Chapter 6

GENERAL CONCLUSIONS AND DISCUSSION

1. INTRODUCTION

In this dissertation we wanted to contribute to theories on history learning and teaching and to the questioning research literature by investigating domain-specific aspects of questioning and the role of affective processes such as interest and emotions. In order to develop students’ ability to ask historical questions and to use student questioning as a meaningful learning activity in the history classroom, we wanted to gain more insight into how students can be stimulated to ask certain questions. Knowledge of how student questions are triggered and formulated can guide the development of lessons and learning activities to increase students’ question asking ability.

This chapter summarizes and discusses the main results of this dissertation. The research questions formulated in the introductory chapter will be briefly answered. Then we discuss these results and propose future questions for research on student questioning in terms of historical reasoning, prior knowledge and affect, connected to existing research literature. Finally, we present practical implications for the learning and teaching of history.

We conceptualized historical questioning using both domain-specific and general educational research literature. In two experimental studies we investigated which factors triggered student questions, the type and number of questions formulated, how questions are formulated, and what cognitive and affective processes underlie the formulation of questions. By studying these processes we tried to explain why and when certain types of questions are asked and unravel the process of questioning.

The questions we addressed were:
- How can we define the ability to ask historical questions?
- What is the effect of the type of introductory text on situational interest and on the type and number of questions students generate?
• What type of questions do students ask spontaneously while reading a historical introductory text and in what kind of thinking processes do questions originate?
• What type of questions do students ask after reading a historical introductory text and to what extent are these questions embedded in historical reasoning?
• Which questions do students consider important and interesting?

2. MAIN ANSWERS TO THE RESEARCH QUESTIONS

2.1 How can we define the ability to ask historical questions?

In order to elaborate on students’ ability in formulating historical questions we consulted review literature on student questioning and theoretical models that describe questioning processes. This resulted in a conceptualization of student questioning that connects domain-specific reasoning and affective elements such as interest and emotions to the cognitive aspects of questioning as they are described in the literature on student questioning.

From a domain-specific perspective, the ability to ask historical questions can be seen as being able to ask questions that are embedded in historical reasoning and aim at (further) understanding of historical phenomena (e.g., a historical situation, event or development). From this point of view a historical question is a product or a (potential) start of historical reasoning (e.g., causal or comparative reasoning) while using historical knowledge and trying to put into words a conflict or deficit in prior knowledge about historical constructs or phenomena. A historical question, for example, ‘Why did women and children work in factories?’, triggered when reading a text about the past, can guide the construction of an historical explanation. On the other hand, while constructing an historical explanation, a historical question such as ‘What was the difference between Germany and UK during the industrialization?’ may be the result of historical reasoning. Based upon literature on history learning we suggested that the ability to ask historical questions is shaped by knowledge about the type of questions one can ask, prior historical content knowledge, the ability to use historical meta-concepts and evidence, and the awareness that history is a (re)construction of answers to questions we formulate about the past. After reviewing the empirical research on historical questioning we concluded that authors agree on the importance of questioning and that there is still a need to describe this ability more explicit and connect it to learning processes.

From a cognitive perspective, the ability to ask a historical question can be seen as being able to ask a question out of an experience of a knowledge deficit or conflict, which can both be considered an experience of perplexity. This experience is ideally followed by the formulation of the question and an idea of an answer. In this way questioning can guide knowledge building and comprehension. In order to stimulate students to ask questions students should be guided in these questioning processes; 1) triggering perplexity, 2) formulating, and 3) having an idea of an answer. In educational practice it is still a challenge to create a learning environment that triggers and supports students to ask meaningful questions.

From an affective perspective, the ability to ask a historical question can be seen as being able to ask a historical question out of interest or emotion. Especially in the
domain of history, literature showed that affective responses such as interest and emotions can influence cognitive processing of historical content and give rise to meaningful questions. Interest in a domain can be triggered by, for example, controversial issues or addressing important life-themes. Emotive responses can reveal present-day thinking that needs to be addressed when students are reasoning about and questioning the past.

Summarizing, we defined the ability of asking historical questioning using a domain-specific, cognitive and affective perspective. We defined the ability to ask historical questions as ‘being able to ask questions that are embedded in historical reasoning. A historical question is a product or a (potential) start of historical reasoning (e.g., contextualization, causal reasoning, comparative reasoning, and argumentation) while trying to put into words a conflict or deficit in prior knowledge about historical constructs, phenomena or developments. Finally, a historical question can be embedded in affective processes such as interest or emotions that may drive further engagement in historical reasoning. In order to further underpin these conceptualizations we needed to study how questions are triggered, what different types of questions are formulated, and the underlying processes of questioning.

2.2 What is the effect of the type of introductory text on situational interest and on the type and number of questions students generate?

To answer this question we investigated questions students ask related to an introductory text about a new topic in the history classroom. In history textbooks for secondary education, it is common practice to introduce and to motivate students for a new topic through the use of an interesting introductory text. The effects of a narratvie, problematizing and expository introductory text on the situational interest of students and the number and type of student-generated questions, were compared.

We expected that students who read the problematizing and narrative text would show a higher situational interest and generate more questions than the group who read the expository text. We designed three different introductory texts that introduced the same historical topic (Industrial Revolution). We aimed at the texts differing on characteristics that affect situational interest. The narrative text tells a concrete and personal story about the Industrial Revolution using vivid details. In the problematizing text the same topic is introduced by contrasting past and present, comparing processes of industrialization and problematizing the consequences of industrialization. The expository text presents the same issues only without using vivid details or problematizing aspects.

Participants were 174 students in higher secondary education (16 years old). After measuring prior knowledge about the Industrial Revolution and students’ interest in History students were assigned to groups reading one of the introductory texts and instructed to write down questions about the Industrial Revolution.

Student-generated questions ($f = 729, M = 4.2$) were categorized in 1) higher and lower-order questions, in 2) descriptive, explanatory, comparative and evaluative questions, and in 3) emotive and non-emotive questions. We used these categories independent from each other, for example, a higher-order question could be a describing question at the same time. The analysis showed that students in all groups
were able to generate higher-order questions, which were mainly descriptive (64%) and explanatory (26%). Students generated a comparable amount of higher (47.5%) and lower-order (49.1%) questions. Questions that reflect emotions were generated, although these made up a relatively small portion of the total number of questions (13.2%).

The type of introductory text had a significant effect on the level of situational interest and type of questions, but not on the number of questions generated. Narrative and problematizing texts provoked more situational interest and more emotive questions than the expository text. Emotiveness and engagement appeared to be an important source of interest. Students who had more historical knowledge on the topic, who were more interested in History, and whose situational interest was more triggered, asked more questions.

Although emotiveness was an important source of interest, students formulated relatively few emotive questions. Apparently emotiveness did not always result in the formulation of questions. We argued that emotive questions could be questions students are most interested in and can be used by teachers to transform present-day and unschooled thinking into historical thinking. On the other hand, in cases where students asked higher-order historical questions, for example, explanatory questions, we wondered whether they were the result of historical reasoning or students just reproducing the kind of questions they had come across in their history lessons. We concluded that more research is needed into underlying processes of student questioning.

2.3 What type of questions do students ask spontaneously while reading a historical introductory text and in what kind of thinking processes do questions originate?

In the first study we experienced that a question itself does not reveal much about the underlying processes that take place while formulating questions and reading a historical introductory text. In the second empirical study we investigated processes underlying student questions in History. A process study was carried out to investigate the characteristics of students’ thinking when reading a historical introductory text. We considered these processes as a potential ‘onset’ for questions. We characterized students’ thinking processes and the onset for spontaneously asked questions while reading in terms of the verbalization of historical reasoning, (a lack of) prior knowledge and affect.

An introductory text was composed that contains narrative and problematizing characteristics that we considered important for triggering situational interest (engagement and emotions such as indignation), cognitive disequilibrium, and different types of questions. Thirty-three secondary school students were instructed to read the text and underline striking text segments. At the point of underlining, students were asked to verbalize their thoughts. Protocols of students verbalizing their thoughts about striking fragments in the text were divided into episodes. Each episode ($f = 251$) was analysed using a coding scheme in order to label each episode on the following four dimensions: 1) historical reasoning (contextualization, comparing, causal reasoning and argumentation), 2) prior knowledge (experiencing a deficit
GENERAL CONCLUSIONS AND DISCUSSION

in, a contradiction or a correspondence with prior knowledge), 3) affective processes (indignation, interest, astonishment, empathy or boredom), and 4) spontaneously-asked question(s) (yes or no).

In half of the 251 analysed fragments (episodes) students verbalized historical reasoning, mainly contextualization. Also in half of the episodes students expressed affective thoughts. Associations (43%) were more frequently used to verbalize prior knowledge than a knowledge deficit (23%) or a knowledge conflict (8%). The most frequent combinations of processes were 1) historical reasoning, association without affect (16%), 2) historical reasoning, association with affect (14%), 3) no historical reasoning, knowledge deficit and no affect (10%), and 4) no historical reasoning, no prior knowledge and affect (13%).

Students spontaneously asked 97 content-related questions. Most content questions were descriptive (\(f = 73, 57\%\)) and were asked while reading the narrative text that dealt with working conditions. In episodes with historical reasoning 44 (42%) content questions were spontaneously asked. Historical reasoning appeared an important process in which questions are embedded. But in many cases historical reasoning did not result in or was started by a question. Only 23% of the episodes that contained historical reasoning contain one or more spontaneous questions.

Although the verbalization of a knowledge conflict occurred less than the verbalization of a knowledge deficit or associations related to the topic of the text, a knowledge conflict appeared to be a strong trigger and was verbalized in terms of a question. Some of the questions were related to affective responses. For example the question ‘Why does she get a fine?’ or ‘Why did they have to work so hard?’ are questions showing indignation, responding to a situation described in the text (see chapter 3, par. 3.4.1) Thus, the results of this empirical study showed that, in addition to the experience of a knowledge deficit or conflict, which are considered important triggers of questions in the literature on student questioning, domain-specific reasoning and affect played a role in the generation of questions during reading of the historical introductory text. Although an experienced conflict between prior knowledge and the information in the text was not often verbalized, we think that expressions of indignation or astonishment about historical situations and events described in the text could also be regarded as conflict.

2.4 What type of questions do students ask after reading a historical introductory text and to what extent are these questions embedded in historical reasoning?

The final study draws on the second study and aims at deeper insight into students’ performance in asking historical questions after reading a historical introductory text. We were interested in the type and content of questions students formulated after reading and receiving the instruction to formulate questions that they would ask in a lesson that introduces the Industrial Revolution. From a curriculum perspective it is important to know to what extent students’ questions were embedded in historical reasoning and connected to important topics in the curriculum.

For this study we used the theoretical framework, sample, data collection method, introductory text and coding schemes from our second study. Audio recordings
of 33 students formulating questions were transcribed. Students formulated 117 questions that were coded on content by using text themes and type (descriptive, explanatory, comparative, and evaluative). In order to describe the processes that underlie each student question we used protocols of students’ utterances before and during formulating a question and their answers to the prompt ‘are you able to give an answer to this question?’ All utterances while formulating a question and answering on the prompt were defined as a question episode.

We were especially interested in to what extent questions asked after the instruction to ask questions were connected to historical reasoning. We coded three dimensions of underlying processes: 1) historical reasoning (contextualization, comparing, causal reasoning and argumentation), 2) prior knowledge (experiencing a deficit in, a contradiction or a correspondence with prior knowledge), and 3) affective process (indignation, interest, astonishment, or empathy). After coding we described prior knowledge and affect that underlie 1) questions embedded in historical reasoning and 2) questions not embedded in historical reasoning.

Questions formulated by students were connected to working conditions, the industrialization process, and the narrative about Friedrich Engels. Questions about working conditions connected to significant curriculum issues; for example, the development of ‘the social question’ and the different political answers to this development. Furthermore, an important part of the questions dealt with general aspects about the Industrial Revolution era, revealing the knowledge deficits of students and the need to have more clarification about the context of industrialization, such as duration, time, places, causes and important individuals and inventions. Most questions were descriptive (50%) and explanatory (40%). Almost no comparative and evaluative questions were formulated.

The 117 question episodes were coded on student verbalizations of historical reasoning, prior knowledge and affect. Almost 40 % of the questions were embedded in historical reasoning, mainly contextualizing and causal reasoning. With most of the questions students formulated, prior knowledge verbalized by students played an important role (84%). With regard to prior knowledge students explicitly expressed a knowledge deficit (31%), conflict (24%) or an association (29%). With regard to affect, half of the questions were embedded in an affective process, mainly interest and indignation. When we looked at the combination of processes that are characteristic for episodes in which questions are embedded, it appeared that questions embedded in a combination of no historical reasoning, knowledge deficit and no affect occurred most (15%), followed by the questions that were embedded in historical reasoning, association and no affect (12%).

Question episodes that contained historical reasoning showed that question generation was related to historical reasoning when students tried to build a historical context for an event or situation described in the text, when they used prior knowledge to think of possible explanations or when they approached a historical interpretation critically. These question episodes contained questions as ‘Was life really as grey as described in the text?’ or ‘What actually started the Industrial Revolution?’ (see chapter 4, par. 3.3). Students also showed uncertainty about the quality of their historical question, showing the awareness that in history a certain type of question is formulated.
Thus, in line with the study focusing on spontaneous questions students ask during reading, questions that students ask after reading the text and the instruction to ask questions, questions are mostly asked in situations in which students experience a knowledge deficit. But also a considerable amount of questions is embedded in historical reasoning and affective processes.

2.5 Which questions do students consider important and interesting?

From a student perspective it is important to consider how student questions originate and what they consider interesting and important questions. After students had formulated their questions (in the study described above) they were asked to indicate their most important and interesting question. The motivation for these questions was coded with categories describing a knowledge deficit, better understanding, actuality, affect, overarching question or importance for the test.

For important questions, an ‘overarching question’ was the most given motive. Half of the questions were selected as important questions for reasons that reflect a curriculum perspective (e.g., important topics and historical questions that can be used in history lessons), and about half of the questions chosen as most important reflected more personal experiences or interests such as a knowledge deficit, affect or interest in actuality. Motives for regarding a question as interesting were interest (57%) or because of actuality (13%) or a need for better understanding (13%). Finally, we found that students showed more historical reasoning while motivating their choices for most important question than while motivating their choices for most interesting question.

2.6 Most salient findings of this dissertation

Taking all three empirical studies together we think the following results are most salient:

- Students in secondary education were able to ask different types of historical questions and higher-order questions after reading a historical introductory text.
- Narrative and problematizing historical introductory texts triggered a higher situational interest than the expository text and more emotive questions. The three types of texts triggered the same amount of questions.
- We found a positive relationship between prior knowledge, interest in History, situational interest, and the number of questions generated by students.
- Spontaneous questions while reading were asked in cases where students expressed a knowledge deficit. 42% of content questions were asked in episodes with historical reasoning and can be seen as the start or the result of historical reasoning.
- Most questions were triggered by a knowledge deficit and to a lesser extent by a conflict or association.
- A substantial number of questions after reading were embedded in historical reasoning, in particular in the attempt to build a historical context.
• A substantial number of questions after reading were embedded in affective processes.
• Students formulated questions that are meaningful from a student and curriculum perspective.

3. MAIN THEMES, DISCUSSION AND QUESTIONS
FOR FURTHER RESEARCH

In this section we discuss the main themes of this dissertation: 1) historical questions as a component of historical reasoning, 2) prior knowledge related to student questioning, and 3) affective aspects of student questioning. For each theme we compare the findings of the three studies and report how these findings connect to existing literature. Finally, we formulate future questions for research on student questioning as a component of historical reasoning.

3.1 Historical questioning as a component of historical reasoning

In this paragraph, we compare the results of each of the three studies with regard to the conceptualization of historical questioning as a component of historical reasoning. Second, we discuss the use of different classification of student questions. Finally we suggest direction for further research on question levels, the role of epistemological beliefs and teacher support of questioning.

We started this dissertation with our provisional definition of the ability of asking historical questions, which is being able to ask questions that are embedded in historical reasoning. A historical question is a product or an initiator of historical reasoning (e.g., contextualization, causal or comparative reasoning or argumentation) while trying to put into words a conflict or deficit in prior knowledge about historical constructs, phenomena or developments. Finally, a historical question can be embedded in affective processes such as interest or emotions that may drive further engagement in historical reasoning (Van Drie & Van Boxtel, 2008; Schreiber et al, 2006). Based on our empirical results we conclude that the types of historical questions students ask are mainly embedded in an attempt to contextualize, e.g., trying to construct a historical context for the situation or event described in the text. We think this is important, because contextualizing is seen as a foundation for further historical reasoning (Wineburg, 2006; Van Boxtel & Van Drie, 2012).

Contextualization was combined with using prior knowledge. This probably explains why students asked mainly descriptive questions (57%) when asking for more information out of a knowledge deficit. On the other hand, reading an introductory text can give rise to historical reasoning without a question being asked. With regard to the finding that historical reasoning occurred quite often during reading of the text (Study 2, 48%), most of the time this reasoning does not result in the asking of questions.

Secondly, research in student questioning presents a wide variety of different question categories (Chin & Otero, 2009), but also often uses the distinction between higher and lower-order questions. In this study we added more domain-
specific categories such as descriptive, explanatory, comparative and evaluative questions and emotive questions. Higher-order questions are questions that invoke long answers and deep reasoning. From this perspective, particularly higher-order historical questions would have the potential to initiate historical reasoning. We found that students, after being triggered by an introductory text and dependent on their prior knowledge and interest in History, were able to ask higher-order historical questions, which can be the start of a historical reasoning, but also formulated many lower-order questions. As a result of our domain-specific approach and attention to the role of affective processes, the studies in this dissertation add the distinction between ‘emotive’ and ‘non-emotive’ questions to the existing question categories. Emotive questions reflected more present-oriented reasoning than historical reasoning.

Based on our categorization of questions in the first study we assumed that not only higher-order questions can be valuable for historical reasoning. Although we think that lower-order questions and emotive questions that reflect unschooled historical thinking may not be questions directly suitable for inquiry, we nevertheless believe that if students are supported in transforming these questions into historical inquiry questions, these questions could be a proper starting point for inquiry and reflection on the, often present-oriented, reasoning that underlies most of these questions. We also assumed that asking a higher-order question does not always reflect higher-order thinking as students could ‘parrot’ those questions based on their experience with the teacher or the textbook. For example, in the third study we found that questions embedded in historical reasoning were mostly connected to an attempt to contextualize a phenomenon discussed in the text. And contextualization often raises more factual questions about the time, location and social context. Although such questions can be considered lower order questions, they are embedded in historical contextualization, an important component of domain-specific reasoning. Thus, we think this distinction between higher and lower-order questions should be supplemented with more domain-specific categories. Further research could investigate whether our classification of different types of historical questions could be used to make students more aware of the type of questions they ask and can ask. It would also be interesting to know whether this classification is useful for questioning in other tasks, such as working with historical sources or performing a historical inquiry.

Finally, in this dissertation we did not pay attention to epistemological beliefs. However, we think that questioning can influence and also be influenced by epistemological beliefs. Further research could be aimed at how teachers can use student questioning as a pedagogical strategy in order to make visible and recognize students’ (historical or present-oriented) thinking (Monte-Sano, 2011; Barton 2004). Furthermore, whether encouraging students to ask questions affects their thinking about the discipline could also be investigated. History is often regarded as learning facts (Maggioni, VanSledright, & Alexander, 2009), whereas questioning could be a start of seeing history as an interpretation of the past, as an answer to the questions we ask. Student questioning could be a pedagogical approach to making students’ thinking visible and to helping teachers design lessons that emphasize the awareness that history is a (re)construction of answers to questions we formulate about the past.
Research indicates that students (and teachers) tend to see the past as a given reality (Maggioni, VanSledright, & Alexander, 2009) and that they have fewer developed epistemological beliefs about historical knowledge. If the focus of teachers and students were on questions, it could open up possibilities of knowledge building (Nebber, 2008) and, in case knowledge and ideas are questioned, a more critical approach towards historical interpretations (see Ikuenobe, 2001). For example, investigation could be done into how students reason historically when they are instructed to formulate knowledge-building questions or questions that critically question historical interpretations.

Further research on student historical questioning could aim at researching how teachers can trigger students to ask historical questions that are meaningful from both a curriculum and student perspective. The effects of other types of introductory methods or classroom activities on the willingness to and ability in asking historical questions could be further investigated. It is important for teachers to know how they can provide space for student questioning and the learning goals of the history curriculum simultaneously. Teachers can help students to formulate questions based on their verbalization of and reasoning with prior knowledge and information from texts. Teachers can stimulate students to express their reasoning by formulating questions, and thus practise ‘specifying their ignorance’. Further research could investigate how teachers can support questions while and after reading (conflicting) sources, while using arguments or other learning activities that aim at historical reasoning.

3.2 Prior knowledge related to questioning

Based on the outcomes of our first study we suggest that a higher prior knowledge about a topic results in a higher number of questions. A higher number of questions could be the sign of a more active use of (prior) knowledge. Students with more prior knowledge may ask more questions because they compare new information with what they already know or use their knowledge to contextualize.

However, while reading, spontaneously formulated questions where mainly connected to a knowledge deficit and appeared in episodes without much verbalization of prior knowledge. This could mean that students with prior knowledge do not use this knowledge to formulate questions while reading and only verbalize prior knowledge in the form of associations.

After students had been instructed to formulate questions after reading we found that a knowledge deficit and associations were verbalized most often, and questions were also accompanied by a knowledge conflict. Thus, explicitly giving students the opportunity to ask their own questions can support students in verbalizing their experience of a knowledge deficit, conflict or prior knowledge.

Further research on the relationship between prior knowledge and questions could investigate the effect of different reading goals (understanding, criticizing, problem solving) before reading the text. Different reading goals and task demands could influence the use of prior knowledge and the type of questions formulated (Otero, 2009). We assume that students need more support in verbalizing a knowledge conflict or deficit and recognizing problems while reading (problem
finding). Furthermore, an experience of puzzlement and wonderment while reading could also be resolved by using prior knowledge.

Further research could also continue to explore differences and communalities in the ability to ask historical questions between students with different levels of prior knowledge. Because of the small sample size in this study we were not able to draw conclusions about these differences. However, based on our description in study 2, it seems that students with more prior knowledge and interest showed more associations and historical reasoning while formulating questions, whereas students with low prior knowledge and interest experience a knowledge deficit more often. Maybe some questions should be answered first (by themselves) in order to trigger more reasoning and the formulation of other questions. Students of different levels in prior knowledge could also work on their ability to ask questions by peer questioning (for a recent study see Cho, Lee & Jonassen, 2011). In general, it is important that students get more opportunity to practise asking questions more independently and go beyond knowing what they do not know (see also Van der Meij, 1990). Questioning in a learning context should drive knowledge building and understanding, and this seems to be not only a cognitive process. The ability of questioning is also a (critical) attitude and needs a supportive environment.

3.3 Affect as a trigger of questioning

The main focus of most of existing research literature on questioning is on cognitive processes. In this dissertation, we were also interested how affect such as interest and emotions, connected to the domain of history, could trigger questioning.

We found that a higher situational interest resulted in more questions. In addition, emotiveness and engagement were an important source of situational interest. Thus, triggering interest with a narrative or problematizing introductory text containing general life themes and moral issues can be a strategy which could be adopted to stimulate students to formulate their own questions. This is an important finding, since literature on student questioning shows that students are not inclined to ask questions spontaneously during lessons in school (Good et al., 1987).

After studying underlying processes while reading we found that in half of the cases where students stopped reading they verbalized affect (indignation, interest, astonishment, empathy and boredom). This supports our idea that the disequilibrium students experience, and which is often considered an important trigger for questions (Otero & Graesser, 2001), is not only cognitive, but also affective. Events or situations described in the text conflict with what students think is correct or normal. Astonishment and indignation - when combined with the attempt to contextualize - can also develop into a question, although these questions often contain presuppositions reflecting a judgment or a present-oriented perspective. Although indignation and astonishment occurred in a third of all episodes, these emotions did not give much rise to the asking of questions. Therefore, it seems important that students are stimulated and supported to formulate questions out of such affective experiences.

The third study confirmed our finding that half of the questions were embedded in affect. However, in this study few questions were embedded in both affect and historical reasoning while most questions embedded in affect lacked historical rea-
soning (40%). In line with these findings students could become more aware of the idea that you can ask historical questions (initially) triggered by affect. Emotions such as interest, indignation and empathy play an important part in motivating one’s self for a topic in history and asking questions that you consider to be interesting. A state of interest triggered by a controversial or sensitive topic in history (Barton & McCully, 2007) and formulated into a question can combine student motivation and cognitive learning goals (see also Ainly, 2006). Almost every historical topic in the curriculum has a sensitive issue one can consider while giving the task to formulate questions. Questioning triggered by affect also seems interesting because students can ask questions they are interested in and it gives the teacher the opportunity to see to what extent students come up with present-day thinking or lack the attempt or ability to contextualization.

Further research could investigate how student questioning as a learning activity can keep motivating students and how questions can be a sign of (sustained) interest in a topic (Hidi & Renninger, 2006). Another aspect that could be investigated is whether students with more interest have fewer problems with formulating questions (see; Renninger, Ewen & Lasher, 2002). Furthermore, it could be worthwhile to investigate students’ interest in history by investigating questions they ask outside the history classroom. Research in science suggests that questions asked on ‘ask-a-scientist’ websites or in popular television shows or magazines can be helpful in giving students a voice in the curriculum (Cakmakci et al., 2011; Baram-Tsabari et al., 2009, and Baram-Tsabari & Yarden, 2005). Interest in history and the questions students ask can be dependent on age, gender and the actuality that surrounds students. Research could investigate how teachers could use this ‘out-of-classroom interest’ and questions for motivating students for classroom learning activities.

Summarizing, further research could investigate the following questions: what are the instructional strategies of history teachers that trigger student questions and create a positive questioning climate? And what are the differences between students and how can teachers deal with difference in student ability in asking historical questions? Furthermore, we suggest research into the role of prior knowledge, epistemological beliefs and how this affects questioning in history. Finally, how can student questions about the past that students are genuinely interested in, be investigated and be used in the history curriculum?

3.4 Research methodology

Finally, the studies in this dissertation contributed to research on student questioning by exploring a methodology that combines thinking-aloud and a signalling method. We also developed a coding scheme that combined cognitive with domain-specific and affective aspects of questioning. Instructing students to underline text segments and explain why they underlined them revealed what segments were striking to students and allowed us to register affective reactions during reading and thus gain more insight into how situational interest could trigger questioning.

In our analysis of protocols with student verbalization we chose to divide our data units into episodes while reading (2nd study) and into question episodes after read-
ing (3rd study) in order to carefully describe these processes. This resulted in an analysis of underlying processes and spontaneous questions asked in episodes in the second study. In the third study we took a slightly different perspective by taking the questions formulated as a point of departure and analyzing the question episodes connected to these questions, while using the same coding scheme. We were more able to connect processes to questions asked in study 3 than we were in study 2, because in study 3 we explicitly instructed students to formulate questions. Further research could aim at an analysis that connects questioning processes in the reading and questioning phase. Future research could improve this online method and vary in instructions and interview questions to answer other research questions. The coding scheme could also be used for other research settings that explore underlying processes, for example the process of questioning during argumentation and (cooperative) learning tasks (see for example, Chin & Osborne, 2010).

4. PRACTICAL IMPLICATIONS

In general, our procedure of triggering student interest and questions by offering an engaging historical introductory text could be a useful practical approach for history teachers in secondary education. Narrative or problematizing texts that provoke affective reactions such as interest, indignation or empathy can be used to engage students in a new topic in history by triggering questions that reveal their knowledge of and interest in this topic. Teachers can adjust texts and use actuality or narrative and problematizing elements, which is sometimes already done in history textbooks. Students’ attention can be captured by important life themes and problems such as justice and injustice, wealth and poverty, which are still a part of contemporary society.

In cases where students are not used to formulating questions, teachers could model by explicitly posing questions about historical phenomena and stimulate students to do the same. In this way teachers can not only make students aware of the different types of questions they can ask and use meta-concepts in history to trigger student questioning that is aimed at historical reasoning, but also show that being able to formulate questions you are genuinely interested in is an important ability and accustom students to asking questions. Emotive questions can be used in history lessons to transform present-day and unschooled historical thinking into historical thinking by giving students more historical knowledge and different perspectives on the past. Reflecting with students on the variety of questions that they ask and that can be asked, could contribute to students’ knowledge about the different types of questions that can be asked in history and could assist teachers and students in developing the ability to ask historical questions.

Based on our findings after studying the underlying processes of questioning we can recommend that teachers support students in being explicit about their thoughts regarding the content they read or listen to in history classrooms and use a similar procedure as we have done in the second and third study. In this way students have space to think about issues they could formulate a question about and, the other way around, the teacher is informed about the historical reasoning, prior knowledge and interest of the students. Teachers need to create a safe classroom environment that
encourages students to share their thoughts with their peers and the teacher in a questioning dialogue (Dillon, 1990). With this information a teacher will be better equipped to judge the quality or relevance of a question. We also found that students verbalized historical reasoning while motivating their choice of their most important question. In their view an important historical question is an overarching question that covers a lot of historical content. Students were able to point these out and recognize that these questions were important. Students could be instructed to discuss the importance of their questions and exchange their questions within groups or ask each other questions. Self-questioning while reading is not only important for historical reasoning it also proves to foster text comprehension (Rosenshine et al. 1996; Janssen, 2002), and is also helpful for poor readers (for a recent study see Berkeley et al., 2011).

When students experience difficulty in formulating a question, teachers can support them with problem finding or helping to find a knowledge deficit or conflict. In our study we found that students verbalized associations and affect but did not always take the opportunity to formulate a question while reading. When explicitly instructed to ask questions, each question is meaningful, either or both from a curriculum and a student perspective. A student question that is not embedded in historical reasoning can be meaningful from a student perspective because of the affect (interest, indignation) that underlies the question.

Concluding, teachers could help students with formulating meaningful questions based on historical reasoning, a need for information, a cognitive conflict or interest. By doing this, history teachers could realize a classroom atmosphere in which each student question can be meaningful and students are supported in developing their ability to ask historical questions. Student questioning can be meaningful for history education, provided that teachers know how to trigger questions and are aware of the underlying processes of a question.