Writing-to-learn instruction in L1 and L2 as a platform for historical reasoning

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Abstract: Writing-to-learn benefits have been explored in various educational settings. However, little research has been done on how a WTL approach in combination with two different languages of instruction can influence historical reasoning learning. The main objective of the present study is to examine the effects of a particular WTL instruction in two languages (L1 is Russian and L2 is English) on historical reasoning learning outcomes. The paper presents the results of a case study of first year students of the History Faculty. Learners received small-group L1/L2 instruction by a team of two teachers in a Logic module which included evidence based direct instruction and a set of WTL activities. The instruction explicitly targeted argumentation skills such as argument structure, validity of an argument, fact vs opinion and using documented historical sources. The Critical Thinking Analytic Rubric was used for both pre and post-course metacognitive competencies assessments while argumentation skills were assessed with the help of a new developed rubric. The results showed various patterns of positive change in all the categories and seem to support the hypothesis that this approach to writing-to-learn in L1 and L2 leads to successful acquisition of disciplinary knowledge and skills.

Keywords: critical thinking, historical reasoning, writing-to-learn, L1/L2 instruction, argumentation skills

Writing-to-learn (WTL) has been heavily theorized and researched within the Writing Across Curriculum and Writing In Disciplines studies. It is an effective tool with benefits including building on new knowledge, transforming information into knowledge, improving cognitive skills. Its positive effects on learning outcomes have been widely explored in various educational settings (MacLeod, 1987). WTL has been increasingly recognized as a core educational approach in the field of higher education worldwide and is often used to teach students disciplinary writing genres as well as specific domain patterns of thinking and arguing. This approach is different from the writing-to-produce framework in which teaching/learning focuses primarily on creating the final written product rather than learning through writing.

Little research, however, has been done on how thinking and arguing are influenced by the language used in the writing activities. Nowadays, university students increasingly find themselves in an international, bilingual environment having to use their native (L1) language and a foreign language (L2). Students are required to successfully use both languages to achieve high academic success. However, either lack of instruction in English or increasing dominance of English instruction as means of instruction might result in poor academic performance and lack of motivation.

The main aim of the present study is to evaluate the effect of WTL with two languages of instruction (English and Russian) on the historical reasoning competence of first year history students. The study described in this paper aims at improving students' competencies required for historical reasoning. To this end, a special course of Logic for first year History Department students was developed, which combines WTL instruction and reasoning training as a basis for developing the overall historical thinking ability. The present study also had a goal to examine what critical thinking components would develop within the course along with the development of argumentation skills (as a key historical reasoning component).

To fulfill the stated goals, this paper raises and addresses many issues related to WTL approach in academic settings. First, the theory of WTL and historical reasoning are reviewed. Popular approaches are compared with an aim to build a more comprehensive framework for teaching disciplinary specific reasoning to be applied in the context of Logic teaching to students of a History Faculty. Secondly, the role of language of instruction is discussed. The case of a course for undergraduate students is then presented with the framework used to teach historical reasoning in the classroom. Writing-to-learn in L1 and L2 is suggested as a successful approach to teaching and learning of historical reasoning.

1. Historical reasoning theory and writing-to-learn approach

1.1 The nature of historical reasoning

Teaching and learning history became an area of American and British educational researchers' interest in 1990s (Carretero & Voss, 1994). Since that time, a number of cognitive studies have been carried out which focused on reasoning and evidentiary support from history, as well as on expert-novice historical reasoning skills. The research in the field was enriched by further socio-cultural studies (Barton, 2001). Overall, the USA and the UK have been pioneers and set the main trends for further research undertaken by scholars in other countries.

The challenges associated with historical reasoning teaching for high school students are multifaceted. For example, in the Netherlands one line of research focuses on how students understand reasoning about history. Such investigations focused on historical questions as an element of students' historical reasoning competencies and shared historical knowledge and understanding of historical events in the Dutch history. Another pedagogical line of Dutch research includes studies on relevant teachers' competencies as well as effective teaching and learning assessment (Van Drie, 2005).

The term historical reasoning is a central concept in various pedagogical models offered by researchers. It is generally defined by many educators as a set of reasoning competencies that students majoring in history should master. Although, the term historical reasoning skills is sometimes used in contrast to the term knowledge of history content (historical names, events, etc.), most educators agree both competencies should be equally developed. For example, according to Van Boxtel and Van Drie (2008), historical reasoning is defined as a combination of knowledge of the past as well as an ability to interpret and link this knowledge to present day context. This definition is rooted in socio-constructivist theories of learning which emphasize the language-mediated nature of knowledge construction (Brown, Collins, & Duguid, 1989). Historical reasoning should also be verbally present in both speaking and writing activities of students (Van Boxtel & Van Drie, 2008). It means that information is transformed and new meanings and interpretations appear in the course of discussion over an issue or in the process of writing an essay.

Thinking and arguing in history are the basis for a number of further teaching models and frameworks and a number of effective models have been developed to teach history. In the USA, at the institutional level, there have been the development of history standards by the National Center for History in the Schools at the University of California, which define five major competencies: chronological thinking, histori-cal knowledge, historical analysis and interpretation, historical research capabilities, historical issues-analysis and decision-making. There has also been the development of a rubric to assess students' skills and knowledge in major historical themes, chrono-logical periods, as well as ways of knowing and thinking about history, namely

historical knowledge and perspective, and historical analysis and interpretation (Assessment Resource Centre for History).

Similar to the American approach is one taken by "The historical thinking project", a Canadian project which promotes a more global view on students' literacy and offers a successful model of the components of historical thinking competence. The six key components (establishing historical significance, using primary source evidence, identifying continuity and change, analyzing cause and consequences, taking historical perspectives, understanding the ethical dimension of historical interpretations) are closely interrelated and allow a student to think historically. Taken altogether they constitute historical literacy which means understanding history through active engagement with historical texts.

Researchers from domestic systems of education have also contributed to successful teaching of historical reasoning. To illustrate, Van Boxtel and Van Drie (2008) constructed the most comprehensive theoretical framework for analyzing historical reasoning from an educational perspective which also received strong empirical support. The framework includes six competencies, namely asking historical questions, using sources, contextualisation, argumentation, using substantive concepts, and using meta-concepts. In the course of history education every student should be able to process information about the past by describing, comparing, or explaining historical facts. All the components often (though not always) co-occur in the process of reasoning (Van Boxtel & Van Drie, 2008). The authors point out that historical reasoning can be best enhanced within the process of collaborative construction of multimodal representations, document-based writing experience and the use of class discussions.

However, until recently, there has been little grounded research on teaching historical reasoning to university students in Russia. This is due to the fact that teachers themselves lack the ability to instruct reasoning in addition to the existing curricular not systematically incorporating higher-order cognitive training, which are crucial prerequisites for promoting critical thinking in high school (Ennis, 2003).

Over the last twenty years, several studies in argumentation and reasoning have been conducted, though no studies have aimed at issues addressing how students understand and reason about history and what effective approaches and instruction can be applied to enhance historical reasoning skills. Overall, the teacher can foster historical reasoning by using various approaches. However, the instruction mode and evaluation of particular skills progress requires further research.

Within the framework of the present study, historical reasoning is related to skills required to critically work with texts and evidence with the aim of constructing evidence-based arguments. Our understanding of historical reasoning as a sub-concept of the broader concept of reasoning is in line with that of Van Boxtel and Van Drie (2008). In other words, it is a more specific component of reasoning.

Although, we agree with the idea presented by Van Boxtel and Van Drie (2008) that all the historical reasoning components (asking historical questions, using sources,

contextualization, argumentation, using substantive concepts, and using meta-concepts) should be developed, in our study we focus only on one sub-skill of argumentation, which is a fundamental one in historical reasoning (Voss & Means, 1991).

Argumentation skills are the area of weakness for many students who tend to make their claims but fail to provide proper arguments (Van Boxtel & Van Drie, 2008). Thus, we developed a particular teaching framework that fosters argumentation skills of junior students, thereby encouragings them to strive for better quality of historical reasoning. The present study draws on the results of argumentation learning within the developed course which might become the basis for further successful development of formal reasoning competence within the teaching framework of other subjects.

1.2   Research on writing-to-learn: a mode to develop historical reasoning skills

There is strong evidence that thinking skills are closely connected with writing skills (e.g. Tynjälä, 2001). This idea is reflected in the writing-to-learn approach (as opposed to writing-to-produce) which seems to be the main tool to develop discipline specific knowledge and skills (Delcambre & Donahue, 2012; Russell, Lea, Parker, Street & Donahue, 2009; Tynjälä, 2001). Some studies also support the idea that writing is the major tool to engage students in discipline specific reasoning (Counsell, 1997; McCarthy Young & Leinhardt, 1998). This idea means that students become active participants and meaning-makers in the educational process (Boscolo & Mason, 2001). Researchers have also proved the effectiveness of the incorporation of writing tasks as the created texts become available for further critical feedback and reflection (Van Drie, Van Boxtel, Jaspers, & Kanselaar, 2005).

Writing has been widely incorporated into teaching and learning history. For example, essay writing is a powerful enhancer of historical reasoning, particularly when it is based on evaluative inquiry questions (Van Drie, Van Boxtel & Van der Linden, 2006). Yet, in the context of Eastern Europe (including Russia) there has been no systematic teaching of writing (Kruse, 2013). Surprisingly, a student's writing ability has been linked to his/her knowledge of the information and facts rather than to purely writing skills (Harbord, 2010). In most educational settings in modern Russia writing-to-produce is the dominanti approach. This means that a majority of teachers prioritize the written product quality (e.g. essay, research paper) and tend to neglect the potential of writing as a productive activity, which fosters critical thinking and reasoning skills.

1.3   Bilingual writing instruction for historical reasoning development
The subject of numerous discussions at the European Association of Teaching Academic Writing (EATAW) Conference 2013 (http://www.eataw2013.eu) was the issue of multilingualism. It means that students should equally develop their language skills in L1 (native) and L2 (English) in the context of a bilingual academic environment.

However, there is little evidence of systematic bilingual writing instruction within Eastern European academia. Some successful examples are mostly related to teachers who have experience of working in an American University and who import the writing-to-learn approach to their courses (Harbord, 2010; Delcambre & Donahue, 2012). Harbord (2010) explains this fact by providing a broader historical context. Before the break down of the USSR, education systems were very similar in its member countries. Writing skills equaled note-taking skills which were related to lectures or extended reading in the discipline. It was assumed that writing skills naturally develop along with thinking skills of students in the course of university studies (Kruse, 2013).

Academic literacy of students is an educational goal and mastering disciplinary patterns of thinking is its integral part (Murrey, 2010). When students undertake a course run in English (in their local university or while studying abroad), they need to learn how to apply their thinking and arguing skills to the new non-native language educational setting. In many cases non Anglophone universities offer their students courses both in the local language as well as in English which has a status of lingua franca. It seems that rich experience in the use of both native and English languages might lead to fostering discipline specific skills including argumentation.

Historians agree that any argument should be made explicit and should have a central line upon which the evidence content should be formulated. However, getting students to follow the instruction and implement the central line of argument is not easy due to the fact that the argument is rarely fully formed and instead students become preoccupied with the process and structure of the writing itself. Successfully following the central line, writing tasks can substantially promote historical reasoning (Leinhardt, 2000) and integration of L1 and L2 writing experience might help students study productively in a parallel language academic environment.

Furthermore, it seems that reasoning skills and the ability to develop arguments should be developed within the process of writing when a student has an opportunity to create the central line of argument and to trace it back through the process of writing. If students are given an opportunity to practice building arguments in both languages (native and English) in the course of writing in L1 and L2, reasoning skills might become transferable. It means that this approach might also lead to higher overall critical thinking skills.

2. Writing-to-learn instruction in L1 and L2 as a platform for historical reasoning: A case study of students from the National Research University Higher School of Economics

2.1 Project description and objectives

Today's students are expected to have strong cognitive and metacognitive skills in order to be successful in their academic life and future employment. Traditionally, history skills are developed with the help of textbooks and are followed by oral or written

activities, but the growing success of the writing-to-learn approach can create more opportunities for students to master relevant competencies.

The present study is part of a broader project which started with the development of the course aimed at enhancing historical reasoning and reports on the results of a particular type of teaching of historical reasoning, i.e. with the writing-to-learn and into two languages. The course in Logic was specifically developed for 1st year history students and was one of the foundation course components in Philosophy. The course was developed as a platform that might facilitate their future learning in the discipline as well as incorporate development of historical reasoning in the curricula on a regular basis.

The course was developed in 2013 and launched for the students of the History Faculty at the National Research University Higher School of Economics, St. Petersburg, Russia. The course was carried out in the form of classroom-based learning with the focus on argumentation skills in L1 and L2 as a way to promote historical reasoning skills.

Course framework and design

The project consisted of two stages. The first stage was the development of a new course based on our theoretical underpinnings grounded in the writing-to-learn approach and historical reasoning. It aimed at helping students improve their writing argumentation skills. Particular attention was given to the incorporation of both Russian and English languages as means of instruction. The second stage consisted of conducting 16 weekly classroom-based, teacher-led sessions, each followed by a writing component devoted to development of argumentation skills (see Appendix A). In total, the students undertook 8 analytical argumentation-based lectures and 8 seminars supported by a substantial writing component (Figure 1).
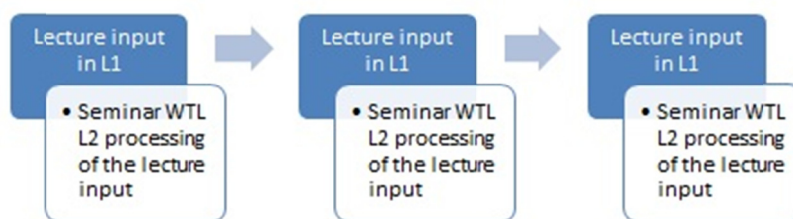

Figure 1. Writing-to-learn course component.

Lectures aimed at making students informed of the theoretical issues were conducted in Russian. In contrast, seminar sessions aimed at developing practical skills of reasoning and argumentation, provided students with writing-to-learn and reading-into-writing experience in English. Appendix A shows the instruction details of our course based on development of argumentation skills of historical students.

Each weekly session consisted of a lecture and a seminar with one particular argumentation skill or sub-skill in focus, and they had the following structure. First, students participated in a lecture facilitated by the teacher aimed at developing a particular sub-skill and introducing students to new concepts and knowledge. Then, students worked during a seminar where they read academic texts, studied argumentation examples, and undertook writing tasks to practice the highlighted sub-skill.

Having completed the Russian lecture session, each student was 'switched', with the help of proper instructions, to the argumentation learning mode in English. In other words, students were instructed to reflect on the new knowledge and concepts in reasoning and take notes on argument building patterns. Students were encouraged to develop individual argumentation threads while writing in English.

For example, while learning to identify an argument in a research article at a seminar, students studied the given English text and identified the argument components as well as examples, descriptions, or background information (Appendix B). Then students were instructed to reconstruct and write the authors' argument in one sentence. All completed sentences were then discussed in small groups in order to help students reflect and take into account all the important aspects. If a student successfully completed the activity, he/she was directed to the next sub-skill. Otherwise, they were encouraged to work again with a new research article, reflect on the mistakes, and reconstruct a clear argument thread before proceeding to the next sub-skill.

The course did not include any instruction on English as a foreign language as promoting language competence was not a goal of the following study. The course design included an intensive and regular writing-to-learn component only within the framework of English seminar sessions while Russian lectures served to provide students with initial information and logic concepts.

For the duration of the course, we also expected changes in metacognitive skills (see Instruments, Critical Thinking Analytic Rubric for detail) of students as development in historical reasoning might lead to higher metacognition. Better understanding of what metacognitive skills were developed during the course might provide more helpful insights into the nature of historical reasoning and its components.

As a result, by the end of the course, students were assessed on three criteria: historical reasoning learning outcomes in L1/L2, overall metacognitive skills development with the help of the CTAR tool, and transferability of L2/L1 argumentation skills (see 2.3.2). The students were expected to submit a short written paper in L1 and in L2 and demonstrate their argumentation skills. The students had writing experience

primarily in the English language (L2) and the task to submit an essay in Russian was given with the aim of seeing whether argumentation skills in L2 were transferable to L1.

2.2   Method

Participants and Procedure

The participants in the project were Russian students taking the existing Logic course for which the new teaching methodology described in the present study was developed. The two month course was run in the 2013 fall semester on a weekly basis for 46 undergraduate Russian students majoring in History. There were two groups A (22 students) and B (24 students) and the male/female ratio was 47,8% (22 girls) to 52,2% (24 boys) aged 17-18.

The new program was developed by a team of two teachers (English for Specific Academic Purposes instructor and a teacher of Philosophy) who were responsible for running the course. Eight L1 lectures were given by the teacher of Philosophy while 8 L2 seminars were run by the ESAP instructor.

Before the study, the students were asked to do two L1 and L2 writing tasks (Appendix C) with the aim of measuring their entry-level argumentation and metacognitive skills. At the end of the course, all the students were assessed in their argumentation and metacognitive skills with two similar L1/L2 writing tasks. Additionally, a feedback questionnaire was conducted at the end of the course.

Intervention

The writing tasks for the given course were designed within the WTL framework and with a particular focus on teaching argumentation skills, which are seen as a key component of historical reasoning competence (argument structure, validity of an argument, fact vs opinion, and using documented historical sources). The writing activities were designed so that each writing prompt contained an argumentation component placed in a historical context.   However, the historical content was appropriate for the students and served not to impede students' concentration during their thinking and arguing stage of writing. L2 writing tasks were more numerous, as English was the language of seminar instruction. L1 writing tasks were mostly related to processing the lecture content while L2 writing tasks aimed at providing students with an opportunity to train their arguing skills through writing.

Instruments for assessing argumentation and metacognitive sub-skills

The rating procedure was carried out by two raters, teachers of English for academic purposes with substantial high school teaching experience in writing. The raters received instructions on the rating procedure for the argumentation and metacognitive skills. A sample rating round was applied to a sample student paper in L2, and the results were discussed with both teachers of the course of Logic.

Argumentation Rubric. For assessment of argumentation skills, the method of performance-based assessment was applied. This requires students to produce an individual text that demonstrates their knowledge or skills (Johnson, Penny, & Gordon, 2008). A new rubric was developed and applied to entry level and end-of-course writing tasks (Appendix C) as a rubric is seen as a reliable assessment instrument for measuring both educational failure and success (Halpern, 2003). The argumentation rubric was developed on the basis of the leading research on the nature of historical reasoning and the CTAR model rubric (Appendix D).

By its nature argumentation, as a component of historical reasoning, is related to making a claim about the past and providing support for it with strong arguments and evidence and by dealing with possible interpretations and counterarguments (Van Boxtel & Van Drie, 2007). On these grounds, the developed rubric includes 3 key components: clear argument structure, validity of an argument and evidence for support (Appendix D).

The CTAR model rubric served aa a successful example of the thinking competencies measurement approach. Each component in the developed rubric has 6 levels of development (6 is the highest score and 1 means absence of competence) and helps to provide a detailed description of each argumentation sub-skill and its levels of development (Appendix D). The rating involved two raters and the inter-rater reliability was 0,86.

Critical Thinking Analytic Rubric (CTAR). The present study applies a famous Critical Thinking Analytical Rubric (CTAR) to measuring metacognitive thinking skills of the students. This analytic rubric became the assessment basis due to its assessment score detail, clear measured components and clear relationship of the measured components and their corresponding scores (Saxtona, Belangerb, & Beckera, 2012). The CTAR rubric (the full version is in Saxtona, Belangerb, & Beckera, 2012) comprises six competencies (interpretation, analysis, evaluation, inference, explanation, and disposition) which are further broken into sub-skills (for full details see Saxtona, Belangerb, Beckera, 2012). This assessment tool provides reliable criteria for metacognitive competencies of critical thinking. The rating involved two raters and the inter-rater reliability was not very high (0,71) due to the complexity of the nature of the studied critical thinking competencies.

Writing prompts. Pre- and post-course L1 and L2 writing tasks (Appendix C) were developed on the basis of two writing prompts (Saxtona, Belangerb, & Beckera, 2012). A one paragraph written answer and a short essay were scored for the first time to investigate particular set argumentation sub-skills and then metacognitive components. These writing prompts allow the evaluation of students' thinking abilities as evidence of thought processes at both the argumentation level and higher order skills level as the writing instruction provides students with clear guidelines and fosters their thinking and arguing sub-skills. The present paper contains the results on the second essay tasks (2

pretests - 1 essay in Russian, 1 essay in English, 2 posttests - 1 essay in Russian, 1 essay in English).

The writing tasks were developed in line with the research on critical thinking assessment (Case, 2009, Moss & Koziol, 1991), and they do not require students to produce the correct answer but rather focus on the level of thinking in a student's paper. The developed prompts were not related to classroom experience but provided students with sufficient material for writing a task response. For each writing task, when the 3 argumentation components were assessed, each of the components had a maximum score of 6 separately in L1 and L2. At the second stage when metacognitive components were assessed, a student could earn a maximum 36 points, and the maximum score for each of the six components is 6.

Course feedback questionnaire. A questionnaire was conducted at the conclusion of the course to measure its effectiveness and components (Appendix E). The Likert scale questions were developed with respect to the course components and students writing-to-learn experience. In particular, the four main questionnaire components were: course design, effectiveness of L1 lecture instruction and L2 seminar writing instruction, students' self-assessed progress in historical argumentation, and overall attitude to the experience of developing the competencies in L1 and L2 (the latter section including some L1/L2 transfer of skills questions). Reversed coding was applied for negative questions to increase reliability of the questionnaire results.

The reliability of the questionnaire components was good in terms of internal consistency (Cronbach's alpha): Course design was .96 (7 items), Writing instruction was .92 (7 items), Argumentation skills was .94 (6 items), overall attitude to the experience of developing the competencies in L1 and L2 was .94 (6 items), and L1/L2 transfer of skills questions was .91 (4 items).

3. Results

This was the first time for both historical students and teachers to target specific disciplinary reasoning skills within the course of Logic. According to the students' feedback, the project proved to be a success and substantially improved their argumentation skills in the course (Appendix F). In order to justify taking means an interval rubric is applied in which equal differences between values are taken literally (Appendix F). However, the majority of students admitted that the course should have lasted longer as it could have provided them with more experience for acquiring higher-order skills.

The obtained pre-course writing results (Appendix G) were calculated according to the argumentation rubric (Table 1) and the CTAR rubric (Table 2). Both Table 1 and Table 2 show relatively low levels of skills across all competencies in L1 and L2. The pre course correlations among the components are in Table 5 (Appendix H).

At the end of the course, the obtained results of the students' papers in L1 and L2 were calculated according to the developed scales. Table 1 shows a dramatic increase in the argumentation patterns while Table 2 shows an overall slight increase in all the assessed metacognitive components, namely, interpretation, analysis, evaluation, inference, explanation, and disposition. Table 2 shows that the abilities to interpret, analyze, and explain have undergone the most substantial positive changes. Interpretation and analysis components have almost doubled during the course while the ability to explain on learning has increased by about three times. Assessment of evaluation, inference, and disposition components has revealed a moderate increase in the group. As a result, the overall metacognitive competence has increased. It is worth noting that evaluation, inference, and disposition indicators were the lowest at the start of the course. The post course correlations among the components are in Table 6 (Appendix G).

Table 1. Argumentation skills L1/L2 - Pre course and posttest: Means and standard deviations (n=46)

	Pretest		Posttest	
	L1	L2	L1	L2
Argumentation structure	3,02 (.54)	2,04 (.47)	4,57 (.72)	4,83 (.57)
Validity	2,09 (.55)	1,98 (.45)	3,76 (.52)	4,78 (.59)
Documented evidence	1,28 (.46	1,26 (.44)	3,26 (.65)	3.65 (.80)

Table 2. Metacognitive skills - Pre course and posttest: Means and (standard deviations (n=46)

	Pretest	Posttest
Interpretation	1,63 (.68)	3,54 (.59)
Analysis	2.67 (.73)	3,74 (.61)
Evaluation	1,52 (.59)	2,70 (.55)
Inference	1,26 (.44)	1,78 (.70)
Explanation	3,00 (.67)	4,59 (.50)
Disposition	1,30 (.47)	2,48 (.51)

Historical argumentation competence assessment revealed substantial progress in the following areas (Table 1): (1) Clear argument structure (premises and a conclusion); (2) Validity of an argument (degree of support, application counterarguments, fact vs opinion), and (3) Documented evidence for support.

The overall assessment results for the group of 46 students illustrate that all students have surpassed their entry level scores, and the majority demonstrated various patterns of academic progress (Appendix H).

The questionnaire conducted at the conclusion of the course supported its effectiveness (Appendix F). Students rated the L2 seminar writing instruction effectiveness higher than the L1 lecture instruction mode, as the majority of them emphasized "a more applied and clear" writing approach to studying the course content. For L2, the majority of the respondents answered that they always understood all the content. Not as many of the respondents claimed the same about the effectiveness of the lecture sessions.

According to the self-reported answers on their historical competence, the majority of students admitted a substantial improvement in argumentation skills, and some students even noted that they "mastered the skill to build arguments" (Appendix F).

The majority of students saw the benefits of using L1 and L2. Only a few students expressed their concerns that their initial L2 competence hindered their progress. The questionnaire results proved the overall extremely positive attitude to the experience of developing the competencies in L1 and L2. The majority of students marked the fact that they can now write in either language, as they see similar argumentation patterns which can be transferred between the languages (Appendix F).

4. Discussion and conclusion

Although this study was an experimental condition only and no comparison between experimental and control groups was possible, the results of the study revealed that the teaching argumentation as a reasoning component within a parallel language environment, via the writing-to-learn approach, seems to be effective for enhancing both argumentation skills and metacognitive competences. The development of the scores for the writing tasks was not assigned to the experimental lessons. The learning progress was measured by the argumentation components and metacognition components with the help of pre and post- course writing tests.

Assessment of the effectiveness of the course on Logic, run in combination with L1 and L2 for undergraduate students, showed a significant improvement in their argumentation competence. All three areas (clear argument structure, validity of an argument, and documented evidence for support) experienced a positive change both in L1 and L2. The component of reasoning in a history context, the argumentation of writing tasks was related to making a claim about the past and supporting it with sound evidence by taking into account alternative interpretations and counterarguments.

Initial poor performance in the three components can be explained by the fact that students are usually not systematically taught critical thinking and reasoning in school (Edwards, 2012). Interestingly, the findings from two of the writing texts by history students at the entry level were in line with the Van Drie et al. results (2006) and revealed that the majority of students rarely supported their claims. Additionally, none of the students used any counterarguments, which also supported the claim made by

Spoehr and Spoehr (1994) that using counterarguments is a very difficult aspect of reasoning. Thirty percent of the students failed to maintain the idea that everyone has an individual opinion and different accounts can be right, contradicting the theory that by the end of school high students frequently demonstrate this skill (Leadbeater & Kuhn, 1989).

At the end of the course, students demonstrated substantially higher argumentation results. Clear argument structure was demonstrated by 89% of students and over 60% of students' papers were based on valid and documented evidence. This substantial increase can be explained by the students' experience of extended writing both in L1 and L2, which allowed acquisitioning and consolidation of the sub-skills. The ability of students to make arguments resulted in better performance on the end-of-the-course metacognitive skills assessment.

Despite the argumentation and metacognition progress shown, the present study has some limitations. Due to the small size of the sample (46 students), it is not possible to claim that this study is statistically significant. Furthermore, it is suggested that more reasoning components should be taken into consideration when developing the course framework, and comparison with a control group's results is required. Finally, it is important to investigate factors that are out of the teacher's control such as teaching strategies and goals of other subjects undertaken by history students that might also contribute to the overall progress in cognitive skills.

The results of our study lead us to conclude that rich experience in writing in L1 and L2 not only helps students learn the content of the course but it also trains them in the required skills of argumentation through their writing experience. Various types of argumentation-targeted tasks (for perception and for production in the written form) seem to contribute to the students' progress in learning historical reasoning.

The results of the questionnaire suggest that it is possible to enhance reasoning competence within a history context by applying a writing-to-learn approach. The results also suggest that argumentation skills might be transferable between L1 and L2, as the students' answers demonstrate their acknowledgement of similar L1/L2 argumentation patterns and their readiness to write in either language. However, a separate study is required into the transfer of L1/L2 argumentation skills to provide more insights into the issue.

In future research, a similar course might be offered but based on a different learning model in order to compare the cognitive progress of students. Another important research topic is the instruction of historical reasoning and the obstacles that teachers face while trying to promote it among their students. This could include, for instance, evaluating the current curriculum and developing special lessons to systematically teach particular reasoning sub-skills and providing opportunities to maintain reasoning skills over time.

The research on historical reasoning can be successfully used by teachers in their classrooms. Using a particular framework can help teachers to systematically develop students' general and discipline specific reasoning skills in L1 and L2. Integration of

both L1 and L2 helps create ample opportunities for training historical reasoning sub-skills while writing in L1 and L2.

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Appendix A. Instructional framework

Part I Instruction framework
This instructional framework overviews the eight key content areas covered within the course. It also illustrates the main instruction modes applied in each lecture and seminar.

Key Session Topics covered within the course	Lecture cycle – instruction framework description Mode of instruction L1	Seminar cycle – instruction framework description Mode of instruction L2
1. Introduction into critical thinking and logic	*Stage 1* Theoretical accounts and examples form history	*Stage 1* Brief revision of the lecture – focus on applied skills
2.Language and the definition Main Logic concepts		*Stage 2* WTL - Writing a thesis statement of the previous lecture
3.Categorical logic	*Stage 2* Questioning method or thinking aloud method	*Stage 3* WTL- Task: use the given key terms and topic-related word and produce a 100 paragraph on the issue
4.Propositional Logic		*Stage 4* Reading into writing. Task: read the text and identify its components
5.Argument structure and its evaluation		*Stage 5* WTL - Reconstruct the writer's thesis statement for the text
6.Logic fallacies		*Stage 6* Home assignment
7.Inductive reasoning Deductive reasoning		WTL - Develop the claim and write a 100-word paragraph (follow historical reasoning
8.Evidence Use of sources and their evaluation		assessment criteria)

Part II
An example of a reasoning WTL instruction used by the seminar teacher for stages 1 and 2 (see Appendix A Part I) based on guided whole-class revision about the previous lecture

The teacher asks guiding questions and uses mind-mapping tool (freeplane.com) to mark students' answers and to create the "lecture space".

Stage 1 Brief note taking stage

The teacher opens the blank page of a mind map to follow all of the students' answers. Then the teacher asks:

- What is the central concept in the previous lecture that we shall place in the middle of our map? Why
- What components can you identify in the concept? Are they in a hierarchical relationship?
- What were the controversial issues raised by the lecturer?
- What was the main message of the whole lecture?
- What evidence did the lecturer use?
- At which points did the lecturer refer to documented sources? Why?
- How can you use the lecture information in future (in your studies, in your everyday experience)?

Stage 2 Writing a thesis statement of the previous lecture

The seminar teacher saves the mind map with all the notes from students' contributions. Then, the teacher asks students to write a short statement (thesis statement). The task is to reconstruct the central argument thread of the lecture and write a three line passage.

Appendix B. Example of seminar sessions

Seminar session: Reading into writing sample activity (in L2)

Task 1. Read the research article and identify the following components within the text:
1. the argument
2. reasons which support the argument
3. counterarguments
4. description
5. explanation
6. summary

Task 2. Draw the main writer's argument thread with the help of a mind map.

Task 3. Using your mind map reconstruct the argument and write in a 3 line paragraph.

Appendix C. Writing prompts

Entry level and end-of-the-course L2 writing prompt

Example writing task L2
(This sample was also used to construct similar L1 writing prompts)

Why did Leningrad people manage to overcome the siege?

The World War II brought a devastating effect. The debate over how local people were able to survive through the siege period in Leningrad. The Germans after the initial success of 'Barbarossa' campaign decided storming the city is not necessary. Hitler was sure that once Leningrad had been surrounded and bombarded, the city would fall without any fight. German also bombarded the city with propaganda leaflets by threatening the population that they would starve to death if they did not surrender. The readings for this assignment contain opposing viewpoints on this issue. Please, read the texts and excerpts from military speeches.

Part I
While working with the texts, take notes that will help you to organize your thoughts into well-written answers. Please, define the main reasons for the Leningrad's survival and then prioritize these factors in the historical setting.

Part II
Based on your main course in History and your background knowledge, write a 300-word essay explaining why Leningrad people managed to overcome the siege. Take into account alternative opinions and justify your position and comment on the most relevant historical points (by providing references to the sources in brackets) that you noted during your analysis of the reading texts form Part I.

Appendix D. Criteria for evaluating informal reasoning

Score	Clear argument structure	Validity of an argument	Evidence for support
6	skillfully identifies all the components in an argumentation thread (the main claim and premises). reconstructs a writer's argument line with a great detail and accuracy. consistently demonstrates a well-developed skill while working with a new text.	skillfully all supports conclusions in an argumentation thread. applies counterarguments with a great detail and accuracy. consistently distinguishes between facts and opinions.	skillfully applies a range of documented sources to support a conclusion.
5	identifies all the components in an argumentation thread (the main claim and premises). generally reconstructs a writer's argument line. demonstrates a developed skill while working with a new text.	supports all conclusions in an argumentation thread. generally applies counterarguments with a good detail and accuracy. distinguishes between facts and opinions.	applies a range of documented sources to support a conclusion.
4	identifies the components in an argumentation thread (the main claim and premises). reconstructs a writer's argument line though with a little inaccuracy. Sometimes faces difficulty while working with a new text.	supports conclusions in an argumentation thread. applies counterarguments. sometimes has difficulty while distinguishing between facts and opinions.	applies some documented sources to support a conclusion.
3	identifies only the basics in an argumentation thread (the main claim and premises). demonstrates difficulty in reconstructing a writer's argument line. demonstrates an inconsistent skill while working with a new text.	supports not all conclusions in an argumentation thread. rarely applies counterarguments. has difficulty while distinguishing between facts and opinions.	applies few documented sources to support a conclusion.

2	identifies not all or incorrect basic elements in an argumentation thread (the main claim and premises). demonstrates extremely limited ability in reconstructing a writer's argument line. tends to fail while working with a new text.	supports few conclusions in an argumentation thread. demonstrates a limited ability to apply counterarguments. tends to fail while distinguishing between facts and opinions.	applies no documented sources to support a conclusion.
1	does not identify even basic elements in an argumentation thread (the main claim and premises). fails to reconstruct a writer's argument line. fails to work with a new text.	supports few conclusions in an argumentation thread. demonstrates a limited ability to apply counterarguments. fails while distinguishing between facts and opinions.	applies no documented sources to support a conclusion.

Appendix E. Course Feedback Questionnaire

Please, answer the following questions by marking your answer on a scale from 1 to 5. All the received data is anonymous and shall not be given to any other parties. The questionnaire completing will take 20 min.

Part I Course design

Q1. I think that the goals of the course were fully met.
Q2. The time frame of the course was comfortable.
Q3. The team teaching was effective.
Q4. L1 lectures were very productive in learning the course content.
Q5. L2 seminars were very helpful for learning the course content.
Q6. L2 overall writing instruction was very effective in learning the course content.
Q7. Frequency of writing tasks was effective.

Part II Course writing instruction
Q8. Different writing tasks were always clear to me.
Q9. Writing support (explanations, guidelines) in L2 was substantial for my progress.
Q10. L1 lecture content was easy to understand.
Q11. L2 seminar content was easy to understand.
Q12. Writing tasks guidelines were always clear.
Q13. Writing activities helped me to think and learn the course content deeper.
Q14. Writing tasks were not always clear to me

Part III Argumentation skills
Q15. I find argumentation skills in history very important for me in my studies.
Q16. I learned a lot about how to think and argue in history.
Q17. I now can structure my arguments.
Q18. I can now make my arguments valid.
Q19. I can now make good use of support for my arguments.
Q20. Explanations about argumentation sub-skills were not always clear to me.
Q21. I feel I have progressed a lot in mastering the argumentation skills in the course.

Part IV: Overall attitude to the experience of developing the competencies in L1 and L2 (L1/L2 transfer of skills)
Q22. I liked the fact that the course was run in 2 languages.
Q23. I think this course should only run in my native language.
Q24. Instruction in L2 was not a problem for me.
Q25. I enjoyed writing in both languages and it gave me very good experience.
Q.26. Writing in English was problematic for me because of my poor English skills.

Q27. When I write in Russian I follow the same guidelines that I use while writing in English.

Q28. When I write an essay either in English or in Russian I follow the same principles.

Q.29. Writing in Russian is easier for me because I can express my ideas more easily.

Q30. Now I do not care in which language I should write my essay as I feel confident in applying the key argumentation skills.

Appendix F. Questionnaire results (n-46; min. 1 max. 5)

	Mean	SD
Q1 - The goals of the course were met	4,74	,444
Q2 - The time frame was effective (1 module was enough for the course of Logic).	4,59	,498
Q3 - The team teaching was effective	4,67	,474
Q4 - L1 lectures were effective	4,63	,532
Q5 - L2 seminars	4,67	,474
Q6 - L2 overall writing instruction was effective	4,70	,465
Q7 - frequency of writing tasks was effective	4,59	,541
Q8 - types of tasks were clear	4,67	,474
Q9 - writing support was substantial	4,72	,455
Q10 - L1 lecture understanding the content was easy	4,28	,544
Q11 - L2 seminar content understanding was easy	4,63	,488
Q12 - writing tasks guidelines were always clear	4,59	,498
Q13 - writing helped me to think and learn more about the content	4,61	,493
Q14 - writing tasks were not always clear to me	4,61	,493
Q15 - I find argumentation skills in history very important for me	4,63	,572
Q16 - I learned a lot about how to think and argue in history	4,54	,546
Q17- I now can structure my arguments	4,57	,544
Q18 - I can now make my arguments valid	4,54	,585
Q19 - I can now make good use of support for my arguments	4,54	,585
Q20 - Explanations about argumentation sub-skills were not always clear	4,65	,482
Q21 - I have progressed a lot in argumentation	4,61	,493
Q22 - I liked the fact that the course was run in 2 languages.	4,61	,537
Q23 - I think this course should only run in my native language.	4,52	,623
Q24 - Instruction in L2 was not a problem for me.	4,61	,493
Q25 - I enjoyed writing in both languages and it gave me very good experience	4,54	,585
Q26 - Writing in English was problematic for me because of my poor English skills.	4,52	,586
Q27 -When I write in Russian I follow the same guidelines that I use while writing in English.	4,57	,620
Q28 - When I write an essay either in English or in Russian I follow the same principles.	4,65	,526
Q29 - Writing in Russian is easier for me because I can express my ideas more easily.	4,52	,691
Q30 - Now I do not care in which language I should write my essay as I feel confident in applying the key argumentation skills.	4,52	,586

Appendix G. Sample student written paper (entry level)

In my opinion Leningrad people managed to overcome the siege by several main reasons.

First of all the general decision made by Leningrad defense center was not to leave the city at any cost (Text 2). The number of wounded and dead by the bombs, starve and cold was grown at the hundreds of people every day but they continued to take all the risks.

The strength of the spirit of the surrounded and bombarded people was unbelievable. They risked their lives every second under repeated again and again air bombings. Men, women, children all helped each other as hard as they could – every hour all of them went upstairs to the last floors of the buildings to find and avoid the possibility of air shelves which were not exploded in the first seconds after hitting the ground to explode afterwards. Almost every one of the survivals lost one or even several members of their families through the siege period (Text 1).

The starve was so cruel that it might led to the greater loss of people as the main reason itself. "The Road of Life" that was created on the freeze lake and realized in a short period of time became the priceless aid amongst the grown starve at the third year of the siege (Text 3). Thousands tons of food were delivered successfully to the city and it was one of the major factors which helped Leningrad not to fall and being completely demolished.

Appendix H. Correlations between variables

Table 5. Pre/Post course Correlations across/between metacognitive and argumentation variables. The table illustrates the correlations for the pre-test variables above the diagonal and for the post-test below the diagonal. On the diagonal there are the correlations between pre- and post-test variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Metacognitive Interpretation	.125	.378**	.160	.180	-.246	-.340*	.266	.385**	.058	.400**	-.027	-.263
2. Metacognitive Analysis	.156	.153	.043	-.006	-.091	-.028	-.038	.347*	-.117	.236	-.022	-.279
3. Metacognitive Evaluation	-.027	.023	.158	-.193	-.171	.138	-.107	.200	.351*	.077	-.295*	-.193
4. Metacognitive Inference	-.358*	-.292*	.113	.403**	-.150	-.285	-.024	-.004	-.263	-.056	.029	.098
5. Metacognitive Explanation	.101	-.070	.018	-.008	.134	.000	-.062	-.242	-.073	-.142	.075	-.075
6. Metacognitive Disposition	.078	.197	.215	.113	.184	-.066	-.027	.068	.005	-.164	-.395**	.360*
7. Historical Reasoning Argumentation structure L1	-.060	-.213	.163	-.015	-.450**	-.027	-.033	.219	.156	.172	-.091	.069
8. Historical Reasoning Validity L1	-.291*	-.199	.203	.098	-.131	-.146	.248	.228	.077	.157	-.082	-.367*
9. Historical Reasoning Documented Evidence L1	.087	-.049	.351*	.178	.066	.018	.106	.319*	.347*	.149	-.078	-.153
10. Historical Reasoning Argumentation structure L2	.090	-.069	-.242	-.209	.290	.064	-.134	-.142	-.055	-.054	.005	-.056
11. Historical Reasoning Validity L2	-.036	-.037	-.139	-.117	.291*	-.090	-.226	-.314*	-.370*	.017	.150	-.083
12. Historical Reasoning Documented Evidence L2	-.015	.038	-.348*	-.300*	.134	-.019	-.037	.116	-.165	.256	.166	.137

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Appendix I. Statistical test for differences between pre and posttest scores (paired samples t-test).

Variables	T-value	Df	P-value
Interpretation	-15,47	45	,00
Analysis	-8,22	45	,00
Evaluation	-10,77	45	,00
Inference	-5,38	45	,00
Explanation	-13,86	45	,00
Disposition	-11,23	45	,00