

Relevance of the socio-cultural perspective in the discussion about critical thinking

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Abstract

Il pensiero critico (CT) è considerato un'abilità chiave per il successo nel 21° secolo. Le politiche educative mondiali sostengono la promozione del CT e ricercatori di diverse aree disciplinari sono stati coinvolti in un ampio dibattito sulla sua definizione, senza raggiungere un accordo. Al giorno d'oggi, la ricerca non ha affrontato compiutamente la valutazione del CT, né il modo in cui dovrebbe essere insegnato. Nel presente lavoro, viene fornita una panoramica sull'argomento, nonché una valutazione delle pratiche, al fine di fornire a ricercatori o professionisti (in particolare quelli della scuola primaria) un riferimento per lo sviluppo di ulteriori teorie e metodi sull'educazione al CT. Il CT è considerato dal punto di vista della filosofia, della psicologia cognitiva e delle scienze dell'educazione. Inoltre proponiamo l'inclusione di una quarta prospettiva, che potrebbe essere definita della pedagogia socio-culturale, per le sue importanti implicazioni sull'insegnamento e nelle pratiche valutative.

Critical thinking (CT) is considered a key skill for success in the 21st century. Worldwide educational policies advocate the promotion of CT, and scholars across different fields have been involved in a wide debate on its definition, without reaching an agreement. Currently, research has not adequately addressed CT assessment, nor the way in which it should be taught. In the present work, an overview of the topic is provided, as well as an evaluation of the practices, in order to provide researchers or practitioners (particularly those involved in primary school education) a reference for the development of further theories and methods about CT in education. CT is considered from the perspective of philosophy, cognitive psychology, and education sciences. In

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DOI: <https://doi.org/10.6092/issn.1970-2221/9882>

addition, we propose the inclusion of a fourth perspective, which could be referred as socio-cultural pedagogic perspective, due to its important implications in teaching and assessment practices.

Parole chiave: approcci al pensiero critico; insegnamento del pensiero; valutazione del pensiero; scuola primaria

Keywords: critical thinking approaches; teaching thinking; assessing thinking; primary school

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1. Introduction

When considering Critical Thinking (CT) for the first time, as a new researcher or an educator, the number of publications retrieved on electronic databases is impressive. The situation is similar to what was noticed in 2005: “The literature on critical thinking is extensive: a search using this term on ERIC, a US-based electronic database, results in over 2000 references to articles alone” (Moseley et al., 2005, p. 20). Notwithstanding this, to achieve similar search results in the UK, different words are needed such as *teaching thinking*, in a more general way, or *thinking schools*, since the research focus in the UK is unique. On the one hand, Wegerif, Li & Kaufman (2015) state that by using the inclusive phrase “teaching thinking” they “[...] avoid the potential trap of prematurely claiming a settled consensus as to what good thinking is and how it can be taught” (p. 2). On the other hand, by widening the search to “teaching thinking” the focus changes from CT itself to all types of thinking (creative thinking, computational thinking, metacognitive thinking). However, this change of focus would include further cognitive functions and methods not specific to CT. Therefore, since the focus of this paper is on CT, the discussion presents the reasons why knowing both the American and English traditions on the topic has important implications for research.

Thus, this brief literature review aims to provide an overview of the topic, but most of all to demonstrate the importance of adding a further perspective, and to recommend additional research towards this new direction.

In 1993, the World Health Organisation (WHO) described ten core psychosocial skills, which were thought to play an important role for the physical, mental and social well-being of people (WHO, 1994). The so-called *life skills* were defined as “[...] abilities for adaptive and positive behavior, that enable individuals to deal effectively with the demands and challenges of everyday life” (WHO, 1994, p. 1). Among them, there is also the ability to think critically together with other skills that are strictly connected to it, such as problem solving, decision making and creativity. According to the WHO, critical thinking is defined as the “[...] ability to analyse information and experiences in an objective manner” (*ivi*, p. 2), and it is stated that it “[...] can contribute to health by helping us to recognise and assess the factors that influence attitudes and behavior, such as values, peer pressure, and the media” (*ibid*).

However, the widespread interest on critical thinking and the diffusion of the Critical-Thinking Movement began before, at the end of the 70s, especially in the US, where the movement began (Ennis, 2018). Though, only in the last decade of the previous century a focus on the teaching of thinking increased, particularly in both the US and the UK. The reasons of this attentiveness may be adduced to both a “relatively poor performance on international comparisons of educational attainment and a recognition that mature economies require more sophisticated learners and problem solvers” (Moseley et al., 2005, pp. 14-15).

Accordingly, worldwide educational policies encourage fostering this competence from a young age along with other key skills. For instance, American presidents, such as George H.W. Bush and Barack Obama, “[...] have endorsed critical thinking as a goal of education” (Ennis, 2018, p. 165). The *Partnership for 21st Century Learning* (P21) has developed the namesake *Framework*, which describes the 4Cs, the four key skills students need to acquire to be successful in the future. These skills are: communication, collaboration, creativity and critical thinking (P21, 2016). Canada (Abrami et al., 2008), Venezuela (Halpern, 2001), Mexico, Brazil, Russia, China, Malaysia, Thailand (Wegerif et al., 2015), Singapore (<http://www.moe.gov.sg/education/education-system/21st-century-competencies>), and the European Community (European Commission, 2012, 2018; European Parliament, Council of the European Union, 2006) have adopted educational policies with the same purpose.

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2. Definitions of Critical Thinking

Although CT received endorsement from influential institutions, literature does not show a unified view for this concept. Indeed, the CT concept was thought to be “[...] a complex and controversial notion that is difficult to define and, consequently, to study” (Abrami et al., 2008, p. 1103). Moseley et al. (2005) collected almost 40 definitions of CT and analysed about the same number of instructional thinking frameworks. Certainly, the wide and dynamic field of the research on the topic could not be summarized either in a paper nor in a book (Wegerif et al., 2015). The reason could be found on the shared interest coming from different fields, such as philosophy, psychology, education, neurosciences, as well as others. Each field of study produces different shadows of meaning, and in this vein, “critical thinking is a polymorphous or multi-form enterprise” (Bailin et al., 1999, p. 279).

However, as suggested by Abrami et al. (2015), the APA definition may be considered a broad definition, which “serves well to synthesize the kinds of interventions that are typically used in CT research” (p. 279).

In 1987 the American Philosophical Association (APA) called to a Delphi panel 46 international experts across different fields in order to reach a consensus on the definition of CT, with educational and assessment purposes. CT was defined as a “[...] purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, [...]” (Facione, 1990, p. 3).

Furthermore, the agreed definition provides information on the internal dispositions the ideal critical thinker must have, who is described as “[...] habitually inquisitive, well informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results [...]” (*ibid*). Facione (2000) remarks about the importance to own both cognitive skills and the propensity to think critically to be able to do so.

3. Current perspectives

Previous literature reviews on CT describe two (Lewis & Smith, 1993) or three theoretical perspectives (Lai, 2011; Sternberg, 1986), belonging to the fields of philosophy, cognitive psychology, and education sciences. As we are going to demonstrate, it may be possible to distinguish a fourth approach, which is more holistic and which has its basis in socio-cultural pedagogy.

The philosophical approach usually describes CT as a list of cognitive and reasoning skills needed for a good thinker. Sternberg (1986) stated that “Philosophical theories tend to be competence theories specifying what people can do” (p. 6) for better thinking. The philosophical conception of CT is a *normative* one (Bailin & Siegel, 2003; Moseley et al., 2005) since it describes the norms that a good thinker must own, in terms of cognitive skills and affective dispositions. Some philosophers, such as Ennis (1964) or Lipman (1988), define CT respectively as “correct thinking” (p. 599) and a “[...] responsible thinking that facilitates good judgment” (p. 39). Others, such as Paul and Elder (2009), argue the necessity to teach CT with ethics, to avoid “the risk of inadvertently fostering sophistic rather than fairminded [*sic!*] critical thinking” (p. 36). Moreover, Paul (1993) adds to a *weak* definition of CT a *strong* one, impartial and less sophistic than the previous one. The scholars mentioned above agree on the essential normativity of the concept but their conceptualization of CT differs in several aspects and emphases (Bailin & Siegel, 2003). For instance, contrary to other theorists, Siegel (1988) has stressed the value of dispositions, habits of mind, and character traits. He defined a critical thinker as a person who has a “[...] global disposition to pay attention to

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reasons and to regard them as important, i.e. to be ‘appropriately moved’ by them” (p. 8). In fact, most theorists agreed that having the skills or abilities of reason and assessment may be necessary but not sufficient to use them systematically (Bailin & Siegel, 2003).

Indeed, as suggested by Biesta and Stams (2001), among philosophers it is possible to distinguish three conceptions of “criticality”, which they call *critical dogmatism*, *transcendental critique* and *deconstruction*. The main point in this distinction is related to the idea that the definition of critical thinking is in some way biased by the provided justification for “being critical”, to which they have referred “as truth, rationality and justice respectively” (p. 70). Critical dogmatism conceives of the activity of critique as “the application of a criterion to evaluate a particular state of affairs” (Biesta & Stams, 2001, p. 60). In this acceptance, it is “critical” since it provides an evaluation based on a criterion, and it is “dogmatic” since “the criterion itself is kept out of reach of the critical operation” (*ibid*). Transcendental critique in the same way relays on a criterion but, according to this perspective, the criterion is justified by a transcendental form of argumentation or a motivation of rationality. Lastly, the authors refer to Derrida’s deconstruction like the most consistent approach available, which consist in revealing that the critical criteria “[...] are not self-sufficient but need something other than themselves to be(come) possible” (*ivi*, p. 69), such as a concern for justice.

Additionally, throughout the literature on CT, references to the existent connection among CT and other kinds of thoughts such as creative and metacognitive thinking often occur (Lai, 2011). The position of philosophers on creative and metacognitive thoughts is relevant since the distinction among these mental processes is still a matter of debate and philosophers can contribute with their perspective. For instance, Paul and Elder (2006) claim that “[...] the relationship between criticality and creativity is commonly misunderstood” (p. 34), since they “[...] often seem to be opposite forms of thought [...]” (*ibid*) but “in the process of actual thought, they are one” (*ivi*, p. 35) and they “are best understood as two sides to the same coin, developing simultaneously as they enhance and augment one another” (*ibid*). Lipman acknowledges a certain degree of communality between the two processes, while stating that “[...] critical and creative thinking are similar in their seeking practical applications” (Lipman, 1995, p. 65). Notwithstanding, Lipman highlights a significant difference between the two, since he described “thinking as a combination of critical, creative and caring thinking” (Lipman, 2003, p. 261). In particular, the last mode of thinking was not considered in the mainstream, while on this topic Lipman argues that often “we fail to see how profoundly our emotions shape and direct our thoughts [...]” (*ibid*).

Regarding metacognitive thinking, the philosophical community seems to implicitly accept the APA definition of CT, which is described as a “self-regulatory judgment” (Facione, 1990, p. 3). Notwithstanding, some criticisms has emerged about the distinction between the concepts of self-regulation and metacognition, which seem to be separate concepts for the most (Moseley et al., 2005). As Moseley and colleagues (2005, p. 14) stated, most researchers seem to define self-regulation as “[...] a systematic process involving the setting of personal goals and the subsequent channelling of one’s behaviour towards their achievement”. This stance is congruent with a statement by Lipman who, in 1988 claimed that “[...] ‘metacognition’, or thinking about thinking’ need not be equivalent to critical thinking” (p. 41). Accordingly, it is possible to think uncritically about our own thinking processes.

With respect to philosophers, psychologists are more concerned in describing the actual way in which people think, along with their human and environmental limits (Sternberg, 1986). Their approach may be defined as a *procedure descriptive* one (Bailin et al., 1999; Bailin & Siegel, 2003; Moseley et al., 2005), since it describes the procedural moves or the cognitive processes involved in the act of thinking, including problem-solving and decision making

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(Lai, 2011; Moseley et al., 2005). According to Sternberg (1986) “[...] psychological theories tend to be performance theories specifying what people actually do” (p. 6). Therefore, since the process of thinking cannot be seen, the psychological approach is interested in inferring from behaviour the cognitive processes related to this composite skill. Literature has historically addressed two main perspectives in the study of CT: those mainly related to active cognition (e.g., judgement and reasoning), and those related to self-awareness (e.g., metacognition and reflective thinking; Fischer & Spiker, 2000). The most prominent one, probably because of the relevance of cognitive psychology, defined CT as being based on problem-solving and decision making processes (Mayer, 1992). The research group of Nisbett has produced a number of studies along with this perspective. Among the skills related to CT, they considered logic, causal deduction, statistics being the most relevant ones (Jepson, Krantz & Nisbett, 1993). Sternberg (1986) developed a taxonomy on critical thinking based on his triarchic theory of human intelligence (Sternberg, 1984, 1986). According to him (1984), intelligence is no more a fixed characteristic of the individual but it can be trained, and it is the result of three changeable “components” or mental processes, which are performance, knowledge-acquisition and metacomponents. Sternberg (1986) claims that the mental processes or skills involved in CT are the same three, suggesting that intelligence is the same as the ability to use thinking and problem-solving skills in everyday-life’s issues (Wallace et al., 2004). This view was supported also by Halpern (2006), who suggested a new definition of intelligence through the adoption of the CT concept. Notwithstanding that, the second perspective strongly relates the concept of CT to metacognition, following Paul (1990), who defined CT as “the art of thinking about your thinking” (p. 32). Kuhn (1999) persuasively argued in favour of the relevance of metacognition for CT, with respect to cognitive competencies. She identifies three broad categories: metastrategic, metacognitive, and epistemological. Metastrategic knowing is related to the skill of achieving goals, which “selects and monitors the strategies that are applied – a manager of the repertory of available strategies” (1999, p. 18). Metacognitive knowing controls the knowledge that a person may exhibit; for example, reflecting on one own declarative knowledge. Epistemological knowing could be considered a reflection on the methods used to obtain knowledge. Diane Halpern (1998) defines CT as “[...] the use of those cognitive skills or strategies that increase the probability of a desirable out-come [...]” (p. 450). In addition, she claims that some mental effort and awareness is needed to think critically and, therefore, an efficient use of CT skills is always intentional. She developed a four-part model to guide teachers’ work where she subsumed metacognitive components, too (Halpern, 1998). Moreover, she designed a taxonomy on CT, where she included creative thinking under the category of decision-making and problem-solving skills for “[...] its importance in generating alternatives and restating problems and goals” (Halpern, 1998, p. 452).

The psychological contribution in identifying cognitive skills and processes involved in CT is relevant also for the theorization of the cognitive system: the study of the other cognitive processes contributing to CT can be helpful to suggest educators how to manage the positive development of the whole child.

To the so far mentioned perspectives, some authors (Lai, 2011; Sternberg, 1986) add the link to the education sciences conception. The educational approach operates at a more practical level than philosophy and psychology, therefore many concepts and frameworks developed in the educational perspective are strongly based on these two sciences. Nonetheless, the educational contribution drives the concepts toward their implementation in interventions and, thus, verifies whether the concepts are empirically useful or need to be modified.

Often, educationalists emphasize the relationship between process and task since “mental processes can be identified only via their products” (Bailin et al., 1999, p. 273), and products are the results achieved through the fulfil-

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ment of a task. For this reason, these conceptualizations may be described as *process* or *task* approaches (see also the comments made by Bailin et al., 1999). The expression mental process is ambiguous given that it has often at least a double acceptance: in a narrow sense it may be used to describe the mental process itself, or it may be referred to the *task* to be executed. It is the case of Bloom's taxonomy (1956), a well-known and employed tool all over the world. The Taxonomy is structured in a six cognitive-processes hierarchy, grouped in two levels, the lower order thinking skills (LOTs), at the bottom of a virtual pyramid, and the higher order thinking skills (HOTs), on the upper side. The three HOTs (analysis, synthesis, evaluation) are considered the highest and most complex levels of mental processes involved in the act of thinking, and they describe what is CT. The Taxonomy is still used worldwide, but following the revised version by Anderson and Krathwohl (2001). In this newest version, Cognitive Processes are distinguished from Knowledge Dimension. Indeed, while Knowledge represented the first stage in the original version, in the revised one it has been replaced by the Remember stage. Furthermore, in the newest taxonomy, Cognitive Processes are named using verbs instead of nouns, and the three highest skills have been converted from analysis, synthesis, and evaluation in analyse, evaluate, create. In the more recent version, the Knowledge Dimension is still expressed using nouns, and it contains four categories (Factual, Conceptual, Procedural, Metacognitive Knowledge) instead of three.

Both the older and the revised version draw some criticism. The hierarchical structure is the most criticized aspect, “[...] leading readers to conclude that knowledge is always a simpler behaviour than comprehension, comprehension a simpler behaviour than analysis, and so forth through synthesis and evaluation” (Paul, 1985, p. 39). Furthermore, the hierarchical issue persists in the revised version, even if in a less strict way. “Like the original Taxonomy, the revision is a hierarchy in the sense that the six major categories of the Cognitive Process dimension are believed to differ in their complexity, with remember being less complex than understand, which is less complex than apply, and so on. However, because the revision gives much greater weight to teacher usage, the requirement of a strict hierarchy has been relaxed to allow the categories to overlap one another.” (Krathwohl, 2002, p. 215).

The second issue is related to the absence of a “[...] single psychological theory that adequately provides a basis for all learning” (Anderson & Krathwohl, 2001, p. 258). Despite this fact, Moseley et al. (2005) claim that Bloom's taxonomy is in any case consistent with many psychological theories.

In addition to the three well-known perspectives on CT, we would like to add a fourth perspective which in our view, significantly differs from the previous ones and is difficult to place in a single field of research. We summarize this approach as the *dialogic* or *socio-cultural* approach. The term *dialogic* is derived from the cross-cultural studies of Robin Alexander (Mercer & Littleton, 2007), since learning is thought to be a social and communicative process, which happens throughout *dialogic teaching*. Dialogic teaching can be shaped in different ways depending on how teachers organize the interactive process of teaching-learning. Even if “there is no single and agreed definition of the term ‘dialogic teaching’” (Alexander, 2018, p. 562) neither in the notion of dialogue however, in this study, we focus on the perspective of some scholars who give relevance to dialogue as both the linguistic interchange between people and the “perennial interplay of voices in culture and history” (Alexander, 2018, p. 563) with a Bakhtinian acceptance. With regard to this perspective, these scholars refer to the educational dialogue among peers as an *exploratory talk*, as later described in the paper.

The *socio-cultural* label originated from the work by a number of scholars, and it promotes thinking as a socio-cultural process. The term socio-cultural is used to refer to both the interest in understanding how mental processes are influenced by culture or history, and the important contribution of Vygotsky and his colleagues (Wertsch,

1993). The socio-cultural perspective “[...] encourages the investigation of the relationship between language and thinking and also of the relationship between what Vygotsky called the ‘intermental’ and the ‘intramental’ – the social and the psychological - [...]” (Mercer & Littleton, 2007, p. 4). When people work together to solve a problem they “[...] do not only interact, they ‘interthink’, combining their intellects in creative ways that may achieve more than the sum of the parts” (*ibid*). Nevertheless, it is important to underline that the Bakhtin’s term *dialogic* differs from the *dialectic* perspective of Vygotsky; for the latter, differences among voices in dialogue need to be overcome or transcended while, in a dialogic perspective, which comes from a neo-Vygotskian or socio-cultural tradition, these differences help in building meaning since “[...] dialogic presupposes that meaning arises only in the context of difference [...]” (Wegerif, 2008, p. 359).

The focus of scholars working in this tradition, is the relationship among thoughts, social interactions, communication, and dialogue, rather than defining what thinking is. Therefore, they are more committed with the best way to teach thinking and they usually study the whole spectrum of thinking processes, without isolating a particular kind of thought, such as CT is. Indeed, Wegerif et al. (2015) suggest that “[...] we might not be able to explain what we mean by good thinking in advance, we recognise it when we see it” (p. 2). Several years before, Wertsch (1993) expressed the same view, by stating: “Like Vygotsky and Bakhtin, [...] that it is often difficult if not meaningless to isolate various aspects of mental processes for separate analysis” (p. 14). Referring to Heidegger’s and Levinas’s accounts of thinking, Wegerif (2011) claims that we cannot reduce it to its structures, but only characterize it in the context of relationships. These concepts show that the socio-cultural approach is interested in studying the linguistic behaviour as the method to develop thinking, rather than other processes underlying CT. While the philosophical perspective proposes a normative/moral definition of CT, and the psychological focuses on cognitive processes, especially on problem-solving and metacognition, the educational perspective is more concerned with the thinking process and how teachers can stage it. The socio-cultural perspective seems to be similar to the philosophical stance in arguing that there is an inherent normative value to what good thinking is; however, the former stance is in contrast to the critical dogmatism of some philosophical normative definitions, as it changes the focus to the dialogue itself, rather than on the structures and outcomes of the thinking process.

4. Four possible learning frameworks to teach critical thinking

Various approaches were proposed to teach CT, stemming from these different perspectives. However, it is difficult to find instructional core traits related to a single research field. In addition, it is hard to categorize each programme, approach or instructional design in one specific area, since some of them have a wide range of theoretical foundations, from psychology to philosophy, from pedagogy to neuroscience. In this paper, we refer to these programmes, approaches and instructional designs with the general expression of learning frameworks.

Therefore, since the learning frameworks might belong to different fields, we prefer to present four frameworks (as prototypical from the several perspectives) without placing them in a defined area of research.

One of the most known learning frameworks among teachers and educators is “Philosophy for children”, created by Lipman and his collaborators.

“Philosophy for Children is a curriculum for the implementation of philosophy in the elementary and secondary school” (Lipman, 1993, p. 296). The curriculum is made of seven sub-programmes, with the same structure. All of them start with a fictional novel or story, and have a textbook with discussion outlines, clarifications of contents

and exercises (Lipman, 1993, 1995). Narratives and exercises are developed to promote critical discussion among peers as in a *community of inquiry*, and they are designed to encourage and cultivate *critical, creative* and *caring thinking* (Lipman, 1995). Lipman (1995) matches these three modes of thinking with the criteria used by the Greeks to define a good thought (the True, the Beautiful, and the Good), with Bloom's cognitive processes (analysis, synthesis, and evaluation; see sub-paragraph 2.3), which describe higher-order thinking, and with the three branches of philosophy (epistemology, aesthetics, and ethics). With this programme, students can also develop four cognitive abilities that are: inquiry, reasoning, concept-formation, and translation skills, and which can be used throughout the subjects (Lipman, 1995). The role of the teacher is to facilitate discussions and inquiries among mates (Lipman, 1995). The Philosophy for children programme is a mean for *doing* philosophy, which allows students to be an active part of a democratic community, emulating the moves of narrative's characters and where they can learn from peers' experiences and share their personal ones (Lipman, 1995). The programme is still used and maintains its importance all over the world due to the educational value of the philosophical inquiry-approach in developing communicative, social, and complex cognitive skills.

Although many colleagues have cast doubts on Feuerstein's approach (Nickerson, 1988; de Acedo Lizarraga et al., 2009), his work deserves mentioning because it is still considered a relevant contribution in the educational field. Feuerstein learning programme is called Instrumental Enrichment (IE) since it considers intelligence as dynamic and changeable (Feuerstein, 1991; Higgins, 2015; Sternberg, 1984) through mediated learning experiences. It is designed with the purpose of improving a wide list of cognitive deficits (Sternberg, 1984), and it is characterized by "[...] a set of exercises whose goal is to increase the individual's capacity to benefit from learning situations, i.e. learning to learn" (Feuerstein, 1991, p. 33). The role of the teacher is that of the mediator, who delivers students specific pencil and paper tools (instruments), to which a discussion follows, and which are structured stimuli given according to the students' needs. Feuerstein and his collaborators also developed a tool named Learning Potential Assessment Device (LPAD), which "[...] assesses not what a person is able to do at a given moment, but rather the individual's modifiability, or the potential to change" (Feuerstein, 1991, p. 33). As mentioned above, the psychologists' focus is on the improvement of people thinking, and their knowledge about the process (metaknowledge).

Another noteworthy approach is the Thinking Actively in a Social Context (TASC) approach by Belle Wallace and Harvey Adams. It describes the procedural moves a teacher should use to guide her teaching activity, and which moves a student needs to follow to solve a problem and to improve her thinking skills. The TASC learning framework finds its theoretical bases on the work of both the educationalist Paulo Freire, and psychologists like Lev Vygotsky, Robert Stenberg, Albert Bandura, and Antonio Damasio (Wallace, 2002, 2008; Wallace et al., 2004). The structure of the TASC model is represented as an eight-slices wheel, which recalls the steps teachers and students should go after. Each slice is intended improving one or more specific mental processes, such as memory, intuition, reasoning and logic, metacognition and creativity. Each move provides also a possible list of tasks to be performed in the form of stimulus-questions, and it is designed to make students use different combinations of learning processes, which may be understood as both mental processes and tasks to achieve. For instance, the stage Gather/Organize is aimed to recall knowledge from previous learnings and experiences, training the brain to make connections among pieces of information (Wallace et al., 2004). In this sense, the stage name is meant both as a task to perform, gather and organize previous knowledge, and as the mental processes involved in fulfilling the assignment.

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Moreover, the TASC framework guides the teacher to implement a constructivist approach in which dialog and cooperation among peers are essential to improve thinking skills. The role of the teacher is to orchestrate the activities providing opportunities for learners to develop a wide range of skills and cognitive processes.

The last is the Thinking Together programme, which was developed by Mercer, Dawes, Wegerif, Littleton, and other collaborators, with the aim of looking for an effective approach to improve language, listening and thinking skills of children (Mercer, 2011). Indeed, “[...] it is through taking active part in conversations, rather than through simply listening attentively, that children’s language skills develop” (Mercer, 2011, p. 1). Pupils are involved in *exploratory talk* to help them becoming metacognitive and aware of their language usage, and reflecting on learning processes (Mercer, 2011; Mercer & Littleton, 2007). The expression *exploratory talk* originates from the researcher Douglas Barnes and “[...] it takes place when partners engage critically but constructively with each other’s ideas” (Mercer, 2011, p. 3). What distinguishes it from other types of peer talks, such as cumulative and disputational talks, is that reasoning is made explicit and it is successful when group members show their willingness to change their minds, “reflectively criticise ideas that they themselves had put forward and admit their lack of understanding” (Wegerif, 2008, p. 356).

Therefore, the programme supports the value of thinking together (*interthinking*) and it is articulated in lessons, which are designed to increase the use of exploratory talk among children. The typical lesson is structured in three parts: an introductory plenary, a triad activity, and a final plenary. Each activity can be fulfilled successfully only when children collaborate with each other and engage in constructive discussions since they are asked to talk about some issues and to find an agreement on a possible solution (Mercer & Littleton, 2007). Moreover, the lessons are distinguished according to the age of children in three groups: 5-7, 8-11, 12-14 years old. The teacher has an active role, asking them reasons, engaging students in discussions, and encouraging pupils; it is both a mentor, since it puts in action the lessons and establishes with children a set of *ground rules* for talk, and a model, since it exemplifies exploratory ways of talking (Mercer, 2011; Mercer & Littleton, 2007).

5. Assessment tools for primary school grades

The same issues emerged in defining CT, and in identifying education practices which are able to promote it, affect the creation of tools for its assessment. For instance, the main issues related to the development of a tool assessing CT are: validity of standardized tests, which kind of skills need to be considered, the need to measure both skills and dispositions, the choice among general or subject-centred appraisals.

The aim of this paragraph consists in describing an illustrative sample of the assessment tools for CT, and for reasons of space it focuses on the existing tools for primary school grades, anticipating why it is necessary to consider the dialogic perspective.

Firstly, a consensus on the skills involved in CT is required in order to comply with the construct validity. Nevertheless, “although there is no absolute agreement on what constitutes critical thinking, there is sufficient overlap in the various definitions to allow an evaluator to move beyond the definitional stage” (Halpern, 2001, p. 272). However, even when experts agree on which skills are relevant, the main issue is whether a standardized test is really able to measure them, or it is simply assessing a distinct amount of cognitive skills without catching the proficiency-level of the critical thinker. “It is not possible to assess single aspects of critical thinking or discrete skills without the risk of these separate assessments failing to capture either the quality of that thinking or the relation of the identified

thinking skill to the task which aims to assess it” (Moseley et al., 2005, p. 23). Moreover, if the aim is to evaluate the quality of thoughts, it is very likely that a multiple-choice test is not suitable to assess both CT skills and internal dispositions, since the latter are very difficult to observe with such a tool. On the one hand, “accordingly, both should be incorporated in the goals for critical thinking instruction, and both should be incorporated in critical thinking assessment” (Ennis, 1996, p. 168); on the other hand, “multiple-choice disposition assessment seems inadequate to the task of assessing critical thinking dispositions” (*ivi*, p. 180). Moreover, asking someone to use a specific internal disposition is meaningless, since it is essential to employ it without any request. Thus, open-ended questions, performance tests, and other qualitative tools are more likely to be sensitive to assess also internal dispositions. However, though qualitative tools are a feasible and valid solution, they are more expensive in terms of time for grading. Indeed, the more structured is an examination with close answers the easier is to standardize it, check the results, and save time, especially with big samples. The more open-ended are the questions, the more complex is its appraisal and replicability.

Ennis (1996) suggests that showing empirically a particular disposition in one area does not mean to own that disposition in general. For instance, a person who is able to do calculations might not be skilled in Mathematics, he might just be a good executor (Rubinsten & Henik, 2009). This is a risk in subject-specific assessment practices since it is necessary to be careful in inferring conclusions on results.

Therefore, all these considerations on skills and dispositions, validity, feasibility, quantitative or qualitative appraisals, subject-specific or general tests, pave the way to consider different kind of examinations, at the risk of losing the possibility to standardize them.

Two other issues are related to the language of the existing tools (mainly English) and the age to which the tests are targeted. “In general, the literature on critical thinking focuses on older students, often college-student populations. [...] However, there are a few studies which have examined critical thinking skills among elementary student populations, including some populations of gifted students” (Kettler, 2014, p. 129). These issues cannot be ignored because both the cultural (and consequently linguistic) background and the age are key aspects of humans’ cognitive development. Thoughts are always situated in a cultural framework, and culture is considered to shape people’s minds (Bruner, 1996/1997).

Finally, a practical problem that deserves to be mentioned is the cost of these tools. It seems that there are no free tests for grades lower than the third year of the primary school. Hence, in the literature or on sale, there are only a few tools for the primary school-grades range, which aim to appraise CT in a strict sense. This means that there are other tests, which focus more in general on reasoning skills or cognitive skills for primary school grades (see Ennis, 1993). Possible reasons for this could consist in the belief that a young person does not possess yet CT skills and a cognitive system developed enough to uphold that process.

All the existing tools focusing specifically on CT are standardized tests, mainly deriving from the philosophical field. They are:

- Cornell Critical Thinking Test (CCTT), by Ennis, Millman e Tomko (2005). It takes this name since it is based on Ennis’ CT conceptualization, which is the “Cornell/Illinois model”, developed when he worked at Cornell University and the University of Illinois. The 5th edition is composed of two Levels, Level Z and Level X, the latter is suitable for pupils from the 4th to the 14th grade. It is a 71-item general-content based and multiple-choice test, which can be taken in one or more parts. It covers five aspects of CT, such as induction, credibility, observation, deduction and assumption identification (Ennis, 1993).

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DOI: <https://doi.org/10.6092/issn.1970-2221/9882>

- Test of Critical Thinking (TCT), by Bracken et al. (2003). The test was theoretically developed around the six cognitive skills identified by the Delphi Report (Facione, 1990), which are interpretation, analysis, evaluation, inference, explanation, and self-regulation, and Paul's eight elements of thought, issue, purpose, concept, point of view, assumptions, evidence, inference, implication. It is intended for the 3rd, 4th and 5th grades, and it is made of ten real-life scenarios followed by 3 to 6 multiple-choice questions, with 45 items in total.
- Educate Insight Reasoning Skills (Grades K-2, and Grades 3-5) to measure CT skills of children, and the Educate Insight Thinking Mindset (Grades K-2 and Grades 3-5) to assess habits of mind and dispositions (www.insightassessment.com; Insight Assessment, 2018a, 2018b). All these tests belong to a comprehensive thinking assessment program for K-12 students, which is also part of the California Critical Thinking Skills Test (CCTST) family. This means that they are based on the Delphi Report's CT definition (Facione, 1990). The four above mentioned are respectively designed for grades K-2 and 3-5. In the case of grades K-2, they cover respectively analysis, categorization, explanation, evaluation, inference, and mental focus, learning orientation, creative problem solving and cognitive integrity. Instead, grade 3-5 tests focus additionally on induction, deduction, and scholarly rigor (but do not study categorization and explanation). These multiple-choice tests are available in different languages, by sending a request on the society website, and subject to the payment of a fee depending on the number of copies requested.

An interesting option to these tests is the independent design of tests, as suggested by Stobaugh (2013). She recommends to create higher order thinking-tasks, referring to the revised taxonomy of Bloom by Anderson and Krathwohl (2001), and employ the so called *interpretive exercises* by Nitko and Brookhart (2011, in Stobaugh, 2013). Interpretive exercises are questions (both open-ended and multiple-choice) combined with scenarios, real world application tasks, visuals, and quotations. In support of Stobaugh's ideas, for Halpern (2001) it seems that "a good assessment will be based on 'simulated scenarios' that are similar to the situations that students will encounter out of the classroom" (p. 274).

Moreover, currently, seven institutions in the UK, Latvia and Finland are running a transnational Erasmus+ strategic project called Assessment Companion for Thinking Skills (ACTS; British Council/Erasmus+, 2017). The project aims to develop and validate a diagnostic and formative thinking capacity-assessment tool, as an e-suite of audio, video and text resources, which may be used by teachers across Europe.

In conclusion, each of the first three mentioned approaches (philosophical, psychological, educational) to CT seems to have affected the existing tests and assessment proposals described above. In particular, while the attention on tests originates from either a normative (i.e. we understand what "good" thinking is) or a functional (thinking should be done in various distinctive stages) perspective, Stobaugh's proposal was inspired by the educational taxonomy of Anderson and Krathwohl (2001).

A further effort is needed to develop a new appraisal tool for CT skills and dispositions which should include the socio-cultural perspective. Indeed, in a dialogic perspective, "thinking" should be "assessed" by way of not only outcomes, but by focusing on the dialogic process that underpins thinking. Moreover, in group work and in teacher-student dialogue, thinking can be assessed by focusing on the actual dialogue (see for example Wegerif, Fujita, Doney et al., 2017). Such a tool might be able to be at the same time valid, feasible and sensitive to dispositions, culture, language and age.

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6. Conclusions

All the four perspectives (philosophical, psychological, educational, socio-cultural) chase the same target: the best ways to teach thinking and thinking assessment, even if with different shadows and focuses. As it happens during the APA Panel in 1987, it might be possible to identify a new common ground for research discussion opened to experts belonging to the four approaches. For instance, almost all of them involve creativity and metacognition in teaching thinking, albeit apparently with distinct weight. Moreover, the first three perspectives show agreements in identifying almost the same components of CT, in terms of skills and dispositions. Instead, according to the fourth perspective, it is not possible to state in advance what a good thought is, but when these experts assess the quality of talks and, consequently, thoughts they should use relevant categories. One may wonder what sort of categories they use and if they could be linked to the same behaviours, skills, and dispositions identified by the three other theorizations. For instance, when counting the number of linguistics occurrences, these can be classified according to the kind of clause, and consequently it may be possible to attribute them to a particular CT-skill or disposition.

Congruent to the common expression “two heads are better than one”, it is likely that more researchers belonging to different fields might work together achieving challenging results. Having merged contributions coming from philosophy, sociology, linguistics, psychology and education sciences, the socio-cultural perspective seems to have addressed the request of multidisciplinary, required in order to achieve the goal of an effective teaching of CT. Moreover, this perspective actualized dialogic teaching, which seems to be a key element in teaching thinking according to recent research. Dialogic teaching appears to play an important role in the development of CT skills and dispositions. The Abrami et al.’s (2015) meta-analysis suggested two general types of instructional strategies: the opportunity for dialogue and the exposure of students to authentic or situated problems.

Though, according to Alexander (2018), there are many acceptances on dialogic teaching, while almost all the theorizations above described give credits to the value of classroom talks albeit in different ways. For instance, “[...] Paul further argues (1987) that one of the purposes of critical thinking is to develop learners’ perspectives, and argues for dialogue or ‘dialectical experience’ as an essential ingredient in helping to develop judgment about how and where particular skills can best be used” (Moseley et al., 2005, p. 22). Even if the Philosophy for Children focuses on dialogue too, the approach is not presented as such and the explanations for its success are based on philosophical arguments (i.e. children engage in good thinking because of the kinds of questions teachers ask them) rather than in the development of the dialogue. The main difference among perspectives is not in stating that dialogue is not relevant, but in considering the centrality of dialogue as a tool for joint critical thinking, such as the Thinking Together programme is doing. From a psychological/cognitive perspective, learning is generated when children experience a disequilibrium in their heads, and by a cognitive process they try to restore the homeostasis. In the psychological literature several strategies are proposed to restore the equilibrium (Paris & Paris, 2001). Instead, from a socio-cultural perspective, learning is promoted by dialogue since it appears that children try to regulate this disequilibrium through talks with others (i.e. in peer groups). In other words, it appears that children would foster learning while suspending their own perspective and trying to see something from another point of view. Thus, through dialogue practice pupils may be trained to be open and willing to other points of view, to reflect on and assess their own and others’ ideas, and to make good argumentations through a process of real shared inquiry. Furthermore, the socio-cultural pedagogy seems to offer a holistic method capable of fostering the development of all kind of thoughts (e.g. creative, metacognitive, and critical thinking) as part of the same process. To some extent, research

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on CT resembles the subject fragmentation at school, which splits real life into several pieces not allowing an overall view of phenomena. Thus, this recent perspective seems to implicitly suggest coming back to a unified conception of knowledge.

Lastly, approaches such as the Thinking Together programme might inspire the arrangement of an assessment tool to evaluate pupils' thinking capacities through the linguistic productions, that is measuring how the quality of children talks change during time or comparing the talks of groups, which follow a specific programme with others that do not, through video or audio recordings.

In conclusion, teaching-thinking approaches based on the socio-cultural perspective emerge to be one of the most promising approaches to be pursued in the near future.

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DOI: <https://doi.org/10.6092/issn.1970-2221/9882>

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DOI: <https://doi.org/10.6092/issn.1970-2221/9882>