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Lombardi, Loredana; Rodeyns, Julie; Thomas, Valérie Marie; Mednick, Frederic Jan; De Backer, Free; Lombaerts, Koen

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Primary School Teachers' Perceptions of Critical Thinking Promotion in European Schools System.

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Loredana Lombardi^{a,*}, Julie Rodeyns^a, Valérie Thomas^a, Frederick Jan Mednick^a, Free De Backer^a, Koen Lombaerts^a

^aDepartment of Educational Sciences, Vrije Universiteit Brussel, Belgium

*Corresponding Author:

Loredana Lombardi, Vrije Universiteit Brussel (VUB), Pleinlaan 2, 1050 Brussels, Belgium

Email: loredana.lombardi@vub.be

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Abstract

Teachers have a key role in promoting Critical Thinking (CT). However, research on appropriate teaching methods for developing CT is scarce in primary education. This study investigated how CT can be fostered among pupils, based on teachers' perceptions of the characteristics that promote CT and create obstacles in primary schools. We interviewed 21 schoolteachers, from 14 EU nationalities, in three European Schools in Brussels (Belgium). The results provide insights on inquiry teaching approach, flexible and structured learning space, a mutual trust relationship in the classroom environment. This research contributes to inform stakeholders on effective CT teaching methods in primary education.

Keywords: Critical thinking skills; teachers' perceptions; primary education; European Schools; qualitative method.

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Introduction

Schools play an important role in preparing young people for society, the labour market and for attaining personal fulfilment (World Bank Group 2011). In the 21st century, acquiring the higher-order skills (e.g., critical thinking, sociability, communication, teamwork, problem-solving) is considered crucial in education (Ab Kadir 2017). This concept differs from education in the 20th century which was focused on memorization and mastery of subject matter skills and knowledge like reading, writing, math, history, and science (World Bank Group 2011).

According to UNESCO (2013), developing critical thinking is a crucial competence that all citizens must possess to succeed in learning throughout their personal and professional lives (e.g., lifelong learning). In the international, media-rich environment, pupils need to develop a wider set of critical thinking skills to understand the different messages they receive and effectively utilize these skills to design and distribute their own messages (Lee 2018). Being literate in the media age requires critical thinking skills that empower students to make informed decisions, whether in the classroom, the living room, the workplace, or the voting booth (UNESCO 2013). Although it is widely accepted that improving pupils' critical thinking skills is an important educational goal in the 21st century, pupils' still lack the level of critical thinking skills required to perform in the school environment (Al-Zou'bi 2021; Davies 2013). Consider, for example, the recent social media 'infodemic'. WHO (2020) observed a rapid exponential spread of correct and incorrect information about the coronavirus in a short period of time. The recent Covid pandemic illustrates the crucial role of CT in addressing controversial issues and combating mis- and disinformation, enabling pupils to critically evaluate information and claims in order to make reasonable judgements themselves (Duncan, Caver and Chinn 2021; Puig et al. 2021).

Despite evidence of the need to promote critical thinking in schools, research on this topic is still scarce, especially regarding critical thinking skills in primary education. Therefore, in this study we explored, in-depth, primary school teachers' views on the characteristics of instruction that they believe can promote of pupils' critical thinking in the classroom.

Definition of Critical Thinking

Critical thinking is widely accepted in the scientific literature of the 21st century as one of the four components of the ability to think (Costa 2001). In fact, critical thinking is considered one of the most important 21st century skills in education, along with creativity, communication, and collaboration - the "four C's" (Costa 2001; UNESCO 2013). However, to date, there is no consensus on a common theoretical definition of critical thinking among scientists, educators, psychologists, and philosophers. For example, several authors (Ennis 1962; Facione 1990; Fisher and Scriven 1997; Glaser 1942; Hatcher and Spencer 2005; Hooks 2010; Lipman 1988; McPeck 1981; Paul and Elder 2006; Siegel 1988) continue to formulate a definition of critical thinking that encompasses a skill and the disposition-based aspect without reaching any scientific agreement. The study by Facione (1990), commissioned by the American Philosophical Association whose "consensus" definition of critical thinking, was derived by an international panel of experts, highlighted habits of mind such as open-mindedness, cognitive maturity, and inquisitiveness. Thus, Facione (1990) proposed that critical thinking is the process of purposeful, self-regulatory judgement. More recently, UNESCO (2013) defined critical thinking as a process that involves asking appropriate questions, gathering, and creatively sorting through relevant information, relating new information to existing knowledge, re-examining beliefs and assumptions, reasoning logically, and drawing reliable and trustworthy conclusions. According to Johnson and Hamby (2015), the UNESCO definition gives a clear understanding of the concept of critical thinking.

UNESCO's definition (2013) also emphasizes that ongoing effort will be needed to master critical thinking skills. Therefore, it is important to apply theoretical constructs to understand a problem, to consider evidence, and to evaluate methods or techniques for building a judgement. To

facilitate critical thinking, UNESCO (2013) emphasizes the need for a scientific research process that includes the following steps - identify the research questions, formulate hypotheses, collect, and analyse relevant data, use the data to test the hypotheses (accept or reject it), and draw conclusions.

Characteristics of Instruction to Promote Critical Thinking

Studies on critical thinking focus mainly on courses and subjects rather than on the aggregate characteristics of primary school instruction that make up an educational environment in which to live and learn (Huber and Kuncel 2016; Kaeppel 2021). In the literature, there is a limited focus on identifying the characteristic of instruction (e.g., teachers' role, classroom setting, teaching strategies) that promote or hinder critical thinking in primary education (McLaren 2015). However, this phase of childhood is considered the most opportune time to generate positive attitudes and behaviours such as critical thinking skills, instead of adolescence and adulthood (Macaluso 2016). Furthermore, primary school instruction can play an important role in fostering critical thinking skills because it represents a physical and socio-cultural environment in which pupils can learn daily (Ten Dam and Volman 2004).

Current research on the characteristics of instruction said to enhance critical thinking in primary education focuses on student-centred classrooms that promote active learning. In this setting, the role of the teacher has shifted from the traditional giver of information to that of guide, facilitator, or learning adviser (Snehi 2011). Critical thinking can also be elicited through questioning to stimulate learning interaction among pupils and foster cooperative learning within a flexible classroom setting (Trede and McEwen 2015). In fact, without questioning and collaboration, there would be no identification or deeper understanding of the problem, only learning through memorization, recall, and repetition (Trede and McEwen 2015). Research on primary education (Bailin and Battersby 2016) demonstrate that critical thinking can only be developed in schools that emphasize the exchange of ideas and point of views and freedom of speech among pupils and teachers. Molnar et al. (2011) explain this concept as follows:

Critical thinking is best cultivated in a school that encourages pupils to ask questions, to think about their thought processes, and thus to develop habits of mind that enable them to transfer the critical thinking skills they learn in school to other, unrelated, situations.

(p. 4)

Several studies have explored which approach is most appropriate to teaching critical thinking in primary schools (Davies 2013). Ennis (1989) debated the various instructional approaches to teaching critical thinking and advocated for teaching critical thinking as a stand-alone course versus integrating it into regular courses as a transversal approach across all subjects. This debate on critical thinking is still up for debate between “generalists” and “specificists” (Davies 2013). The generalists stress the generic nature of critical thinking which implies that critical thinking is teachable, using various approaches, across disciplines (Ennis 1989). This view contrasts starkly with the specificists who stress that critical thinking is subject specific and can only be taught using the language of the discipline in question (McPeck 1981, 1990). Thus, there is no consensus in the literature on which approach is most appropriate for teaching critical thinking in primary schools.

In their research on primary education, Aliakbari and Sadeghdaghighi (2013) report that teachers’ lack of knowledge on how to teach critical thinking is one of the major obstacles to teaching critical thinking in the primary school context. Unfortunately, research on barriers to teaching critical thinking and on factors to stimulate critical thinking to incorporate into teachers’ lesson plans are still scarce. Additionally, what is still not clear, as per the literature, is how the presence of specific characteristics of school instruction can enhance or hinder critical thinking in primary school pupils.

Study

Purpose and Research Questions

In this study, we aimed to identify characteristics of instruction that enable primary school teachers to promote critical thinking skills in their pupils and the main obstacles teachers face in promoting critical thinking skills in their pupils.

The focus of this study was to investigate how teachers can foster critical thinking skills among pupils and to detect the key obstacles to fostering critical thinking skills as perceived by teachers in the primary school environment.

Therefore, in the context of primary education, the following research questions are addressed:

- (1) Which characteristic of instruction do primary school teachers view as stimulating to pupils' critical thinking?
- (2) Which characteristic of instruction do primary school teachers perceive as hindrances to pupils' critical thinking?

Context of the European School System

During the 1950s, the European Schools were established to provide mother-tongue education to the children of officials of the European Union Institutions (Savvides 2008). These educational institutions also offer places to other children on a fee-paying basis (Martinez et al. 2015). According to the Schola Europaea's guidelines (2007), the European Schools are official educational establishments, controlled by the governments of the European Union member states. Each country is responsible for the recruitment of teachers, who are trained and selected by their home country. Currently, thirteen European Schools are spread over six countries - Belgium (5), the Netherlands (1), Germany (3), Italy (1), Spain (1) and Luxembourg (2).

Every European School has three teaching levels - kindergarten (4 and 5-year-old children), primary (5 levels for children in the 6-11 age range), and secondary school (7 levels - level 1-3 basic education, level 4-5 semi-specialized education, and level 6-7 preparation for the European Baccalaureate). According to Swan (1996), the European Schools differ from international schools because each school has different language sections. Each official language of the member states is taught with its cultural dimension, depending on the requirements and the number of pupils enrolled. In all language sections, education is based on a common European curriculum. However, the syllabi (curriculum for each subject) are designed with attention to the specificity of each member state so that each pupil can enrol in the national education system if necessary. In primary school, pupils

generally come from different member states of European Union and attend the language section of their mother tongue. The learning focus is on mother tongue, mathematics and a foreign language (L2) among English, French or German. Pupils also study art, music, physical education, discovery of the world (science, geography, history), religion/ethics. Lastly, in the "European Hours" (subject in the pupils' L2 or in the language of the host country), pupils from mixed EU nationalities meet for a variety of activities (e.g., theatre, journalism) (Schola Europaea 2021).

Generally, teachers are sent on secondment by their home country to the European Schools for a specific period. At the end of the period, they return to their respective member state. The teachers are expected to adapt to the European structure, follow the European syllabi and apply the didactic and pedagogical principles underlying the European Schools organization. Teachers receive local in-service training to gain greater experience in both learning theories and pedagogical approaches (Schola Europaea 2007).

Method

Data Collection

The starting point for sample selection were the European primary Schools in the Brussels Capital Region (Belgium). Brussels has four European Schools that were constructed based on the year and the city area, as needed. They are (a) Brussels I (situated in Uccle area), (b) Brussels II (in Woluwe-Saint-Lambert), Brussels III (in Ixelles), and (c) Brussels IV (in Laken). The principals of the four school were first contacted by an email explaining the research project and asking for the participation of primary school teachers. One of the European School in Brussels did not participate in our research study for lack of time, even though we had invited it to participate. Next, the research project was further explained in a face-to-face meeting with each of the three-school principal or with the deputy-head of primary education. After each principal or deputy head gave permission to use their teachers as study subjects, we received a list of 21 teachers willing to participate in individual, semi-structured interviews. We contacted the 21 primary school teachers individually by email all of whom agreed to participate in the interviews. As per the school principals' decision, the interviews took place in the

schools where teachers worked.

The data were collected through 21 semi-structured individual interviews with primary school teachers in three out of the four European Schools in Brussels (nine respondents from Brussels II, six respondents from Brussels III, and six respondents from Brussels IV). Each interview lasted approximately one hour and thirty minutes. The participants came from nine language sections (Czech, Dutch, English, Finnish, German, Greek, Italian, Romanian, and Swedish). Teachers were equally spread over the class years (levels 1-5). Only three respondents were specialized in teaching English as a second language instead of teaching all subjects. Additionally, a few of them had a dual role - as general coordinator in their language section and as teacher for a specific topic (e.g., special needs in education, music, foreign languages). They originated from 14 different member states of the European Union.

Instrument

The interview format was composed of a series of questions assessing four main subject areas. They were as follows: (i) Teachers' role in the classroom; (ii) Specific classroom setting; (iii) Subjects taught; (iv) Teaching strategies to introduce new topics.

The semi-structured interview format allowed for asking additional questions if necessary or anticipating answers that were relevant to the research objective.

Data Analysis

Each interview was recorded and fully transcribed ad verbatim, with voluntary, informed, and signed consent of each teacher. All information provided will be kept anonymous and will not be disclosed to anyone beyond the researchers working on this study. As this research study is based on a literature-based approach, the initial coding structure was suggested by existing literature. A thematic analysis of the collected data was conducted to identify, analyse, and report crucial themes (Braun and Clarke 2006). Next, the texts were analysed in-depth and inferences from the data were made to create a new, relevant argument to answer to the research questions (Braun and Clarke 2006). A thematic analysis was conducted to explore how teachers' interview data was related to (a) the characteristics

of instruction that would encourage pupils' critical thinking and (b) the barriers to pupils' critical thinking. To guarantee reliability of the categorization, six researchers in the field of educational sciences (three junior and three senior researchers) independently examined these themes for consistent patterns and made minor adjustments in grouping or by splitting up data categories.

Findings

Characteristics of Instruction to Promote and Hinder Pupils' Critical Thinking

Teachers' Role in the Classroom

More than half of the 21 teachers from the three European Schools perceived their role in class as facilitator of pupils' learning processes. These primary school teachers highlighted the fact that both teachers and pupils enter the learning process together, a process in which teachers guide pupils to manage information, find solutions, and use their acquired knowledge.

Teachers also explained the relevance of providing the best conditions for fostering pupils' learning opportunities, based on the children's choices. Although these teachers followed the curriculum closely, they underlined that it was crucial to make learning interesting, gain children's attention, and make them aware of their own learning interests and abilities. If pupils are not involved during their classroom lessons, and the learning process is not enjoyable, children will neither learn properly, nor be able to think critically. For those reasons, teachers stressed the need to provide a tolerant, enjoyable, and safe learning environment in which to foster pupils' critical thinking skills. Respondents who defined themselves as facilitators did not consider themselves the only source of knowledge for their pupils. They highlighted the fact that learning from other classmates was also important to pupils' learning process.

A few respondents defined their role as leaders or experts who provided pupils with all the necessary information and strategies to simulate a home life situation. Other teachers indicated that they modelled a mother/father role so their student could relate to them as such. One respondent professed, "I'm the promoter of the development of every single child to help them to reach the best of their abilities." These teachers stated that the emotional state of each child was highly linked to

their learning process. They said that pupils needed to feel emotionally safe to be able to engage in learning during lessons.

According to more than two third of the teachers, the starting point and the key to developing a positive learning context for students was to create an environment where relationships of trust between teacher and pupils, and among pupils could be established. One teacher said, as follows:

You need to have a good connection with children, so that they trust you and you can support them. I create an environment in my class where I try to do it. Safe, secure, happy, fair, and a genuine place of learning, where it is very important to listen to each other (respondent 6).

Two third of the teachers reported that an environment which builds mutual confidence allows pupils to express themselves openly and to learn from each other. Thus, they stressed how crucial it was for pupils not to be afraid to talk about their thinking or to be judged. In this context, the respondents agreed that an active listening environment where pupils are stimulated to share ideas, express their feelings, compare their opinions and questions is conducive to critical thinking.

Specific Classroom Setting

To promote critical thinking, most of the respondents claimed that pupils in their classrooms worked in pairs or small groups of four to five pupils during lessons. They explained that cooperating with other classmates was beneficial for children and helped them to learn from each other. According to the teachers, when pupils interact, they multiply their own knowledge because they discuss topics, share ideas and different viewpoints, and so can learn from and support each other in a group environment. These respondents stated that reflection was a very important part of teamwork. Children can think about and rethink their learning processes together because "learning is not an individual matter, it needs others" (respondent 4).

Teachers professed that they often divided their class into groups because they believed that primary school children are not always able to build coherent groups by themselves. Teachers formed the groups in advance to enhance pupils' abilities. In this way, they create a favourable environment

for interactive work among children, because they are given the responsibility for their own learning. However, two of the teachers interviewed said that for the first year of primary school they preferred the traditional setting where children sit in rows in front of the teacher's desk.

Regarding pupils working in small groups, a few respondents chose the cooperative learning method in which each pupil was asked to adopt a specific role in the group (e.g., the reader, the writer, the drawer, the speaker, etc.). The teacher then gave pupils the same topic or question which they first discussed in pairs, sharing existing knowledge and searching for new information, after which they came back to discuss their findings with the larger group. Finally, every group shared the collected information with the whole class. According to the teachers who use this method, the cooperative learning method is positive strategy that motivates each pupil to participate actively. The teachers claimed that teamwork avoided the risk of disappointing pupils; this is not always possible in a traditional classroom where all pupils may not have the chance to express themselves when the teacher asks a question. When using the cooperative learning method, teachers perceived that each pupil learned that their opinions have value for their group, their class, and their teacher, who fosters pupils' learning motivation and self-esteem.

Most teachers also discussed the importance of having spaces within their classroom to organize different activities. For instance, a reading corner on a carpet where children can search for information on several topics independently or read a book together (four or five pupils) where each pupil has an active role (e.g., looking up new words in the dictionary, making illustrations, writing the summary, performing the story in front of the class). Teachers said that they often organized the roles in advance to enable the pupils to enhance their abilities and to train them in adopting other roles. According to the teachers, these kinds of structured roles can be organized for different activities, such as painting, music, and drama.

Nearly one fourth of the respondents believed that a lack of space in their classrooms was obstructing the organization of these reading corners. They highlighted the need for more flexible

learning spaces inside and outside the classrooms (e.g., corridors, school's garden) as children can learn everywhere.

However, a few respondents said that they preferred a traditional setting. For instance, this preference is summed up by one teacher as follows: "To have more attention and control, I prefer the traditional position of two rows of desks in front of me. Usually, pupils can choose whom to sit next to." (respondent 2). These teachers considered teamwork beneficial only for a few subjects like the arts where children can collaborate to decorate or create artworks together. They added that working in small groups can promote a positive learning experience when children have to engage in activities (i.e., drama, music, drawing) for events and festivities.

Subjects

All respondents agreed that critical thinking skills can be fostered in any curriculum subject. They said that promoting critical thinking skills depends on how teachers structure their lessons. "Critical thinking fits in every subject. You don't need to consider this as exclusive subject, but as a tool to facilitate other pedagogical goals that you have in every single subject" (respondent 1).

One third of respondents gave concrete examples of how subjects like history, geography, ethics, European hours, language 1, and sciences offer several opportunities to promote critical thinking skills through questioning, comparing, and discussing different topics. In fact, they argued that humanities were a suitable subject for critical thinking as it encompasses social, political, and human aspects of real-life situations all of which can be discussed from different viewpoints.

One third of teachers claimed that once children have understood the basic language rules underlying terms like different from, the same as, similar to, teachers can begin to foster critical thinking on the similarities and differences that exist in other subjects as well.

Two respondents emphasized the importance of teaching children to experience and appreciate the arts. According to these teachers, the arts can help pupils to develop critical thinking. Paintings can enable children to observe, describe, compare, connect, reflect, investigate, and explore

viewpoints. One respondent stressed the importance of drama-related activities as drama can stimulate pupils' imaginations and lead them to reflect on feelings different from the own.

One respondent stressed the crucial value of robotics in education. The teacher explained that the designing, programming, and coding skills needed to build a robot can foster critical thinking skills among pupils. The respondent claimed that in a robot building project pupil worked like engineers as they followed steps to write codes to make the robot move. The teacher explained that the process of following the steps in a robot building project develops inquiry habits and communication and rethinking skills. In a similar vein, one respondent said, "We have to test everything, everywhere and see what works, what it is. They can see the result very quickly. They don't have to wait so long." (respondent 18).

One respondent said that during sports lessons pupils can remember and rethink the logical steps of an exercise (e.g., running). By doing so, they learn different critical thinking skills and exercise properly.

Teaching Strategies to Introduce New Topics

Except for one respondent, all the other teachers described the need to gain children's attention to foster critical thinking when introducing new topics. The teachers explained that when they put the interests of pupils first during lesson activities, pupils felt encouraged to participate as active learners. Starting a lesson with examples linked to the real-life situations of children was also considered very useful to foster critical thinking skills. Respondents also said that during the first year of primary school, participating in structured games was a positive method to involve children in their learning and at the same time to allow them have fun. To attract children's curiosity, some respondents introduced the new topic of the day by writing key words on the board or using visuals in the class (e.g., posters, books, objects). Teachers claimed that such methods can initiate the critical thinking process and encourage pupils to share opinions and ideas, ask questions, and make connections with real events.

More than half the respondents said that a new topic is always introduced in a specific way. Specifically, the lessons start with brainstorming about the topic in response to stimuli (e.g., videos, songs, stories, flash cards) to engage pupils' prior knowledge, stimulate their thinking, and connect their experiences with new information. These group discussions are facilitated by the teacher who also reinforces and highlights the new learnings. This process seems to be an effective way for teachers to make children aware of their own knowledge and to give the children valid and relevant reasons for discussing a specific topic. Most of the respondents thought that raising children's awareness about why and how they learn was crucial. "I like this, the start-up. I do not usually tell them [pupils] what the topic is. I'd rather give them some input so they can find out what the topic is" (respondent 2).

Two teachers stressed that giving pupils a real problem to solve at the beginning of a lesson is a better teaching strategy for promoting pupils' critical thinking than following the assigned textbook's structure and rules. They agreed about the usefulness of working in small groups, using logical steps to search for answers, and reaching a conclusion that leads to the creation of new knowledge. One respondent claimed that using a "provocation approach" during the lessons can stimulate children's learning process. This approach helps pupils first and foremost to think independently and thoroughly, to share ideas through small group discussions, and ultimately, to present and argue their group's idea in front of the entire class. Likewise, respondent 5 reported the following:

I am not just saying 'this is the first thing you will do today.' For a pre-history lesson, for example, I had boxes with different materials in it, like stones, clods of soil, and pictures. Children had to observe those materials. Then, each small group chose one object to discuss based on questions: What is it? How was it used? What age does it come from? What is this material? Afterwards, each group presented the collected information to the others.

The minority of teachers claimed that they primarily followed the syllabus program and used the main textbook in each lesson they taught. Connections are made with real events afterwards.

Discussion

The objective of this study was to explore teachers' perceptions about factors that promote or are obstacles to pupils' critical thinking skills in primary schools.

Firstly, regarding their role in class, teachers stressed the need for establishing a relationship of safety and trust with their pupils and among pupils to promote critical thinking. This is in line with research (Snehi 2011) that shows how teachers can play a key role in fostering pupils' critical thinking skills by building a positive student-centred learning environment. Additionally, our respondents said it was important to develop empathy for pupils as a basis for building an environment of mutual trust in which critical thinking is best cultivated. According to Ten Dam and Volman (2004), a learning environment based on empathy, safety, and mutual trust is crucial for stimulating critical thinking. This is because such an environment can foster interactions among pupils and help students to understand and learn from each other's different points of view. In line with Bailin and Battersby (2016), these characteristics of instruction can contribute to the development of critical thinking because a relationship of mutual trust stimulates pupils' freedom of expression and sharing of ideas within a group situation. Teachers also claimed that working in groups is considered crucial to fostering critical thinking among pupils. According to Friesen and Scott (2013), critical thinking is part of the learning process during which pupils in a class or group help each other and compare and discuss different ideas with each other to reach a conclusion. Additionally, most of the primary school teachers in our study perceived their role as facilitators in a student-centred classroom environment. This is in line with Davies (2013), who found that teachers' roles as facilitators or learning advisers is a characteristic of instruction that fosters critical thinking by promoting active learning and allocating more responsibility to pupils. Secondly, regarding obstacles to critical thinking, we found that when teachers adopted the role of leader rather than facilitator, they build a top-down relationship with their pupils and do not consider interaction among pupils a learning opportunity. Respondents

with a teacher-centred, leader orientation considered themselves the key learning resource for pupils, solely in control of the teaching environment with the assigned textbooks as their main teaching tools. This classroom environment is based on the transmission of content from teacher to pupils with little regard for pupils' input, feedback, and discussion—characteristics that, according to research (Trede and McEwen 2015), promote critical thinking.

Thirdly, about the specific classroom setting, a significant proportion of the interviewees felt that promoting critical thinking worked best when pupils worked together in groups and in flexible spaces during their classroom activities. Teachers described a flexible classroom environment as follows: Grouping pupils' desks in small clusters, organizing corner activities on the carpet, and using outdoor spaces (school's gardens, library, laboratories, corridors, museums, etc.) as informal classroom spaces. The teachers in our study indicated that these physical changes in their teaching and learning environment can encourage more pupil collaboration which in turn can promote critical thinking. In line with Tan (2017), when teachers engage students in cooperative activities like sharing knowledge and identifying and correcting misconceptions with their peers, these activities foster critical thinking.

Fourthly, in contrast, a few teachers said that the lack of physical space inside or outside the classroom obliged them to use the traditional classroom setting with the pupils' desks lined up in rows front of the teacher. This traditional frontal teaching style and seating arrangement is more suitable for individual work. Thus, this teaching style is an obstacle that can hinder the development of a cooperative learning environment and classroom interactions which are important factors for promoting critical thinking.

Fifthly, regarding the relationship between critical thinking and school subjects, all the teachers agreed that the promotion of critical thinking should not be taught as a separate course. Instead, they supported that critical thinking should be incorporated into all subject in primary education, incorporated into the whole school curriculum. This line of thought is in keeping with the specifist view in the debate on critical thinking (McPeck 1981, 1990).

Sixthly, about teaching strategies to foster critical thinking, teachers in our study reiterated the need to gain pupils' attention and motivate them to learn using instructional strategies like brainstorming and asking questions about their personal interests and experiences. Most teachers provided the children with multiple learning resources (magazines, newspaper, internet access) during group discussions to give them opportunities to examine, compare, think, and ask questions about the information and to provoke and encourage critical thinking. Similarly, Friesen and Scott (2013) found that inquiry-based learning, a constructivist learning approach that encourages students to problem-solve, ask questions, and work collaboratively also encourages critical thinking in the teaching and learning environment.

Lastly, the teaching strategies used by teachers can also be an obstacle to the promotion of critical thinking. For example, we learned that teachers who organized their lessons around the traditional classroom setting used the assigned textbook, for the most part, or the set school curriculum to begin an introductory lesson with new topics. This contrasts with the finding of Prince and Felder (2007) that support brainstorming as a value-added strategy for gaining children's attention, and discussions with pupils on subject that interest them in student-centred classrooms as effective teaching strategies for promoting critical thinking.

Conclusion

The present study focused on primary school teachers' perceptions of critical thinking in three European Schools in Brussels. To promote critical thinking, most teachers were found to act as facilitators in a flexible student-centred classroom environment promoting active learning, such as the approach of inquiry-based learning. In teachers' view, the relevance of critical thinking skills should be incorporated in all syllabi of the primary school curriculum. Therefore, the European Schools in our study contribute to promote these factors that are crucial in fostering critical thinking skills among pupils. In conclusion, this study contributed to increase understanding about key factors to stimulate critical thinking among pupils from European Schools to other school settings wishing to incorporate or strengthen critical thinking in primary education.

Methodological Limitations and Follow-up Study

The limited sample size is not representative for all primary school teachers in the European School system. A larger sample size could provide a better understanding of the facilitating characteristics of instruction to stimulate pupils to engage in critical thinking. Further research will investigate teachers' experiences of teaching strategies promoting pupils' core critical thinking skills across the primary school curricula. The results can be used for future educational research and design among different stakeholders (teachers, school principals, policy makers, researchers) involved in innovative teaching methods for critical thinking.

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