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Stimulating historical thinking in a classroom discussion: The role of the teacher

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ABSTRACT: In this article we describe strategies history teachers use to guide student historical thinking in a classroom discussion. We focus on three challenges for the teacher: a) exploring several possible answers; b) stimulating the use of specialized language; c) thinking about the quality of answers. We analysed the prompts of the teachers on general guiding (such as problematizing the remarks of the student) and on guiding historical thinking, to which we refer as components of knowing and doing history. We identify that teachers use three strategies: (1) broadening student thinking by focusing on knowing history; (2) deepening student thinking by focusing on doing history; (3) enhancing student thinking by integrating knowing and doing history. We show that teachers do not stick with one of these strategies but that they choose a strategy that gives students the best chance of taking the next step in historical thinking.

KEYWORDS: Historical thinking, contextualisation, classroom discussion, teacher strategies.

Introduction

Many students find it difficult to master domains with a horizontal knowledge structure, such as history. Domains with horizontal knowledge structures have few systematic organising principles and the use and meaning of the domain-related concepts and procedures are context dependent (Bernstein, 1999). This implies that there is not one fixed way to come up with the correct answer. Moreover, domains with a horizontal knowledge structure do not have a single correct answer, but they have several reasonable possibilities, depending on the perspective taken. Consequently, learning to think historically differs from task to task, and students have to explore several possible answers (instead of looking for the single correct answer), using the specialised language at a substantive and procedural level. On top of this they have to find criteria to evaluate an argument in order to assess the quality of their answers. This complex thinking does not emerge automatically (Wineburg, 2001) but needs to

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be carefully guided by a history teacher. Consequently, a history teacher guiding student historical thinking, for example during classroom discussion, has to make sure that students focus on: a) searching for several possible answers, instead of looking for a single correct answer; b) using specialised language at a substantive and procedural level; c) discussing the criteria by which to evaluate the quality of argument.

When a teacher stimulates the search for more possible answers, students actually ask them: 'Please tell us, what do we have to write down?'. If the teacher responds that several answers are possible, depending on the quality of argument or the perspective taken, some students may get confused and think that any answer is valid, as long as you have some sort of argument. They do not comprehend that substantive and procedural knowledge is required for good domain-specific reasoning, and that correct use of this knowledge is context dependent in a domain with a horizontal knowledge structure (Bernstein, 1999). It is therefore not enough for the teacher to stimulate the search for more possible answers (VanSledright, 2002), they must also guide the use of specialised language and discuss the criteria with which to judge the given answers.

Student answers also reveal that they often do not possess the necessary substantive knowledge to construct an answer (Van Boxtel & Van Drie, 2004, 2013). They tend to describe historical events, phenomena or developments with everyday language. When students do use domain-specific concepts, this is often a kind of 'name-dropping' without solid knowledge of the nuances of a particular context. This can lead to sloppy reasoning, which needs to be addressed by the teacher to stimulate historical thinking.

When constructing answers, students often have no indication of the procedures needed for solid domain-specific reasoning. In historical thinking the so called second-order concepts¹, such as cause and change, play an important role in describing relationships between historical facts, figures, concepts and the specific historical context. Students find it difficult to use these second-order concepts properly (Lee, 2005). Their answers therefore often lack both the proper use of domain-specific concepts and of second-order concepts (Lee & Shemilt, 2009). A teacher must also focus student thinking on using second-order concepts so as to relate the substantive knowledge in a relevant way for this specific context.

Finally, the criteria for integrating substantive and procedural knowledge are context dependent in a domain with a horizontal knowledge structure. There are no fixed rules or guided step-by-step plans with which students can assess a consideration in order to come up with the most reasonable answer. This gives students little grasp of how to evaluate answers. A teacher therefore must also guide thinking on the quality of the answers for each specific context by focusing on the relationship between, and the integration of, the domain-specific concepts, everyday language and second-order concepts.

In an earlier study we developed design principles for historical tasks in order to address these learning problems (Havekes, 2012). Two odd-one-out tasks, focusing on constructing a historical context of change around 1500, were developed based on three design principles: 1) creating a cognitive incongruity; 2) stimulating substantiated considerations; and 3) scaffolding student learning. Analyses of how students worked on the tasks (Havekes, Luttenberg, Coppen, & Van Boxtel, 2014) show that initial steps in historical reasoning are stimulated by the task, but that they do not solve all problems. The idea of one correct answer remains particularly strong; the minimal use of domain-specific concepts as part of the specialised language and difficulty in evaluating the answers remain. It seems obvious that the teacher has an important role in further guiding the students in their historical reasoning during the classroom discussion following the task. Little research has been done on strategies used by teachers to guide historical thinking during a classroom discussion (Van Boxtel & Van Drie, 2013; Van Drie & Van Boxtel, 2011). The main research question of this article is:

How do teachers stimulate domain-specific thinking in history, as a domain with a horizontal knowledge structure, during a classroom discussion after students have worked on a task on historical contextualisation?

To answer this question we will focus on the three challenges the teacher faces when guiding student historical thinking during classroom discussion. How does a history teacher focus on:

- (a) exploring several possible answers?
- (b) stimulating the use of the specialised language of the domain?
- (c) thinking about the quality of answers?

Theoretical framework

Guiding historical thinking in a classroom discussion is challenging for a teacher, as domains with a horizontal knowledge structure are ill-structured (Bernstein, 1999) and there are no well-defined procedures. Students have not mastered specialised language and have difficulty evaluating the quality of answers. These problems involve components of substantive (knowing history) and procedural (doing history) knowledge, as well as the epistemic ideas of students (Havekes, Coppen, Luttenberg, & Van Boxtel, 2012). To stimulate and guide student historical thinking, a teacher has to address all these components and epistemic ideas. A teacher has to find strategies during classroom discussion, addressing learning problems and prior knowledge of the students on the one hand, and disciplinary demands on the other hand. We will describe relevant insights into what teachers can do to guide productive thinking (Engle & Conant, 2002), to enhance knowledge building (Scott, Mortimer, & Ametller, 2011) and how they relate to relevant components of knowing and doing history (Havekes, et al., 2012).

In the vast amount of literature on classroom interaction, the research of Engle and Conant (2002) and Scott, Mortimer and Ametller (2011) is useful, as they provide theoretical insights and useful tools for analysing the prompts of the teachers. Engle and Conant (2002) have characterised productive disciplinary engagement as an intellectual interaction concerning the issues and practices of a discipline (as relevant for a school setting). This disciplinary productivity can involve relatively simple tasks such as recognising factual knowledge or concepts, but can also involve making connections between ideas or solving domain-specific problems. They emphasise that ‘what constitutes productivity depends on the discipline, the specific task and topic, and where students are when they begin addressing a problem’ (p. 403). This relates to the aforementioned challenge of the teacher in guiding a classroom discussion to find strategies fitting the learning problems and prior knowledge of the students, and the disciplinary demands.

Scott et al. (2011) have described pedagogical link-making “as the ways in which teachers and students make connections between ideas in the ongoing meaning-making interaction of classroom teaching and learning” (p. 3). This basic constructivist idea indicates that the teacher has to guide student learning not by pouring knowledge over the students, but by guiding the construction of new knowledge by relating these new ideas to the existing knowledge of the students. Scott et al. (2011, p. 4) add that “in this way learning or meaning-making is regarded as being an essentially dialogic process, which involves bringing together and working on ideas”. This links to the challenge that teachers have to connect with the prior knowledge of the students while, at same time, integrating new insights into the interaction, without profiling themselves as the domain-expert with long historical exegesis.

This literature also provided tools with which teachers can address the guidance of domain-specific thinking during a classroom discussion. Engle and Conant (2002) identified four guiding principles for productive disciplinary engagement. In a single classroom discussion two of these four principles are relevant as they concentrate on productive disciplinary thinking: a) problematising and b) disciplinary accountability. The third guiding principle, giving authority to the students, is less relevant in the present study as it concentrates on the engagement of the students during their talk. The fourth guiding principle, providing relevant sources, functions at a different level: it is interwoven with the other three principles. In this study we consider the prompts of the teachers to be relevant sources. The questions and feedback that the teacher brings into the interaction are meant to stimulate the historical thinking of the students. It is the main source for further thinking by the students. This is why we will not use 'providing relevant sources' as a separate analytical element.

The first guiding principle, problematising, is defined as stimulating students to come up with alternative reasonable answers or to elaborate on given answers. Instead of just collecting facts, concepts and arguments and letting students bring forward ideas, teachers have to challenge these answers (Engle & Conant, 2002). In this sense problematising is divergent. These divergent prompts are important in a domain with a horizontal knowledge structure, because there are more reasonable answers that stand next to each other and these challenge each other without necessarily leading to a single correct answer. Students tend to look for a single correct answer. A teacher should therefore ask students to come up with alternative answers, and stimulate elaboration of these answers. Elaborating on an answer can be necessary if a student uses everyday language instead of the specialised language. The teacher can ask the students to come up with the domain-related concept or the teacher can provide it and ask the students to use it.

The second guiding principle, disciplinary accountability is connected to problematizing, as it also asks students to elaborate on answers, but its focus is convergent. Disciplinary accountability focuses on the necessary demands of domain-specific thinking relevant in a classroom situation (Engle & Conant, 2002). The answers of the student should make use of facts and concepts, and should also relate these facts and concepts to each other in a domain-specific way. The teacher can challenge an answer, if the answer merely consists of facts and concepts without any relationship. When they are asked to integrate procedural knowledge in an answer by using second-order concepts such as cause and change, students are stimulated to come up with more coherent answers, as the facts and concepts are connected through domain-specific relationships. In this way disciplinary accountability helps students to relate facts and concepts to relevant phenomena and helps students to construct valid historical answers.

In their analyses of pedagogical link-making, Scott et al. (2011) differentiate between three forms: support knowledge building, promoting continuity and encouraging emotional engagement. Supporting knowledge building is of interest in this study as it focuses on "making connections between different kinds of knowledge to support students in developing a deep understanding of subject matter" (Scott, et al., 2011, p. 5). They also describe several approaches to support this knowledge building. Three of them address two of the learning problems in this study: learning the specialised language and thinking of the quality of answers.

The approaches that address the learning of specialised language are: a) differentiating between everyday use of concepts and domain-specific use of concepts; and b) making relationships between these concepts, as they do not appear by themselves, but only in relation to other concepts. In a classroom discussion this can mean that teachers ask students to describe historical concepts in more detail when they have the feeling that a student does

not comprehend the concept very well. Where students do not use historical concepts, teachers should ask them to integrate relevant historical concepts in their answers. Stimulating the use of second-order concepts like cause, change and simultaneity, helps students to relate the facts and concepts to the historical context and phenomena at hand. Teachers can do this by asking questions to activate prior knowledge, so students come up with the concept themselves, or alternatively teachers can suggest the proper historical concept and ask students how it relates to the answer they have given. In both cases teachers help student thinking on a substantive level.

The third approach, scaling of explanations, addresses learning the specialised language and the evaluation of answers. The scaling of explanations refers to ‘fluently juggling’ with substantive and procedural knowledge. This scaling can be done on a substantive level, when the teacher addresses another scale but remains focused on substantive knowledge. For example: an answer discusses one historical phenomenon (e.g. reformation). The teacher can ask students to relate this phenomenon to other phenomena (renaissance and discoveries) that occur at more or less at the same time, in order to construct a more sophisticated historical context for the changes around 1500. Although focusing on substantive knowledge, the teacher stimulates students to integrate second-order concepts such as simultaneity and change to construct a more sophisticated historical context, using the specialised language in a more sophisticated fashion.

Scaling can also be done on a more abstract and procedural level, by asking what elements in the answer are important for a valid domain-specific argumentation. Scott et al. emphasise that domain specific thinking involves moving between explanations, some of which are not directly visible to the student. A teacher might focus student attention on the role of facts and concepts in domain-specific reasoning, or on the role of second-order concepts such as cause, change or simultaneity. This kind of scaling gives opportunities to discuss the criteria for assessing the quality of an answer, thus giving students more hold on evaluating answers in a domain-specific way.

These guiding principles and the approaches of Engle and Conant, and Scott et al. do not yet define historical thinking. This present study uses a task involving historical contextualisation as an example of historical thinking. Havekes et al. (2012) identified components that need to be addressed when students try to construct a historical context. These elements are: use of facts (who, what, when, where), use of historical concepts, and use of colligatory concepts, as part of the substantive knowledge and asking questions, using sources, using second-order concepts (e.g. time, change, cause, simultaneity) and argumentation as part of the procedural knowledge. They refer to this as knowing and doing history.

To support historical thinking a teacher should combine the guiding principles and approaches mentioned by Engle and Conant (2002), and Scott et al. (2011) and the components of knowing and doing history. Stimulating the use of colligatory concepts is a substantive way of relating historical persons or concepts to phenomena or a historical context. Asking students to integrate second-order concepts such as cause or change, helps students to define a historical context in greater detail. Asking for these relationships helps the students put forward more than just facts and concepts, and stimulates them to integrate components of knowing and doing history.

Little research has been done into how teachers try to address these guiding principles and approaches and how they try to integrate them with domain specific components, in a domain with a horizontal knowledge structure. In teaching history the focus has been on conceptual change (e.g. Limon, 2002), on students working with sources (e.g. Nokes, Dole, & Hacker, 2007; Reisman, 2012; VanSledright & Kelly, 1998; Wineburg, 1998), and on causal

reasoning by students (e.g. Monte-Sano, 2011; Pontecorvo & Girardet, 1993; Stoel, Van Drie, & Van Boxtel, 2014). Research into how history teachers stimulate thinking during classroom discussion is scarce. Van Drie and Van Boxtel (2011) have identified the use that teachers make of the general guiding principles and approaches mentioned by Engle and Conant (2002) and Scott et al. (2011), and that these are coloured by the demands of the domain. They do not indicate how teachers try to address the learning problems of the students on the one hand and the disciplinary demands of integrating knowing and doing history on the other hand. The present study focuses on the prompts given by history teachers during a classroom discussion, after students have worked in groups on a task of historical contextualisation, to describe strategies teachers use to stimulate student historical thinking and how they try to address both the learning problems and the disciplinary demands.

Table 1 shows how the learning problems of the students on the one hand and the disciplinary demands on the other hand contrast and define the challenges for the teachers. We have related the guiding principles for the productive thinking of Engle and Conant (2002), the approaches for knowledge building of Scott et al. (2011), and the components of knowing and doing history of Havekes et al. (2012) to these learning problems and disciplinary demands. The use of these guiding principles, approaches and components of knowing and doing history help us to describe the strategies used by history teachers to stimulate historical thinking during a classroom discussion on historical contextualisation.

Learning problems of students	Teacher strategies			Disciplinary demands
	Guiding principles for productive thinking (Engle & Conant, 2002)	Approaches for knowledge building (Scott, et al., 2011)	Components of knowing & doing history (Havekes, et al., 2012)	
Looking for a single correct answer	<ul style="list-style-type: none"> • Problematising 		<ul style="list-style-type: none"> • Facts • Concepts • Argumentation 	Several possible answers stand next to each other
Using everyday language and lack of substantive and procedural knowledge		<ul style="list-style-type: none"> • Relating daily and domain-specific concepts • Relating concepts and phenomena 	<ul style="list-style-type: none"> • Facts • Concepts • Colligatory concepts • Second-order concepts 	Using specialised domain-specific language
Fixed and clear criteria of good/wrong	<ul style="list-style-type: none"> • Referring to disciplinary accountability 	<ul style="list-style-type: none"> • Scaling of explanations and concepts 	<ul style="list-style-type: none"> • Facts • Concepts • Colligatory concepts • Second-order concepts • Argumentation 	Debatable criteria for both substantive and procedural components of the answer

Table 1: Matrix relating learning problems and disciplinary demands to guiding principles for productive thinking, approaches to knowledge building and components of knowing and doing history

Method

In a multiple case analysis we will focus on the three learning challenges the teacher has to address during a classroom discussion. The first challenge is to stimulate students to search for multiple possible answers, instead of looking for a single correct answer. We will analyse how the teachers problematise the answers given by the students. The second challenge for teachers is to guide the learning of specialised language. We will analyse the way teachers stimulate the use of domain-specific concepts, instead of everyday language, and how the teachers stimulate student thinking about relationships between substantive knowledge within the disciplinary demands. The third challenge for teachers addresses thinking about the quality of answers. We will analyse how teachers converge student answers to the disciplinary demands and on how the teachers scale answers to stimulate students to fluently integrate substantive and procedural knowledge.

We have analysed two datasets from a total of seven classroom discussions about a task involving the historical contextualisation of the changes around 1500. This task consisted of three odd-one-out rows, each addressing one phenomenon (renaissance, discoveries, reformation) and two overarching questions, relating the three phenomena, focusing on the changes around 1500 and the simultaneity of their appearance (see appendices A and B). Although there are some differences in the design of the task used in datasets A and B, we do not take them into account in this study as we focus on the learning challenges for the teachers during the classroom discussion, which are not influenced by the slightly different odd-one-outs and questions of the task.

For dataset A, three classes, with a total of 59 students (27 male; 32 female), from three different schools, participated. For dataset B, four classes, with a total of 93 students (43 male; 50 female), from four different schools, took part. The students attended upper general education (aged 15-16). Five different teachers participated, varying in teaching experience from four years to more than fifteen years, and had eight to ten years of experience with odd-one-out tasks. An average classroom discussion lasted 16:15 minutes (see table 2). The classroom discussion of T4 was cut short due to the end of the lesson. Students and teacher were still discussing the last question when the lesson ended. All other discussions were finished within the normal time of the lesson.

Teacher	Classroom discussion	School	Teaching experience	Experience with the task	Students	Students	duration of classroom discussion
dataset A							
T1	A	II	3-5 years	since 2007	18		14:30 min.
T2	B	III	> 15 years	since 2002	16		17:00 min.
T3	C	I	5-10 years	since 2004	25		14:25 min.
dataset B							
T1	D	II	3-5 years	since 2007		20	18:40 min.
T2	E	IV	> 15 years	since 2002		28	15:30 min.
T4	F	I	3-5 years	since 2008		26	15:00 min.
T5	G	V	5-10 years	since 2006		19	18:15 min.
Total					59	93	
Mean							16:15 min

Table 2: Participants in, and duration of classroom discussion (dataset A and B)

These classroom discussions were videotaped and transcribed. To analyse the classroom discussions we used the guiding principles (Engle & Conant, 2002), approaches (Scott, et al., 2011) and the components of knowing and doing history (Havekes, et al., 2012). We used Atlas-ti to code every prompt given by the teacher, as this was the unit of analysis. A prompt was defined as a sequence of utterances without interruption. By giving more codes for each prompt, we analysed how the guiding principles and approaches on the one hand, and components of knowing and doing history on the other hand, were related. We developed a matrix to visualise where the prompts of the teacher coincide (see Tables 3 and 4). We found this matrix useful as it helped to characterise the prompts of the individual teachers in the different classroom discussions. To give meaning to the prompts we also determined how they fitted into the context of the ongoing discussion. This helped us to analyse how the teacher tried to stay close to the learning challenges and to address the disciplinary demands at the same time.

Based on literature and further grounded in the data itself, we developed criteria for each guiding principle or approach (see appendix C). In this way we could agree upon a set of criteria for the codes. The criteria for the code problematising was similar to that of Engle and

Conant's (2002) findings, indicating that the teacher encourages students to give several answers and to challenge these answers of the students. These challenges should direct student thinking in a disciplinary way, however, sometimes the teacher did not direct the answer of the student in any way, but still made sure that the student elaborated on their first answer. We coded these prompts as 'only-problematizing'.

Teacher	Classroom discussion	Challenges for the teacher						Total prompts	
		Exploring answers		Specialised language		Quality of answers			
		Problematizing -only	Problematizing	Concepts- phenomena	Relating everyday language to	Disciplinary accountability	Scaling		
T1	A	Knowing & doing history	8						
		Second order concepts		0	1	1	0	0	
		Argumentation		3	0	1	0	0	
		Facts		8	8	7	0	0	
		Concept		3	3	3	0	0	
		Colligatory concepts		3	1	3	0	0	
		<i>subtotal A</i>	8	17	13	15	0	0	53
T2	B	Knowing & doing history	25						
		Second order concepts		3	1	1	2	2	
		Argumentation		8	3	4	8	7	
		Facts		12	3	7	2	6	
		Concept		2	2	1	2	3	
		Colligatory concepts		5	0	3	1	2	
		<i>subtotal B</i>	25	30	9	16	15	20	115
T3	C	Knowing & doing history	22						
		Second order concepts		10	2	4	2	0	
		Argumentation		31	6	12	8	0	
		Facts		39	14	22	4	0	
		Concept		13	9	10	3	0	
		Colligatory concepts		9	1	11	3	0	
		<i>subtotal C</i>	22	102	32	59	20	0	235
T1	D	Knowing & doing history	18						
		Second order concepts		3	2	1	0	0	
		Argumentation		5	0	1	0	0	
		Facts		7	0	2	0	0	
		Concept		10	2	5	0	0	
		Colligatory concepts		2	0	0	0	0	
		<i>subtotal D</i>	18	27	4	9	0	0	58
T2	E	Knowing & doing history	1						
		Second order concepts		6	1	3	3	3	
		Argumentation		6	0	0	4	3	
		Facts		7	0	0	6	4	
		Concept		5	1	1	2	2	
		Colligatory concepts		2	1	1	1	0	
		<i>subtotal E</i>	1	26	3	5	16	12	63
T4	F	Knowing & doing history	21						
		Second order concepts		2	0	3	0	0	
		Argumentation		9	0	0	0	0	
		Facts		20	4	5	0	0	
		Concept		14	6	0	0	0	
		Colligatory concepts		0	0	1	0	0	
		<i>subtotal F</i>	21	45	10	9	0	0	85
T5	G	Knowing & doing history	20						
		Second order concepts		0	0	0	0	0	
		Argumentation		14	0	0	0	0	
		Facts		16	1	1	0	0	
		Concept		17	1	1	0	0	
		Colligatory concepts		2	0	0	0	0	
		<i>subtotal G</i>	20	49	2	2	0	0	73
Total		<i>f</i>	115	296	73	115	51	32	
		<i>M</i>	16.4	42.3	10.4	16.4	7.3	4.6	
		<i>SD</i>	8.0	26.5	9.6	18.0	8.5	7.5	

Table 3: Frequency of the prompts in seven classroom discussions, categorised in the three challenges for the teacher and components of knowing and doing history

Scott et al. (2011) provided a criterion for relating daily and domain-specific concepts, indicating that a teacher can support knowledge building by asking to use domain-specific

concepts, by asking to explain these concepts in everyday language, or by giving new factual knowledge. The second criterion Scott et al. provided was the focus on the relationships between the concepts, persons or the phenomena. Scott et al. indicate that concepts never stand alone, but are fitted together in an interlinking system and are applied through other concepts. In history these relationships are often described through the use of second-order concepts, such as change, cause and simultaneity. We combined the insights of Engle and Conant (2002) and Scott et al. (2011) for the criteria on disciplinary accountability and scaling. This could be done on a substantive level, when a teacher initiates thinking from one phenomenon to more phenomena. A teacher can also scale from only substantial knowledge to integrating substantial and procedural knowledge, or scale to a more disciplinary meta level to address why several answers need to be discussed.

Our criteria for the codes for disciplinary demands of historical thinking are based on the insights of Havekes et al. (2012). The facts (what, who, when, where) give information about the past, but are in themselves not yet related. Guiding historical thinking should do more than just collect facts. Colligatory concepts are needed, for instance to relate the facts on a substantive level. Second-order concepts are needed to relate the facts and concepts in a disciplinary way. The following second-order concepts are of special interest when constructing a historical context: time (simultaneity), cause and change.

We use descriptive statistics to present the use of the different codes. For every classroom discussion we will describe the frequency of the prompts per category and will give subtotals for each classroom discussion. For the totals we will give the frequency, the mean and the standard deviation (see Table 3). This will give us insight into both how often a category occurred, and the differences between the classroom discussions. We will then elaborate on this use by going back to our data and characterising significant categories of the classroom discussion through qualitative analyses.

We also characterised every whole episode of the discussion. An episode was defined as the talk about one question in the task. Renshaw and Brown (2007) have emphasised the need to study the form and structure of a talk to study how the co-construction of knowledge is done in a classroom discussion. Focussing only on the prompts does not give an indication of the form and structure of the talk. Studying the whole episode will give insight into the form and structure in which the prompts manifest themselves.

Based on the research of Mercer and Nystand, Havekes et al. (2014) described four types of student talk when collaborating in small groups, using the criteria co-constructing and discussing multiple perspectives, which are relevant for the present study. Each classroom discussion involved five questions and therefore we coded five episodes (see table 4). The first talk is termed transmissive, as there was little or no collaboration and only one perspective was discussed. The teacher handed down information directly to the students and the few remarks of students did not or barely influenced the response of the teacher. All three other talks used responsive questioning (Chin, 2006) and thus tried to use the remarks of the students in the interaction. The second talk was the cumulative talk. The teacher and the students discuss one answer together and the teacher ends with a sort of conclusion which includes the remarks of the students. Often, after discussing one answer this way, another answer is brought forward and dealt with in the same way. The answers however are never brought together. In the third talk, the disputational talk, students bring forward multiple ideas. The answers of the students remain autonomous and are not related to each other. The teacher hears students remarks, but refrains from giving an opinion and refrains from directing the answers to a specific content or higher level. In the fourth talk, the transformational talk, the teacher and the students discuss several answers together. In this

talk the different answers brought forward are related to each other, for instance by comparison or by combining them, in order to come up with new ideas and conclusions.

All these analyses were performed by the main researcher of this study. During weekly encounters with a second researcher these analyses were discussed, challenged and re-adjusted. Two other researchers acted as debriefers, by challenging the criteria and asking for examples. During the final coding, there were some minor differences when the remarks of the teacher were interwoven with non-task utterances, such as class management issues, or when a prompt was very long and included several elements. These differences were then discussed until consistent consensus between the researchers was acquired.

Results

We present our results through descriptive statistics. We order them by discussing the three challenges for teachers in more detail, by giving examples derived from our data and performing additional qualitative analyses. We will indicate whether the results were found in all or most classroom discussions, or only in one or two.

The first challenge refers to the way teachers explore several answers by problematising in a domain-specific way. Table 3 shows that in all discussions this is the most common of all codes, especially if we add the code problematising-only, which is often used to stimulate students to continue talking or thinking. These problematising-only prompts were often very short, such as: ‘yes’ or ‘because’ or ‘please tell’ or ‘That is an interesting point, go on’. As mentioned, these problematising-only codes were used to stimulate students to continue talking and thinking in a general way. If we return to the category of problematising and look at how this was done in a domain-specific way, it becomes clear that the focus is mostly on knowing history (facts, concepts, colligatory concepts). The component fact was problematized particularly often. For example: ‘They are reformers. And what did they want to reform?’ or ‘Yes, he has discovered America. What about the others?’. The second largest is the category of argumentation, for example: ‘Okay, so the changing portrayal of mankind and the worldview is stimulated through the discoveries and the renaissance. Okay. Does anybody have an addition? Can somebody give an example?’ or ‘So they serve as a motto for the way of living. Can you explain what you mean by that?’ Overall it appears that problematising prompts focus more on knowing history than on doing history.

The second challenge for the teacher involves learning the specialised language. It refers to how teachers stimulate domain-specific substantive and procedural knowledge. Table 3 shows that all teachers paid attention to learning the specialised language. Stimulating the use of the domain-specific language instead of using every day language was particularly done often (115). Overall these prompts focus almost twice as much on knowing history as on doing history. Returning to our data, we note that in all classroom discussions the episodes on the explorers are mostly responsible for this focus, especially on facts and concepts. During the preceding group work it had already become clear that the students did not have adequate substantive knowledge (see also: Havekes, et al., 2014). One teacher explicitly mentioned factual information about each explorer, while the other teachers briefly mentioned this information and partly tried to activate prior knowledge by collaborative thinking, for example: ‘Yes, he discovered America. What about the others? What did Vasco da Gama do? [student answers]. Yes very good. En Diaz, why is he famous?’

To stimulate the use of the specialised language teachers often rephrased or paraphrased answers using everyday words and domain-related concepts at the same time, for example: ‘Yes, yes, so Calvin put emphasis on... you can say, the faith of the individual, very good, and Luther and Erasmus gave it more.... gave the king or the church a more important role. The

higher authority, the sovereign had to decide the faith of the people. Very good. Yes, other answers? This example also shows that, although the teacher evaluates this answer as a good one, more possible answers need to be explored, as they finished with an invitation for more alternatives.

Constructing relationships between the phenomena in this specific historical context is another part of learning the specialised language. We note that all classroom discussions paid attention to this. In general the prompts focused more than three times as much on knowing history as on doing history. When focussing on knowing history the teacher often asks students to construct relationships between facts and concepts and a specific phenomenon. In the following example the teacher wants the students to relate the actors to the phenomenon of the reformation: *'Very good. They thought that things happened in the church that will not pass. And then they react differently to it. Erasmus wants changes, but wants to stay within the church. What about Luther and Calvin?'* Three of the seven classroom discussions paid attention to colligatory concepts, but only once in each discussion. The other four discussions did not use colligatory concepts as a way to construct relationships in a domain-specific way. If this was done, the focus was on using the correct colligatory concept, for instance in this example the concept of renaissance: *'Humanism... and, and... what concept lays above it? What is a more general concept? [...] What do we call it, what do we call the overarching concept that is mentioned as a key-concept in the textbook? It is not Humanism'*.

Five classroom discussions focussed on doing history and only discussions B and C focussed several times on doing history. In the following example the teacher focused on the second-order concept *cause* and also on relating two phenomena (renaissance and discoveries): *'That the earth was round. Good. Does this fit... Does this relate, this changing worldview caused by the discoveries, does it also have to do with the first odd-one-out in the renaissance?'* The following example illustrates how a teacher invites students to come up with a better argument by focussing on possible relationships in the answer: *'Why are they especially interested in classical antiquity if they started to think logically?'* A third example illustrates the need to look for similarities in the odd-one-out sets, thus coming up with substantiated answers within the phenomenon, such as these discoveries: *'Columbus is the odd-one-out, because, if I summarise Koen, the other three did not try to find their way to India, going west. Bartolomeo Diaz could be the odd-one-out, because... who knows a possible answer, because the other three... What do the other three have in common, differentiating them from Bartolomeo Diaz?'*

The third learning challenge involves thinking about the quality of the answers. Few prompts focused on disciplinary accountability and even fewer on the scaling of explanations. Table 3 also shows that only discussions B, C and E considered this challenge. In fact all prompts scaling student answers are from a single teacher (T2), who did this in both his classroom discussions. Prompts on disciplinary accountability were also given by this same teacher (T2) and one other teacher (T3). In the few cases that a discussion focused on this challenge, we noted a more equal ratio between knowing and doing history. This contrasts with the other two challenges, where the focus was more on knowing history.

Prompts stimulating thought about the quality of answers were often rather long. The teacher often paraphrased several given answers and then invited students to think about these answers at another level or use these given answers to construct a more sophisticated conclusion. This could be set at the level of disciplinary demands or can be related to school discipline if the teacher discusses what good answers in a written test may look like: *'[...] I think your answer gives a good summary of it all. What you are doing is constructing a chain of facts and causes, bringing it all together. [...], what we have done is use historical persons and concepts, because now we are talking about how you can construct such an argument.'*

[...] We have seen mainly causes and consequences. So if you have to relate three persons or concepts, it might be useful to use one of these concepts: what are causes? Or, what consequences? Or what is the relation between these people? Or what changes or developments symbolize these persons or concepts? Because, now you are doing something with the domain of history. Not so much with the content of history, the discoveries, but mainly with historical thinking. So if you have a question in a written test about what it means, about the relationship, you should actually use these kinds of words'. A great deal comes together in this prompt, but as noted, these kinds of prompts appeared rarely.

We also coded the type of talk for a complete episode to determine whether teachers stimulated student thinking in a constructivist way and to place the prompts in the context of the talk (see table 4).

	Classroom discussion							Total
	A	B	C	D	E	F	G	
Teacher	T1	T2	T3	T1	T2	T4	T5	
Transmissive talk	1			1		1		3
Cumulative talk	2	1	2	3	2	4	4	18
Disputational talk	2		2	1			1	6
Transformational talk		4	1		3			8
Total	5	5	5	5	5	5	5	35

N= 35 (episodes)

Table 4: Frequencies of types of talk in each classroom discussion

We will first look at how the episodes are opened, because this is important for the form and direction of the talk. To stimulate collaboration and the exchange of ideas, all teachers started the discussion in an open manner by asking students to come up with a possible answer: *'Okay boys and girls. I believe that most of you have finished the task. So let's start discussing your answers. So, for every odd-one-out there are several possibilities and I think the argument that you use to choose the odd-one-out is important. Erm... the first one, memento mori, carpe diem, uomo universalis and classical heritage. Who..?'* Teachers also made it explicit that several answers were possible and that there is no single correct answer: *'[...] Let's see what you came up with and as I said before, it is of course not the idea to come up with the correct answer. Your argumentation is what matters'*.

Three episodes were coded as transmissive talks, showing a classical initiation-response-evaluation pattern, with a rather long prompt from the teacher at the end, without involving the remark of the student. These three episodes were the only talks to explore just one possible answer.

The majority of the episodes were coded as cumulative (18). Our data shows that all these episodes discussed several possible answers, one after the other, not simultaneously. Each discussion finishes with a conclusion by the teacher, in which the remarks of the students are included. An example of closing the discussion on a possible answer during a cumulative talk was described above when we discussed the results of stimulating the specialised language: *'[...] The higher authority, the sovereign had to decide the faith of the people. Very good. Other answers?.'*² In another discussion the teacher continued discussing the answer of a student, using several prompts to problematise the answer, and ended with: *'Yes, very good. So Erasmus indeed wanted to prevent the church from dividing. Luther and Calvin on the other hand did not object to dividing the church'*.

We coded six episodes as disputational, which means that multiple ideas are brought forward but that these answers remain autonomous and are not related to each other. In

contrast with cumulative episodes, where a conclusion ends each answer, these disputational episodes do not end with some sort of conclusion. The same teacher as above finished another episode like this: *'Okay, Okay... Anybody else?'* When nobody reacted, the teacher went on to the next question without further ado. The use of 'okay' in this prompt is very neutral, just leading the conversation. The answers are simply listed and not discussed or assessed in any way.

Table 4 shows that eight episodes are coded as transformational, but also that only in classrooms B and E did this occur regularly, and in classroom C only once. In most classrooms this type of talk did not occur. It needs to be noted that these discussions are led by the same teachers (T2 and T3) that stimulated thinking about the quality of the answers. The long quote we used above to describe this thinking about the quality of answers, is a good example of closing a transformational talk. The teacher paraphrases the answers of students, brings together several answers and uses words like 'we'. The example focuses on doing history, but in transformational talks the focus can also be on knowing history. An example from another teacher illustrates this: *'So we can say that it depends on your question or your perspective if a concept is the odd-one-out. Classical heritage can be the odd-one-out if you are looking for mottos or Latin expressions, but if you consider which concepts are important to explain the renaissance, memento mori becomes the odd-one-out. [...]'* These talks indicate possible answers as the teacher makes the criteria for thinking about the quality of the answers explicit, but leaves it up to the students to draw final conclusions, thus stimulating the co-construction of new knowledge. In these prompts knowing and doing history are more or less equally present, implicitly indicating that this is needed for sophisticated historical thinking.

Conclusion and discussion

We will now present our conclusions and discuss them in light of challenges for the teacher, then we will come back to our main research question and draw some final conclusions.

The first challenge for the teacher is to explore several possible answers with the students. This was done through continually problematising student remarks. To do this teachers used the design principles of creating a cognitive incongruity and stimulating the substantiated arguments of the task (Havekes, et al., 2012). Problematising, whether focusing on knowing or doing history, helped in discussing more perspectives and in broadening or deepening the answers given. This is in line with the findings of Van Drie and Van Boxtel (2011), who presented examples of the way teachers broadened or deepened historical reasoning in a whole-class discussion. If the focus remains on knowing history, which is often the case, the thinking of students is broadened in the sense that more facts, persons and concepts are introduced, explained and related at a substantive level. If the focus is on doing history, student thinking is deepened, because more components of historical thinking are involved in the argument. Constructing relationships is done through second-order concepts, such as change and cause. Only if problematising involves an explicit focus on integrating knowing and doing history, is student thinking extended towards more elaborate historical thinking by using and debating both domain-specific substantive and procedural knowledge to construct historical context. Only one teacher integrated knowing and doing history explicitly, when he problematized by discussing the criteria for the evaluation of an answer.

Results show that all episodes, except the three transmissive talks, explored several possible answers. If we look at all classroom discussions, we note that all teachers emphasised the need for multiple answers, and this was often made explicit at the start of the classroom discussion. The reason that several answers needed to be discussed was often implicit,

however. It is not clear whether the teachers explored several answers because the design of the task stimulated it or because of the disciplinary demands. The teachers therefore might be more task-orientated than domain-orientated. If teachers are indeed more task orientated, then it seems that they focus on the learning problems of students who are more interested in doing well at the task than in historical thinking (Newell, Beach, Smith, & VanDerHeide, 2011).

Literature suggests that teacher stances on pedagogy might also influence their behaviour. In a review Maggioni and Parkinson (2008) describe history teachers who believe that learning history is acquired through construction by using different historical heuristics and those who believe that learning history is done by bringing to life existing narratives, for example through captivating and entertaining sources that allow the ability to acquire factual knowledge. They also emphasise that history textbooks often present an unbiased narrative of events, which might enhance the epistemic belief that learning is about receiving a body of knowledge developed by experts. The task in this study however leaves little place for bringing to life existing narratives or receiving a body of knowledge. The task forces students to think of multiple possible answers and forces them to discuss them. This might however clash with the epistemic ideas of teacher who believe that learning history is done best by bringing existing narratives in a lively manner.

All classroom discussions considered the second challenge: learning specialised language. Teachers focused student attention on using domain-specific concepts and relating these concepts to the historical context. This focus became most explicit during the odd-one-out talk about the explorers. The prior knowledge of the students fell short and the teachers spent significant time activating the necessary substantive knowledge to fulfil the task. Two teachers explicitly emphasised the need for substantive knowledge in historical reasoning, when they scaled the answers of the students.

In other discussions we noted that the teachers tried to stimulate the use of colligatory concepts, such as renaissance, or 'changing portrayal of mankind and worldview'. Colligatory concepts were used as a kind of conclusion. They seem to function as a link between concepts, persons and phenomena on a substantive level. Some talks finished with this kind of broadening of students' substantive knowledge. Van Drie and Van Boxtel (2011) also noted these kinds of decisions being made by the teacher. Teachers seem to stay close to the learning problem of the students to give good opportunities to build a solid substantive knowledgebase as part of learning the specialised language. This focus on the substantive might also be motivated by the national exams in the Netherlands, in which students can earn several marks by naming and explaining historical context. Newell, Beach, Smith and VanDerHeide (2011) argue that the pressure of assessments also shapes the answers of students. Students realise that they need to produce answers that can withstand assessment by the teacher, whether during a classroom discussion or in a written test and therefore tend to come up with answers that resemble earlier experiences of good answers, often focussing on including the correct substantive knowledge. Teachers and students, both trying to stay close to what they think the other prefers, thus find themselves in a sort of vicious circle, focussing on substantive knowledge over and over again.

The third challenge, stimulating thinking about the quality of answers, was done more regularly in two discussions by the same teacher, and once in the discussion of another teacher. Few prompts focused on this learning challenge by scaling the answers to another level, but when it was done it addressed our design principle of explicitly focussing on integrating knowing and doing history (Havekes, et al., 2012). Returning to the data, we noted that the teacher who included this in both his discussions addressed the epistemic ideas of the students, making clear that criteria are needed for the valid integration of knowing and doing history, without fixed procedures. This teacher used long utterances and took charge of the

discussion: he decided to explain the required criteria for historical thinking explicitly and model correct historical thinking. In this way the teacher helped the students to become acquainted with the disciplinary demands of discussing criteria to evaluate answers, although students did not explicitly use these demands themselves. It remains unclear what effects these prompts would have on student historical thinking in the long term, although explicit teaching of skills and addressing student epistemological beliefs are considered important for becoming an expert in a particular domain (Alexander, 2005; Stoel, et al., 2014).

It remains unclear why most discussions did not focus on all three learning challenges. The first and the second were addressed, as all teachers explicitly mentioned the need to explore several answers, and during all discussions teachers paid attention to learning specialised language. The third challenge, however, was addressed regularly by only one teacher in his two discussions. Our data does not provide sufficient information to draw empirically grounded conclusions about why this might be, but we will discuss possible explanations for the choices of the teachers. We noted from the data that time was an issue in some of the discussions. When the end of the lesson was approaching, they increased the tempo. We found remarks like: '[...] *ssh... erm... We have three minutes left and in those three minutes I want you to finish the final question*'.

We have already discussed the possible influence of a teacher's epistemic ideas on learning history, and the focus on learning the substantive knowledge. The teachers in this study, however, were selected because of their experience and because they were familiar with the pedagogy *Active Historical Thinking* and the task. Despite the familiarity with the design principles of the pedagogy and the task, we still noted that these teacher paid a great deal of attention to knowing history. This might be explained by the ideas of teachers as to what students are capable of when learning history. This might also influence the reasons they focus less on doing history, and do not focus on thinking about the quality of answers. They might consider it too difficult for students, especially for the topic in the task used in this study: the historical context of the changes around, and the 'changing portrayal of mankind and worldview', cannot be described in a simple linear causal chain of origin, event and consequence. Lee (Lee, 2005; Lee & Ashby, 2000) and others have noted this as one of the problems in learning history. Lee and Howson (Lee & Howson, 2009) have also shown that a lack of substantive knowledge is a problem when students have to construct a historical context. It might therefore also be possible that the topic of the task constrains teachers in exploring the challenge of thinking about the quality of the answers.

More possible explanations are suggested by Newell et al. (2011) in their review study of teaching argumentative reading and writing. Argumentation involves a sophisticated set of practices and there is no one correct form. Teachers, so they argue, might not always know what substantive and procedural knowledge are required. This might be even more valid in domains with a horizontal knowledge structure, as they are ill-structured. On top of that, Newell et al. emphasise that teaching argumentation is often done in a formal way, using prescribed steps to come up with a correct argument. This may limit student ability to think critically about the quality of given answers. In guiding high-quality argumentation teachers might take procedural concepts, such as change and cause, for granted, and not make them available and useful for the students in this particular task as part of discussing the quality of answers. Newell et al. also bring forward another possible problem meaning that teachers try to avoid discussions about the quality of answers. They note the accepted idea that teachers must try to maintain a conflict-free zone when it comes to learning. Starting a discussion about the quality of the answers given might disrupt this conflict-free zone, especially as there are no fixed rules for establishing the correct answer.

Answering our main question about how teachers stimulate domain-specific thinking in a domain with a horizontal knowledge structure, like history, during a classroom discussion on debriefing a task involving historical contextualisation, we can conclude that teachers use three kind of strategies to support domain specific thinking: 1) broadening student thinking by stimulating the use of substantive knowledge, placing an emphasis on knowing history; 2) deepening student thinking by focusing on procedural knowledge, placing an emphasis on doing history; and 3) enhancing student thinking by integrating knowing and doing history.

In the first strategy, broadening student thinking, multiple answers are explored and the focus remains on facts, persons and concepts. The substantive knowledge of the students is broadened through prompts asking them to describe or elaborate facts, historical persons and concepts. This is triggered by the nature of the task in which the three odd-one-out tasks ask for substantive knowledge. This focus on substantive knowledge remains close to the epistemic ideas of the students, who often have a copier or borrower stance at this age (Havekes, et al., 2012; Maggioni, VanSledright, & Alexander, 2009). In these stances they focus on knowing history, as they believe that presenting facts which are more or less related is the essence of reconstructing the past and doing history. Broadening student historical thinking this way is a first step, but scholars on learning history agree that this is not enough (Barton & Levstik, 2004; Davies, 2011; Lee, 2005; Levstik & Barton, 2005; Limon, 2002; Monte-Sano, 2011; Reisman, 2012; Van Boxtel & Van Drie, 2004; Van Drie & Van Boxtel, 2008; VanSledright, 2010; Wineburg, 2001).

The second strategy, deepening student thinking, explores, as all strategies do, multiple answers. The focus shifts to doing history, as the teacher emphasises the need for good argumentation and the use of second-order concepts like *change*, *cause* and *simultaneity* to construct relationships between the facts, persons and concepts. Student thinking is deepened because relating facts, persons and concepts now involves components of doing history. It helps students develop their epistemic beliefs, as they learn that valid domain-related argumentation is based on components of doing history, such as using second-order concepts. This strategy remains close to the epistemic ideas of students in the borrower stance, in which students believe a final reconstruction is possible if all facts and sources are available, but, as not all information from the past is preserved, students realise that several constructions of the past are possible as long as you make valid arguments for it. Deepening student historical thinking this way runs the risk that students might think that anything goes in history, because they do not yet recognise that valid constructions in a domain with a horizontal knowledge structure are restricted by domain-specific procedures, which are context dependent.

The third strategy, enhancing student historical thinking, integrates knowing and doing history. Facts and concepts are not only broadened on a substantive level or deepened by relating them through second-order concepts, but the teacher explicitly scales to a more meta-cognitive level, in which the criteria for a valid historical argument are discussed. This explicit focus helps students to become acquainted with the context dependent procedures of the domain and shows them that factual knowledge and concepts need to be addressed in a historical way so as to construct historical reasoning that can withstand critical debate. This focus also shows that a sophisticated epistemic stance, the criterialist stance, is needed. It shows them that knowing and doing history need to be integrated, using domain and context specific criteria.

It needs to be noted that the use of the third strategy, enhancing students' historical thinking by integrating knowing and doing history, was explicitly engaged by only one teacher in two classroom discussions. This teacher was the most experienced teacher in this study and had also been involved in developing the pedagogy of *Active Historical Thinking*

from the beginning. It might also be that the other teachers believed it was too difficult for students. We have also suggested that the Dutch system of assessment might be of influence.

It needs to be noted that teachers do not stick with just one of these strategies. In the discussion of one answer the focus might be on deepening substantive knowledge, while in the discussion of another answer, the focus might be on broadening or enhancing student knowledge. Consideration of time issues, epistemic ideas about learning history, the specific topic and the nature of the task might also be an influence here. Further study should focus on the relationship between the chosen strategies, types of discussion and the considerations of the teachers about this choice.

The strategies, although far from definitive, might enhance teacher awareness of the necessary focus during a classroom discussion to stimulate the domain-specific thinking of students. Further research is needed to relate the behaviour of the teachers to their pedagogical content knowledge, so that the strategies can be useful in a variety of domains with a horizontal knowledge structure.

It can be argued that in a domain with a horizontal knowledge structure, the guiding principles for disciplinary thinking (Engle & Conant, 2002) and the approaches to knowledge building (Scott, et al., 2011), are not enough to stimulate historical thinking in themselves. These tools give a general focus, but do not yet determine the domain-specific aim needed for historical thinking. Components of knowing and doing history (Havekes, et al., 2012) need to be involved in the prompts of the teacher. The ill-structured character of history, however, gives little support to the teacher about which components are relevant at a specific moment. When choosing a strategy, teachers seem to find it important to broaden the substantive knowledge of the student, as a knowledge base. They seem to have the idea that students must know a lot of factual and conceptual knowledge, before they can go on to use this knowledge in domain-specific procedural ways. Learning history in secondary school might be seen as a first step towards a more sophisticated, more disciplinary way of historical thinking. If this is the case, the focus in designing tasks and in preparing classroom discussions should be on the design principle of explicitly integrating knowing and doing history (Havekes, et al., 2012). Design-based research should investigate how this integration can be stimulated. Is the first step indeed building a knowledge base and then using it, or can this be done at the same time? How do the epistemic ideas of teachers, about how students learn to think historically, influence pedagogies and determine teacher behaviour?

In this study we did not address all components of knowing and doing history, as they were not relevant in this particular task. Future research should study these strategies with other tasks and in another contexts, so that more light can be shed on both the context-dependency of stimulating historical thinking and on the characteristics that are less context-dependent that may be useful in other domains with a horizontal knowledge structure.

References

- Alexander, P. (2005). Teaching toward expertise. *British Journal of Educational Psychology Monograph Series II Number 3 - Pedagogy - Teaching for Learning*, 1(1), 29-45.
- Barton, K. C., & Levstik, L. S. (2004). *Teaching history for the common good*. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Bernstein, B. (1999). Vertical and horizontal discourse: an essay. *British Journal of Sociology of Education*, 20(2), 157-173.
- Chin, C. (2006). Classroom interaction in science: Teacher questioning and feedback to students' responses. *International Journal of Science Education*, 28(11), 1315-1346.

- Davies, I. (2011). *Debates in history teaching*. New York: Routledge.
- Engle, R. A., & Conant, F. R. (2002). Guiding principles for fostering productive disciplinary engagement: Explaining an emergent argument in a community of learners classroom. *Cognition and Instruction*, 20(4), 399-483.
- Havekes, H., Coppen, P.-A., Luttenberg, J., & Van Boxtel, C. (2012). Knowing and doing history. A conceptual framework and pedagogy for teaching historical contextualisation. *International Journal of Historical Learning, Teaching and Research*, 11(1), 71-92.
- Havekes, H., Luttenberg, J., Coppen, P.-A., & Van Boxtel, C. (2014). Stimulating historical thinking in a collaborative learning task. An analysis of student talk and written answers. Paper presented at the AERA, Philadelphia.
- Lee, P. (2005). Putting principles into practice: Understanding history. In S. Donovan & J. Bransford (Eds.), *How students learn: History, mathematics and science in the classroom* (pp. 31-78). Washington, D.C.: National Academies Press.
- Lee, P., & Ashby, R. (2000). Progression in historical understanding among students ages 7-14. In P. N. Stearns, P. C. Seixas & S. S. Wineburg (Eds.), *Knowing, teaching, and learning history: national and international perspectives* (pp. 199-222). New York: New York University Press.
- Lee, P., & Howson, J. (2009). 'Two out of five did not know that Henry VIII had six wives': History education, historical literacy and historical consciousness. In L. Symcox & A. Wilschut (Eds.), *National history standards: the problem of the canon and the future of teaching history* (pp. 211-261). Charlotte, NC: Information Age Publishing.
- Lee, P., & Shemilt, D. (2009). Is any explanation better than none? *Teaching History*, 137, 42-49.
- Levstik, L. S., & Barton, K. C. (2005). *Doing history: Investigating with children in elementary and middle schools* (3rd ed.). Mahwah, N.J.: L. Erlbaum Associates.
- Limon, M. (2002). Conceptual change in history. In M. Limon & L. Mason (Eds.), *Reconsidering conceptual change: Issues in theory and practice* (pp. 259-289): Kluwer Academic Publishers.
- Maggioni, L., & Parkinson, M. (2008). The role of teacher epistemic cognition, epistemic beliefs, and calibration in instruction. *Educational Psychology Review*, 20(4), 445-461.
- Maggioni, L., VanSledright, B., & Alexander, P. A. (2009). Walking on the borders: A measure of epistemic cognition in history. *Journal of Experimental Education*, 77(3), 187-213.
- Monte-Sano, C. (2011). Beyond reading comprehension and summary: Learning to read and write in history by focusing on evidence, perspective, and interpretation. *Curriculum Inquiry*, 41(2), 212-249.
- Newell, G. E., Beach, R., Smith, J., & VanDerHeide, J. (2011). Teaching and learning argumentative reading and writing: A review of research. *Reading Research Quarterly*, 46(3), 273-304.
- Nokes, J. D., Dole, J. A., & Hacker, D. J. (2007). Teaching high school students to use heuristics while reading historical texts. *Journal of Educational Psychology*, 99(3), 492-504.
- Pontecorvo, C., & Girardet, H. (1993). Arguing and reasoning in understanding historical topics. *Cognition and Instruction*, 11(3-4), 365-395.

- Reisman, A. (2012). Reading like a historian: A document-based history curriculum intervention in urban high schools. *Cognition and Instruction*, 30(1), 86-112.
- Renshaw, P., & Brown, R. A. J. (2007). Formats of classroom talk for integrating everyday and scientific discourse: Replacement, interweaving, contextual privileging and pastiche. *Language and Education*, 21(6), 531-549.
- Scott, P., Mortimer, E., & Ametller, J. (2011). Pedagogical link-making: a fundamental aspect of teaching and learning scientific conceptual knowledge. *Studies in Science Education*, 47(1), 3-36.
- Stoel, G. L., Van Drie, J. P., & Van Boxtel, C. A. M. (2014). Teaching towards historical expertise. Developing a pedagogy for fostering causal reasoning in history. *Journal of Curriculum Studies*, 1-28.
- Van Boxtel, C., & Van Drie, J. (2004). Historical reasoning: A comparison of how experts and novices contextualise historical sources. *International Journal of Historical Learning, Teaching and Research*, 4(2), 89-97.
- Van Boxtel, C., & Van Drie, J. (2013). Historical reasoning in the classroom: what does it look like and how can we enhance it? *Teaching History* 150, 44-54.
- Van Drie, J., & Van Boxtel, C. (2008). Historical reasoning: towards a framework for analyzing Student reasoning about the past. *Educational Psychological Review*, 20(2), 87-110.
- Van Drie, J., & Van Boxtel, C. (2011). "In essence I am only reflecting". Teachers strategies for fostering historical reasoning in whole classroom discussions. *International Journal of Historical Learning, Teaching and Research*, 10(1), 55-66.
- VanSledright, B. (2002). Confronting history's interpretive paradox while teaching fifth graders to investigate the past. *American Educational Research Journal*, 39(4), 1089-1115.
- VanSledright, B. (2010). *The challenge of rethinking history education: on practices, theories, and policy*. New York: Routledge.
- VanSledright, B., & Kelly, C. (1998). Reading American history: The influence of multiple sources on six fifth graders. *Elementary School Journal*, 98(3), 239-265.
- Wineburg, S. (1998). Reading Abraham Lincoln: An expert/expert study in the interpretation of historical texts. *Cognitive Science*, 22(3), 319-346.
- Wineburg, S. (2001). *Historical thinking and other unnatural acts: Charting the future of teaching the past*. Philadelphia: Temple University Press.

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Appendix A

First version - Dataset A

Odd-One-Out: The time of Explorers and Reformers

Names: _____ and _____

Nr. camera: _____

Your task

- Work in dyads
- You may **not** use your textbook or notes.
- Below you will find three lines with concepts or persons.
- Choose, in every line, one concept or person that is the odd-one-out.
- Explain what the other concepts or persons have in common.

1.	<u>memento mori</u>	carpe diem	<u>uomo universalis</u>	classical heritage
2.	Christopher Columbus	Bartolomeo Diaz	Vasco da Gama	Willem <u>Barentz</u> .
3.	Erasmus	Luther	Calvin	

1. _____ is the odd-one-out, because the other three _____

2. _____ is the odd-one-out, because the other three _____

3. _____ is the odd-one-out, because the other two _____

Question

A) A lot changed around 1500. Can you, using the concepts and persons above, describe what the change consisted of?

B) Can you give an explanation why many of the developments about 1500 occured in a (relative) short period of time?

Appendix B

Second version - Dataset B

Odd-One-Out: The time of Explorers and Reformers

Names: _____ and _____

Nr. camera: _____

Your task

- Work in dyads
- You may **not** use your textbook or notes.
- Below you will find three lines with concepts or persons.
- In each line you will twice choose a concept or person that is the odd-one-out.
 - Mind: You can choose the same concept or person twice, but then you have to give another argument.
 - Then you have to choose which one of these two is the final odd-one-out.
- In conclusion you have to answer the two questions on the back.
 - We will end the assignment with a whole classroom discussion.

1. reminder of mortality	seize the day	polymath	classical heritage
2. Christopher Columbus	Bartolomeo Diaz	Vasco da Gama	Willem Barentz.
3. Erasmus	Luther	Calvin	

1. _____ is the odd-one-out, because the other three _____

_____ is the odd-one-out, because the other three _____

2. _____ is the odd-one-out, because the other three _____

_____ is the odd-one-out, because the other three _____

3. _____ is the odd-one-out, because the other three _____

_____ is the odd-one-out, because the other three _____

Questions

Answer these questions after choosing the odd-one-outs above.

A) A lot changed in the era of 1500. Describe this change for (each of) the odd-one-outs.

Row 1: _____

Row 2: _____

Row 3: _____

B) The changes you described in question A occur in a relatively short period. What is the relationship between these changes, through which they occur at more or less the same time?

If you have finished everything, you can wait for a moment. The odd-one-outs and the questions will be discussed with the whole class.

About the Authors

Harry Havekes is a teacher educator of history and art history in the Radboud Teachers Academy, Radboud University Nijmegen, the Netherlands. His research focusses on how students learn and how pedagogies can stimulate historical thinking. His teaching for novice (art)history teaching and refreshment courses for expert (art)history teachers uses the pedagogy of Active Historical Thinking as a base for history teaching.

Carla van Boxtel is a professor of History Education in the Research Institute of Child Development and Education & the Amsterdam School of Historical Studies of the University of Amsterdam, the Netherlands. She also gives lead to the Dutch Centre of Social Studies Education. Her research focuses on the learning and teaching of history. I published on historical reasoning, the learning of historical concepts, heritage education and the potential of collaborative learning in small groups and whole-class discussions.

Peter Arno Coppen is a professor of Professional didactics and school subject development on language, culture and history in the Radboud Teachers Academy, Radboud University Nijmegen, the Netherlands. He publishes on domain-specific language and the use of language in general. He is a columnist for several Dutch journals and papers on language. His research focusses the use of language in society and in schools subjects.

Johan Luttenberg has recently retired from his job as a teacher educator for philosophy in the Radboud Teachers Academy, Radboud University Nijmegen, the Netherlands. His expertise is the normative professional identity of teachers in secondary education.

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Endnotes

¹ These concepts are sometimes also called ‘meta-concepts’. We think that ‘meta-concepts’ and ‘second-order concepts’ are interchangeable and we will use the term ‘second-order concepts’ in this article.

² For the complete prompt, see [example specialized language](#).