. The explanation to be produced addressed the epistemological principles of historical reasoning. The research question that emerged from the models and theories presented was: *How do German comprehensive school students write historical explanations?* This question was addressed by analysing epistemological explanations written by 7th- and 8th-grade students. The focus was on both historical reasoning skills and subject-specific language skills.

## Method

### Instruments

To answer the research question, a writing task was used. The resulting explanations were analysed quantitatively using a category system. This category system was developed deductively and inductively

(Mayring, 2000). To interpret the results, data on the students' historical knowledge were collected using a knowledge test (Husemann, 2022).

## Participants

The sample consisted of  $n = 216$  students in Grades 7 and 8 at four comprehensive schools in North Rhine-Westphalia, which are characterised by a high proportion of students with a migration background (82.4 per cent), a low socio-economic status, and an above-average proportion of students with special educational needs. Therefore, this study examined the competencies of a group of learners that has received too little attention so far. Fourteen classes participated, with almost equal numbers of boys (46.8 per cent) and girls (53.2 per cent). Ages ranged from 12 to 16 years, with a mean age of 13.36 years ( $SD = 0.880$ ). All students and their parents gave their active consent to participate in the study, which took place during history lessons.

## Tasks

To elicit subject-specific writing skills, students' text products were obtained through a situated writing task, based on the preliminary work of Wickner (2019). Students were asked to complete the task: *Why can we only make assumptions about many past events? Explain in detail. (Use the narrative text and the historical source.)* In writing their explanations, students had to consider the epistemological principles of historical reasoning. The material available for elaboration included both a narrative text, which provided the thematic background for the test, and a short extract from a historical source. It was based on two topics: 'The construction of the pyramids' (A) and 'The Olympics' (B). For a crossed evaluation of the writing skills before and after a genre-based writing support (pre–post design), two different material bases were used, while the task remained unchanged. At the time of data collection, the students only had to complete one of the two tasks. The task was randomly assigned.

Reasons and arguments which the students might use for their explanations could be drawn from the material, but they were not explicitly stated. The writing task 'The Olympics' allowed a multiperspective approach to the topic by presenting different contemporary perspectives. For example, the historical source presented different contemporary opinions about the athletic competitions. The students could thus identify that the Olympics were discussed among contemporaries. The topic of the construction of the pyramids brought the aspect of controversy to the fore (Kropman et al., 2021). By considering different theories, it becomes clear that there is not necessarily always a consensus among researchers regarding historical facts. From the historical source, it was also possible to point out weaknesses in the theories about the construction of the pyramids. Furthermore, a motivational approach to the writing tasks was created by emphasising the mysterious quality of historical events, or the connection to the students' interest in sports and competitions (Sauer, 2012). A model solution for the writing task is shown in Figure 1.

**Figure 1. Model solution for the writing task for the grades (7 and 8) examined**

*There are many reasons why we **can** only **make** assumptions about past events. [1] One of the **biggest** problems is that there **might not be** any sources available. For example, we **don't have** any written records about how the pyramids were built. Maybe the people who built them didn't write anything down or the documents got lost over time. The texts we do have about the pyramids **were written a very long time after they were made**. [2] So, it's **hard** to be sure about what happened back then **because** we **don't have enough evidence**. This happens with many events, [3] **which is why** historians don't always agree on what happened. [4]*

The epistemological explanation should be *introduced* [1], mentioning the circumstance that only assumptions can be made about the past. This hypothesis should be followed by a statement of the *reasons* [2] that can be deduced from the documents available. An explanation that conforms to the epistemic principles of history might refer to the *lack of evidence* or *historical sources* (underlined in

Figure 1). Students can also point out that the credibility of sources or the narratives might be doubted, because people in the present as well as in the past view(ed) and judge(d) events differently. These explanations correspond to the construct character of history, and reflect the students' substantive knowledge (Körber, 2021). Explanations which suggest that we have to make assumptions because we did not experience historical events ourselves or cannot interview eyewitnesses are implausible. After all, different interpretations and judgements of events would also emerge from our observations, or from the reports of contemporaries. Students should then generalise and/or *transfer* [3] the reasons they have identified to other historical events. Finally, they should summarise their findings in the *conclusion* [4].

*Conjunctions* of consequence, purpose and condition (for example, 'so', 'because', 'which is why') are particularly important when writing explanations (Coffin, 2004). This also applies to the epistemic explanation to be written. As it is possible to represent causal relations in other ways (for example, using nouns or verbs), other forms of *cohesion* are also considered. It is also important to use the correct *tense* in the context of the explanation required: *present tense* for descriptions concerning the present, *preterite* or *perfect tense* for descriptions of the past. Another linguistic device that is specific to the explanation required is the use of *impersonal formulations* (for example, 'were written'). In this way, students distance themselves from the historical facts presented. The same applies to the use of the *conjunctive*. By doing so, students show that they recognise the researchers' speculations as such, and consider them to be assumptions. Another characteristic is the use of *graduating formulations* such as adjectives (for example, 'important') and particles (for example, 'very', 'already', 'maybe'). These allow the expression of a conscious attitude. All the linguistic means should lead to an address-oriented, coherent explanation.

Given the amount of text included in the material, it could be assumed that the students' reading skills would have a particularly strong impact on their writing performance, since the textual basis of the writing tasks had to be worked out first. In order to reduce the complexity of the writing tasks, graphic representations, such as sketches of the construction of the pyramids (A) or Greek Olympians in competition (B), were added to both writing tasks.

Despite the difference in content, both versions of the writing tasks are comparable in scope and complexity, as a comparison of the mean scores obtained shows (MPY = 42.16 per cent, *SD* = 10.42 per cent, *n* = 92; MOL = 42.23 per cent, *SD* = 8.95 per cent, *n* = 87;  $F(1) = 0.002$ ,  $p = 0.962$ ).

## Procedure

All data were collected in the joint project SchriFT.

Within each class, students were randomly assigned to one of the topics, A or B. Within 45 minutes, they had to write the explanation and solve three other writing tasks: 'Name', 'Describe' and 'Justify' (Husemann, 2022). Missing data were excluded using a filter variable (gesat12gb) indicating the completion of the task.

Although no specialist knowledge beyond the material basis was required to complete the tasks, it can be assumed that recourse to historical knowledge facilitated the completion of the writing tasks. Therefore, a knowledge test – adapted from Wickner (2019) – was used to measure subject-specific knowledge. The test consisted of single-choice and true–false items, and it included content that is defined in the history curriculum for the 5th and 6th grades (Ministerium für Schule und Bildung des Landes Nordrhein-Westfalen, 2011). The items focus on substantive and meta-concepts (Van Drie and Van Boxtel, 2008), so that the test allowed statements to be made about the students' historical reasoning. Based on the construction of the HiTCH test (Trautwein et al., 2017), an attempt was made to include items that could be used to map students' methodical competences. These items required the students to extract information from historical sources and deal with them. The Cronbach's alpha for the overall construct 'subject-specific knowledge', which is composed of all 48 items of the test, is  $\alpha = 0.790$ , and thus in an acceptable range. The Cronbach's alpha for the construct 'methodical competence' also reaches a satisfactory value of  $\alpha = 0.796$ . A Rasch analysis with Winsteps was carried out to test the unidimensionality of the construct 'subject-specific knowledge'. The infit and outfit of all items are within the range 0.5 to 1.5, so that the unidimensionality of the instrument could be assumed (Boone et al., 2013).

## Analysis

The conception of the category system represents a redesign of the category system used in the first funding phase of the SchriFT project (2014–17) (Roll et al., 2019; Wickner, 2019). The category system allows the assessment of the subject-specific writing skills.

The linguistic features of the epistemological explanation were represented by 10 items (Table 1), reflecting the features presented in the task description (see above). The items were coded according to a 0–1–2 system, indicating the extent to which the linguistic and structural features of the genre are not, partially or fully realised. Exceptions to the rating system were the items gesat13gf and gesat13koj, which were only coded in a 0–2 system. The total score of 20 points resulting from the overall assessment reflects the subject-specific writing skills concerning the genre of explanation, specifically, epistemological explanations. In assessing the subject-specific language items, it was not crucial that students realise them orthographically correctly, but rather that they were used in a historically meaningful way.

**Table 1. Items used for analysing the historical explanations**

Historical explanation – items		
Code	Item	Measures
gesat13de	introductory sentence	completeness, traceability, plausibility
gesat13ru	reproduction of cause(s)	
gesat13te	transfer (of the explanation)	
gesat13df	conclusion	
geasat13ak	conjunctions	addressee-oriented, coherent linguistic means
gesat13kxk	(other forms of) cohesion	
gesat13tp	tense	
gesat13ug	impersonal formulations	
gesat13koj	conjunctive	
gesat13gf	graduating formulations	

Three coders (the author and two trained assistants) coded the students' texts. Different coding was discussed beforehand, and anchor examples were defined in order to improve the quality of the category system. The calculated Cohen's kappa was around 0.60 for all categories, which is considered acceptable (Bortz and Döring, 2016). Based on the calculated Cronbach's alpha ( $\alpha$ : 0.698 [A]; 0.611 [B]), the category system can be considered sufficiently reliable. The item discriminatory power is also acceptable. The introductory sentence (gesat13de; 0.456) and the conclusion (gesat13df; 0.470) showed high discriminatory power values, and can be considered suitable for predicting the total score of the subtask and for mapping the technical language ability in explaining (Bortz and Döring, 2016). A Komogorov–Smirnov test ( $p = 0.001$ ) and a Shapiro–Wilk test ( $p = 0.005$ ) showed that the data did not meet the assumption of normality. Therefore, appropriate analytical methods had to be selected.

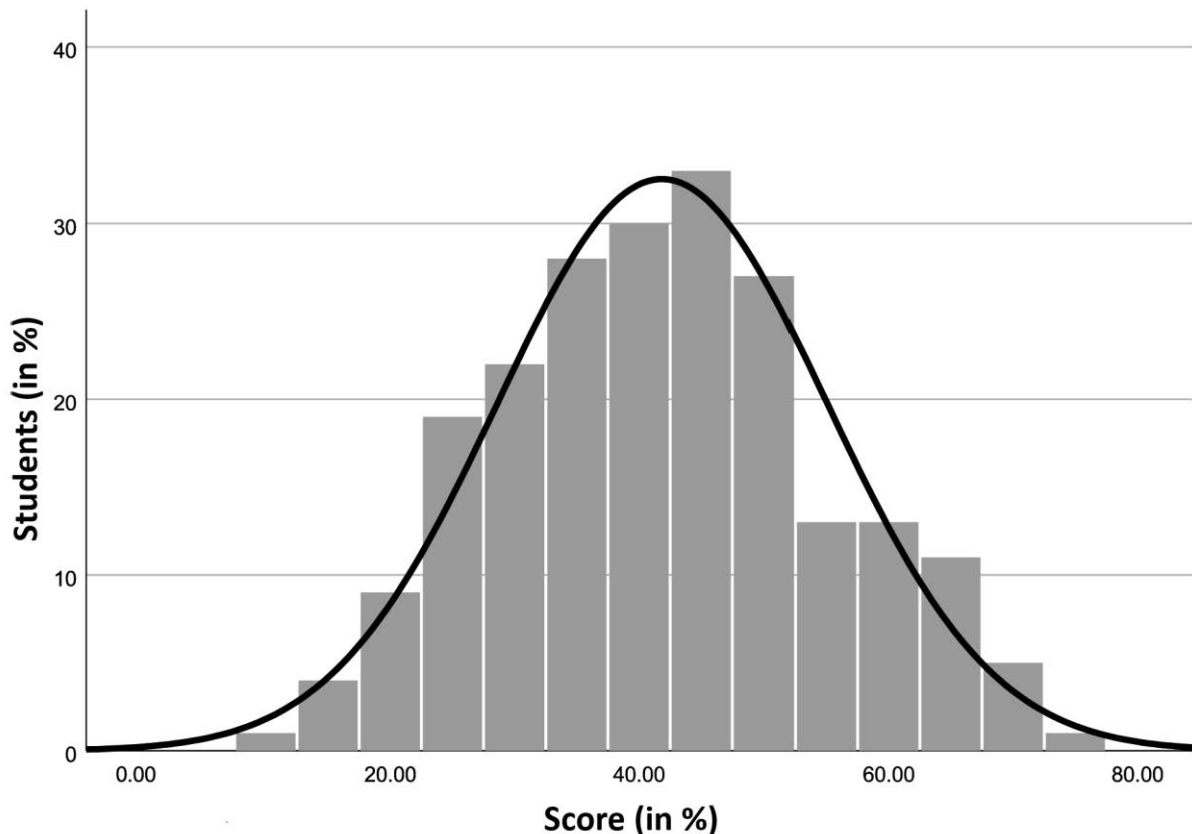
## Findings

### Overall findings

Because the students solved the same task – despite the different material basis (A/B) – the results will be presented together. The mean score achieved by the students who completed the task was 41.83 per cent ( $SD = 13.24$  per cent, Min = 10 per cent, Max = 75 per cent; Figure 2). Almost two-thirds of the sample produced an explanation consisting of only one sentence, and no explanation consisted of more than eight sentences. The average sentence length was 17.35 words. This indicates that the explanations

were realised in only a few, but long, sentences. There was a statistically significant correlation between the text length and the total score achieved in the writing task ( $r = 0.270$ ,  $p < 0.001$ ). It can therefore be assumed that students who write longer texts are better at using the subject-specific language than those who only formulate short explanations. There is also a medium correlation between text length and a student's score in the knowledge test ( $r = 0.410$ ,  $p < 0.001$ ). It can therefore be assumed that students who write longer texts also have more subject-specific knowledge. In both cases, Spearman's correlation was used.

**Figure 2. Total score (per cent) in the task 'Explanation'**



### Language-specific writing skills

More than 17 per cent of the sample succeed in realising an *introductory sentence* that opens the topic of the explanation. A further 28.7 per cent achieved this at least partially. An appropriate *conclusion* was fully or partially realised by over 50 per cent of the sample. Most students (88.9 per cent) managed to use *tenses* (past or present) appropriate to the genre. The use of *impersonal forms* was also only a minor difficulty, with 94.4 per cent using them appropriately. Challenges can be seen in the use of *graduating formulations*, which were used by only a quarter of the students (25.5 per cent). *Impersonal formulations* were used by only 3.2 per cent of the students. This shows that the students do not use linguistic devices to distance themselves from historical events or claims.

As the explanations were quite short, not all students used *conjunctions* (42.1 per cent). Explanations realised in a single sentence do not require any structuring through linguistic devices, unlike an elaborated writing product. This could be the reason why other forms of text *cohesion* were used correctly by only 6.9 per cent of the students. As the explanation requires giving reasons for the fact that often only assumptions can be made about historical events, students mainly used causal conjunctions to structure their text: 87.6 per cent used one to three causal conjunctions; only 1.4 per cent used more than three to structure the text. Other conjunctions were used less frequently. There was a significant correlation between the use of conjunctions and the number of reasons given ( $r = 0.270$ ,  $p < 0.001$ ).



Students who gave several different reasons in their explanation also linked them through linguistic devices. However, it can also be assumed that the students who use no or few references are not able to formulate comprehensive explanations. It is possible that, as [Brauch et al. \(2020\)](#) outline, students do not succeed in writing a historical explanation due to a lack of knowledge about the specifics of the genre. It can also be assumed that the combination of historical and linguistic knowledge poses considerable challenges for the learners when completing an explanation.

## Historical reasoning and epistemological beliefs

More than three-quarters of the students were also able to reproduce the causes resulting from the question. About 17 per cent of the sample managed to write a complete and plausible explanation, while another 60.6 per cent constructed incomplete explanations. The latter were based on everyday ideas of history, and did not include plausible reasons. Students who composed plausible explanations chose rational arguments according to their value and usefulness ([Van Drie and Van Boxtel, 2008](#)).

Of the sample, 41 per cent did not include any reasons at all in their attempted explanations. Some of them gave partial explanations tautologically; that is, they presented the reason for these assumptions as making assumptions. Irrespective of the plausibility of the reasons, 41.9 per cent of the students wrote down a reason that they felt was sufficient to answer the question. Only 3.7 per cent of the sample included more than two reasons in their text products. This reflects the considerations of [Lee and Ashby \(2000\)](#) and [Chapman \(2016\)](#), who state that lower secondary school students are often overburdened by multiple reasons in explanations. Considering the text products, it can be assumed that this consideration applies not only to the reception of, but also to the writing of, historical explanations. The reasons included in students' explanations are shown in Table 2.

**Table 2. Reasons included in the students' explanations**

		First reason	Second reason	Third reason
<i>n</i>		128	37	8
Implausible	not witnessing historical events	33.6%	n/a*	n/a
	no living contemporaries	17.2%	24.3%	n/a
	time gap	9.4%	24.3%	37.5%
Plausible	lack of evidence	8.6%	8.1%	12.5%
	lack of sources	12.5%	16.2%	12.5%
	different opinions	12.5%	5.4%	n/a
	doubt on sources	5.5%	13.5%	37.5%
	doubt on traditions	0.8%	8.1%	n/a

\*n/a: not available – no students provided this

In what follows, extracts from the students' writing products are quoted as translated by the author, to illustrate the findings.

The most common reason that students gave for doubting historical facts was that they did not witness the events (Table 2). Therefore, people in the present can only make assumptions about historical events 'because you can't travel back in time today' (GEDFDd8c-17). Following this line of reasoning, students perceived the past as inaccessible ([Lee and Ashby, 2000](#)). A similar line of reasoning is followed when students refer to the fact that contemporaries of historical events are no longer alive, and therefore cannot provide an accurate description of the events they witnessed. One can only make assumptions 'because there is no one [alive today] who lived during this time and can give testimony' (GEKHKo8c-19). Being present at an event is therefore a central moment for generating unambiguous statements. Students who take this point of view reach the intermediate stage in the model developed by [Lee and Ashby \(2000\)](#). They also see the past as inaccessible, but attribute this to the fact that the 'informants' are no longer available. These students are not aware that 'history' and 'the past' are not

synonymous. They do not realise that history is an interpretation or mental construct (Körber, 2021; Van Drie and Van Bostel, 2008). Without this insight, they cannot meet the demands of an epistemological explanation. It can be assumed that the students fail to transfer the factual explanation to other events because they do not possess second-order concepts to represent historical processes.

Lack of evidence (8.6 per cent) and lack of sources (12.5 per cent) are cited as plausible reasons. This includes aspects such as the lack of preservation of photographs, texts or other forms of tradition. A student argues that we can only make assumptions 'because ... there is no video evidence ...' (GEKHKo8f-25). Although the past still seems to be synonymous with history, the learners managed to show that insights into past events can also be generated in the present. They thus reach the third level outlined by Lee and Ashby (2000).

Equally true, although much more succinctly, are the considerations that there are assumptions 'because there are no sources to prove it, so archaeologists make assumptions about how something happened' (GEKHKo8f-19), or 'most of the sources ... could be fake ... because throughout time many [people] ... have given false testimony' (GEDFDd8c-11). The reason why sources might be 'fake' can be attributed to the fact that 'there are many sources that all say something different' (GEAFMo7e-20). It becomes apparent that the students' explanations try to reach the conventional level of historical explanations (second level) defined by Brauch et al. (2020) by using second-order concepts such as the concept of source (Limón, 2002).

Two further explanatory approaches result from doubts about the credibility of sources. On the one hand, it can be argued that contemporaries generally arrived at different judgements. The result is that today we make assumptions about past events, 'because everyone had their own opinion' (GEKHKo8f-08). On the other hand, the description of a fact was 'always passed on until today'. Historians can now 'not be sure because it could be that someone has misunderstood and that is why they suspect more than they are sure' (GEHGDu7c-17). Students thus reach the fourth of the six levels outlined by Lee and Ashby (2000). They are aware that the representations of the past are shaped by the position and intention of source authors and researchers, and that this results in different tendencies and narratives. Thus, they are able to apply meta-concepts of historical reasoning (Van Drie and Van Bostel, 2008).

## Correlations between content and language

There is no statistically significant correlation between the length of the text and the plausibility of the reasons given (Cramer's  $V = 0.731; 0.875; 1.00, p = 0.190; 0.394, 0.333$ ). Therefore, it cannot be assumed that the extent of the explanation is related to its quality. Similarly, there is no statistically significant correlation between the plausibility of the reasons given and the total score achieved in the writing task (Cramer's  $V = 0.343; 0.352; 0.856, p = 0.130; 0.712; 0.319$ ). There was also no significant correlation between subject-specific knowledge, represented by the total score on the knowledge test, and the plausibility of the reasons given (Cramer's  $V = 0.516; 0.848; 1.00, p = 0.514; 0.191; 0.321$ ). There is a significant correlation between the use of cohesive devices and the number of reasons given ( $r = 0.270, p < 0.001$ ). Students who give different reasons in their explanations are therefore able to connect them through linguistic devices. However, it can also be assumed that those students who use no or few references are not able to formulate comprehensive explanations. It is possible that, similar to what Brauch et al. (2020) outline, they do not succeed in writing historical explanations because they are not familiar with the linguistic conventions – especially because it is a challenge for them to link subject-specific and linguistic knowledge.

## Conclusion and discussion

In this article, challenges to writing epistemological explanations in history lessons have been revealed. To investigate their subject-specific writing skills, explanations written by students in 7th and 8th grade were examined. Following models mapping progress in historical reasoning (Lee and Ashby, 2000) and levels of historical explanation (Brauch et al., 2020), it was analysed how historical reasoning was reflected in the reasons given for the question: *Why can we only make assumptions about many past events?*

The results of the investigation have shown the heterogeneous level of German comprehensive school students when compiling historical epistemological explanations. Difficulties arise in the skill of

*argumentation* as a component of historical reasoning. The (subject-specific) linguistic means proposed for an epistemological explanation were not consistently realised. Additionally, students found it challenging to present reasons oriented towards the reader, or to include more than one reason. These findings reflect results from studies on students' historical argumentations (Kuhn, 1991; Voss and Means, 1991).

Only a few learners were able to highlight the construct character of history in their explanation. The majority of students considered 'history' and 'the past' to be synonymous. This result can be linked to the levels of epistemological thinking (Kuhn and Weinstock, 2002). Kuhn and Weinstock (2002) show that at a basic stage, students perceive assertions as copies of an external reality, or as facts that can be either correct or incorrect. Taking into account that students develop different conceptual areas at different stages (Maggioni et al., 2004), consideration should be given to repeating the study at a later time or in a higher grade. This might show whether students demonstrate any progression in writing epistemological explanations.

Furthermore, dealing with *meta-concepts*, such as the concept of source, proved to be challenging. The use of meta-concepts is directly related to the writing of historical (epistemic) explanations (Van Drie and Van Boxtel, 2008). As Lee (1998) has shown, students' knowledge about meta-concepts is often implicit. Taking into account students' linguistic skills, it is also possible that they lack the ability to articulate their thoughts in a written explanation.

First, the composition of the sample must be considered. Many students come from socio-economically disadvantaged families. Not all students have learned German as their first language. As it can be assumed that students who 'face challenges with literacy in general ... [also] face particular difficulties when engaging in argumentative historical writing' (Nokes and De La Paz, 2018: 562), the findings can be seen as an appeal for language-sensitive history teaching. Moreover, it should be considered that subject-specific writing poses significant challenges to students (Coffin, 2006). They must bring together their historical knowledge, historical reasoning skills and linguistic knowledge. In order to write subject-specific genres – in this case, an explanation – knowledge on writing strategies must also be available (Beaufort, 2004; Van Drie et al., 2021). There is thus potential in the implementation of genre-based writing approaches (Liang, 2015; Schall-Leckrone, 2017).

The study was carried out in the awareness that epistemological explanations do not represent the common form of explanations realised in history lessons. In spite of the results obtained, it therefore seems reasonable to assess subject-specific writing skills using factual explanations as an example. Such an investigation could also further differentiate the linguistic means that are typical for a historical explanation. Nevertheless, since 'epistemical beliefs and historical understanding are linked' (Stoel et al., 2017: 322; see also VanSledright and Limón, 2006), it can be assumed that challenges on the linguistic and content level would also have emerged when writing causal, factual explanations.

In order to be able to make more reliable statements, further research investigating factors such as the influence of motivation and interest on subject (language) learning is also required.

## Funding

The project was funded by the Federal Ministry of Education and Research (BMBF) between 2017 and 2020 under the funding code 01JM1405.

## Declarations and conflicts of interest

### Research ethics statement

Not applicable to this article.

### Consent for publication statement

The author declares that research participants' informed consent to publication of findings – including photos, videos and any personal or identifiable information – was secured prior to publication.

## Conflicts of interest statement

The author declares no conflicts of interest with this work. All efforts to sufficiently anonymise the author during peer review of this article have been made. The author declares no further conflicts with this article.

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