

# CHANGING THE TEACHING METHODOLOGY: HOW MUCH DOES IT COST?

**Alessandra Imperio**

*Faculty of Education, Free University of Bozen-Bolzano (Italy)*

## Abstract

The paper describes selected results of a multifaceted intervention study aimed primarily at nurturing and assessing critical thinking (CT) competence in a sample of primary school children in the North-East of Italy. The core of the study comprises the implementation of a new learning framework considered effective in promoting thinking and problem-solving skills, the development of an assessment tool to appraise CT performances during peer dialogue tasks, and the comparison over time of the results achieved by participants in the intervention and control classes. As part of the same research, an exploratory survey was undertaken through a voluntary questionnaire with the twofold aim of knowing the most common teaching style among primary school teachers in the region and selecting the experimental classes. The analysis of the questionnaire data showed that the use of traditional methods is still prevalent among teachers. Italian schools have a tradition of using content-based approaches and, since these are considered ineffective in promoting CT competence, one of the research questions of the study, and the focus of this paper, was how teachers deal with the implementation of a new learning framework and whether it enables them to change their teaching towards more student-centered approaches. For this purpose, the 13 teachers in the experimental group were first trained about the “Thinking Actively in a Social Context” (TASC; Wallace, 2001) learning framework. After its implementation in the experimental classes for nine months, data were collected through logbooks, lesson plans, and a final questionnaire. Furthermore, data collected from those sources were analyzed and the words of teachers from formal and informal communications were considered.

Throughout the implementation period, quantitative (e.g., number of TASC learning plans implemented) and qualitative (e.g., ways in which teachers had applied the learning framework) differences in the TASC use were observed among teachers. One group stayed with traditional approaches, keeping a more teacher-centered focus, another small group used TASC from a student-centered perspective, and a smaller group accommodated their usual learning plans within the TASC framework. Although some teachers had difficulty applying the new approach, most of them found it valuable in challenging their teaching style. The costs for changing teaching methods include extended times to fully develop the school curriculum with student-centered approaches and teachers’ efforts to re-frame practices and explore strategies within new learning perspectives. Both aspects should be taken into account when rethinking school system reforms and the training of future teachers.

**Keywords:** *Teaching methods, traditional approaches, active learning, primary education, intervention study.*

---

## 1. Introduction

The existing literature on educational change is extensive, and has often dealt with issues of *what* and *how* educators should teach (Hargreaves, Lieberman, Fullan, & Hopkins, 2005). Teachers have always been the main agents of educational change, either through *top-down* decisions or *personal* motivations based on teaching experience and practice.

The quasi-experimental intervention study, which is only partially described in this paper, embraces issues as well as impulses to change. Indeed, the study was planned to foster critical thinking (CT) education (the *what*) as one of the goals set by the European Community (Council of the European Union, 2018; Sala, Punie, Garkov, & Cabrera, 2020) and the Italian curriculum guidelines (Ministero dell’Istruzione, dell’Università e della Ricerca [MIUR], 2018; the *top-down* impulse). Moreover, the research design included the implementation in six primary school classes in the North-East of Italy of a

learning framework considered effective for the promotion of CT competence (the *how*) through the voluntary participation of teachers and their students (the *individual* impulse).

Italian schools have a tradition of content-based and expository teaching approaches (Capaldo & Rondanini, 2002). Traditional teacher-centered approaches are known to not be effective in promoting CT competence (Halpern, 1998) compared to other constructivist ones. Moreover, constructivist learning theory “does not translate directly into teaching practices”, and most teachers have “not experienced constructivist classrooms” during their own time as students (Richardson & Placier, 2001, p. 913). For these reasons, one of the objectives of the study was to find out about the actual situation concerning the most commonly used teaching style in primary schools.

It is acknowledged that teachers need to keep looking for new approaches and ideas, checking what works and what does not (Johnson et al., 2009), and, indeed, this is what usually happens in schools, but many efforts at change seem to be ineffective (Hargreaves, 2005). Furthermore, although the literature suggests that most teachers are constantly changing (Richardson & Placier, 2001), “it is hard to break a habit” (Johnson et al., 2009, p. 156). Changing from a traditional to a non-traditional teaching style requires several substantial changes, including beliefs and practices (Johnson et al., 2009; Richardson & Placier, 2001). Moreover, nowadays educators face manifold demands for change which are proving to be more complex than those of the past (Hargreaves et al., 2005). In addition, since the teaching-learning process should be considered a sociocultural phenomenon, the multitude of existing studies in the literature on teacher change might not be sufficient when placed in different cultural and social contexts.

The paper aims to contribute to the field of research on teacher change taking into account the above issues. After a brief description of the general research design, the paper focuses on a selected research question related to how teachers approach a new learning framework and how such a framework contributes to their teacher change. Then the methodology is outlined, and the results are discussed.

## **2. The overall design of the intervention study**

The core study (Imperio, 2022) was designed as quasi-experimental research *with* the school and *for* the school. The theoretical framework underpinning the entire research project refers to the existing perspectives on CT (see Imperio, Kleine Staarman, & Basso, 2020): the *normative* conceptualization of philosophers (among others, Ennis, 1964), the *procedure descriptive* perspective of cognitive psychology (among others, Sternberg, 1986), and the *process* or *task* approach of educational sciences (among others Bloom, 1956). Each of these positions has been taken into account when drawing up a definition of CT and other choices related to educating students in CT and assessing their CT competence. In particular, in order for a choice to be made regarding the learning framework and the development of the assessment tool, a fourth position on *teaching thinking* was considered, which is the *dialogic* perspective of socio-cultural pedagogy (among others, Mercer & Littleton, 2007).

The learning framework entitled Thinking Actively in a Social Context (TASC), developed by Wallace and Adams (Wallace, 2001) was chosen among the many existing resources for teaching thinking (see Moseley et al., 2005). Several aspects were considered when making the choice. It had to be a student-centered approach, applicable to all disciplines, suitable for the design of authentic and cooperative learning tasks, with a solid theoretical basis of reference, easily teachable during training, especially in terms of time, and adaptable to the context of Italian schools.

As mentioned above, the research project had several objectives that are congruent with the phases of the study, i.e., to learn about the most common teaching style in primary schools in the Friuli Venezia Giulia region; to train teachers to use a new student-centered learning framework meant to promote CT competence; to implement this approach in six primary school classrooms; to develop a tool for assessing students' performance in CT within the context of peer dialogue tasks; to compare results between students in the experimental and control group; and to understand how children think critically, by means of observing how children express their thoughts and attitudes or dispositions.

### **2.1. Research question**

The present paper focuses on how teachers implement the new learning framework and whether it enables them to move from their usual approach to a more student-centered one.

### **2.2. Participants**

Seventy-two teachers with their 51 classes applied for the project and then confirmed their interest. The application was made through an online exploratory survey sent to all headteachers in the region along with a description of the research project. The survey also aimed to provide information on primary school teachers in the region and learn about the most common teaching style. Six primary school classes (three 2<sup>nd</sup> grade and three 4<sup>th</sup> grade) were selected with their 13 teachers as the

experimental group. The selection was based on several criteria: the non-use by teachers of innovative methodologies in the classroom, the grade, the number of applicant teachers for that class, the subjects involved, and the school time. By means of snowball sampling a further six classes of equal grade, their students and teachers were selected to form the control group. A total of 229 primary school children from 12 classes in eight different schools in the region participated in the main study.

### 2.3. Methods

All teachers who applied for the project were offered training on the TASC framework, although they were not ultimately selected for the study. Training sessions were organized at four different venues to encourage participation. There were four meetings per location, each lasting two hours. At the end of the implementation period, teachers in the control group voluntarily attended the same training. The intervention was planned over two school years, from February 2018 to April 2020. Actually, due to the Covid-19 pandemic emergency, it finished at the end of February 2020, and without the summer holidays, the total duration of the intervention was about nine months.

Many data collection tools were employed to answer the research question topic of this paper. First, teachers developed multiple TASC lesson plans collected by the researcher. Throughout the implementation period, the researcher mentored the teachers and initiated a community of practices, helped them with their planning, facilitated the exchange of lesson plans between teachers, answered questions, and found solutions. Therefore, there was a significant exchange of emails, text messages, and some planning meetings. In this way, relevant information about the teachers' way of working, critical issues, and goals they observed were gathered and noted. During those nine months, they also filled in a logbook. For each lesson plan developed, the logbook recorded the TASC stages and teaching strategies used, some relevant notes about the effectiveness or failure of the planning, any modifications made, and the results observed. As a last stage, teachers completed a final questionnaire.

The final questionnaire was helpful for data triangulation since it offered the opportunity to compare teachers' perceptions with the researcher's analysis of data collected through the other tools in order to infer adherence to the trial. It is structured in sessions dealing with active learning strategies, learning outcomes, other findings, tools provided, researcher support, level of satisfaction and reasons. All questions, except those of the last session which are open-ended, are on a 6-point Likert scale format.

### 3. Data analysis and findings

In the nine months of intervention, differences in the number of TASC lesson plans developed in each classroom (*Minimum* = 16, *Maximum* = 44) and their quality were observed. Indeed, alongside the quantitative observation, lesson plans were analyzed qualitatively. In each lesson plan, the relevant expressions that were used to describe the teacher's actions and the learners' tasks were underlined. Lesson plans were classified as teacher-centered or student-centered according to these expressions. Consequently, trendlines of the teaching style of those who developed the plans were inferred. Notes collected through formal and informal communication, such as by email and text messages or during planning meetings, contributed to the interpretation of data. Logbooks provided additional support for data triangulation.

A consistent group of lesson plans seems to be oriented towards lectures, with a teacher-centered approach. Elements that have led to this conclusion can be found in the linguistic choices that describe the teaching design and the actions contained therein. For instance, many expressions such as "I explain...", "I have presented the theme of...", "I have introduced...", are common. In other lesson plans, the teachers claimed to make the pupils practice using TASC after a lecture-style lesson or with content already known to the pupils. The crucial element is that in their planning, teachers describe tasks that train executive cognitive processes without co-construction of new knowledge among peers, despite the fact that TASC clearly involves the use of higher-order thinking skills in many of its stages. On one hand, the teacher is portrayed as holding the knowledge and guiding actions by making decisions for the students. On the other hand, children have few moments to explore materials independently and co-construct new knowledge with their peers. A smaller group of plans is student-oriented and well placed within the TASC framework. The actions of retrieving prior information, sharing and processing it, deciding, creating, comparing, proposing changes, motivating choices, evaluating, communicating findings, and reflecting on the work done, are always carried out by the students, whether alone, in pairs, or groups, depending on the task. The plans are structured accordingly for authentic and transversal tasks but also with disciplinary content, which might sometimes be more complex to tackle if the teacher were not to use the lecture-style approach. Finally, very few other educational designs seem to have been retrospectively tailored to the TASC framework. However, even if it is not known how the content has been mastered by the students, the plans feature reality tasks.

Therefore, matching the lesson plans with the teachers who developed them, it was possible to draw the following picture. For a group of teachers (30.8%), TASC became the reference model for designing and implementing student-centered lesson plans in all subjects, regularly or occasionally. Several teachers (53.9%) developed lesson plans following the lecture type of teaching method, strongly influenced by tradition. These teachers easily employed TASC with content already familiar to the students. A small final group (15.3%) chose the topics or activities most easily adaptable to the TASC framework, i.e., cross-curricular reality tasks. Essentially, these teachers continued with their way of working, and the TASC framework seemed to be more of a constraint for them. These results are reasonably consistent with the teachers' self-perceived and self-reported teaching styles in the initial survey, where multivariate data analysis showed a relevant presence of the lecture pattern (teacher-oriented) in at least 50.4% of the sample of teachers responding to the questionnaire ( $N = 236$ ; for a full analysis see Imperio, 2022).

Data collected by means of the final questionnaire were statistically explored with SPSS software. Only the questions concerning the focus of this paper are discussed here. At first, descriptive statistics were produced and presented in bar charts. The first question asked teachers to rate on a 6-point Likert scale (1 = *easy*, 6 = *difficult*) some aspects connected to active learning practices: planning with TASC, identifying which active strategies to employ, stopping using a lecture-style teaching method, implementing cooperative learning techniques, organizing student-centered activities, managing the class (with issues such as groups, noise, desk arrangement). About half of the teachers (46.2%; showing rates from 4 to 6) indicated that shifting the focus to the student ( $Mdn = 3$ ;  $Mo = 2$  and 4) and planning with TASC ( $Mdn = 3$ ;  $Mo = 2$ ) was a challenging task. However, 76.9% (rates from 1 to 3) found breaking away from the traditional lecture style ( $Mdn = 3$ ;  $Mo = 2$  and 3) and identifying active learning strategies ( $Mdn = 3$ ;  $Mo = 2$  and 3) fairly easy. Putting into practice cooperative-learning techniques ( $Mdn = 2$ ;  $Mo = 1$  and 2) was judged as easy (with rates from 1 to 3) by most of the teachers (84.6%). These inconsistencies in ratings seem to suggest that some teachers may not be fully aware of the influence of traditional approaches on their teaching style. Finally, classroom management (dealing with issues such as group management, noise etc.) was found to be rather easy by approximately 70% of them ( $Mdn = Mo = 2$ ). In the third question, with rates ranging from 1 (*not at all*) to 6 (*a lot*), all teachers rated TASC ( $Mdn = Mo = 5$ ), and the cooperative learning strategies learned during the training ( $Mdn = Mo = 6$ ) as useful. Both their written (email, text messages) and oral statements (during planning meetings) supported TASC as helpful to enhance reflection on their own teaching, even if it was considered as not easy to put into practice for some teachers. One issue that may have represented an obstacle in implementing TASC emerged in the fourth question, again ranging from 1 to 6 (*not at all* and *a lot*, respectively), and related to the time needed to deal with the same amount of content compared to the previous teaching habits. Indeed, 61.5% of the teachers (with rates from 4 to 6) felt that the amount of time required increased due to this teaching approach ( $Mdn = 4$ ;  $Mo = 5$ ). Nevertheless, in the final session, teachers gave an average satisfaction level of 91.2% ( $SD = 8.2$ ) and stated that they would take part in the project again. To corroborate this last answer, teachers referred to their professional growth and the results achieved by the pupils. Only one teacher reported that she already used similar approaches.

#### 4. Final discussion and conclusions

The differences observed in teachers' plans, their statements through the different communication channels and answers to the final questionnaire suggest that the costs of teacher change can be summarized in two words: time and effort. Findings confirm what has already been described in the literature (among others, Hoekstra & Beijaard, 2006; Johnson et al., 2009). To quote the teachers themselves, some costs of change are: time for awareness and changing beliefs, time and efforts for “shaking off traditional, almost always frontal teaching”, “a first period spent understanding” and exploring new strategies and approaches, a “longer time to do things [of the curriculum] but with better results”. The amount of time and effort seems to be individual, and could be affected by a range of variables that should be investigated in further studies, like those described by Hoekstra and Beijaard (2006). Some constraints that emerged from teachers' statements were: a feeling of pressure to complete the content program (which actually should no longer exist in Italy), the expectations of parents, the assessment at a national level, the challenge of not knowing where children's actions might lead to.

Among the questions that remain unanswered, there is the influence of university education on future teachers, and how much university education's approaches are still mono-directional and content-focused, and do not provide a concrete model of what is meant by active learning.

In conclusion, the complete study has explored at least two areas of research for a better understanding of teacher change: the effects of changing teacher practices on students' learning

outcomes, and the development of a community of practice among a group of teachers moved by the same interest (see Richardson & Placier, 2001, p. 939). The former has not been discussed in this paper. As for the latter, teachers' statements confirm that the community of practices was helpful for them, as was the ongoing dialogue among teachers and between teachers and the researcher. Most teachers found TASC "an opportunity to challenge oneself, to stop and reflect". Moreover, the study has helped to understand once again that many teachers need more time and support to move toward, apply and retain effectively a new teaching style.

## References

- Bloom, B. S. (Ed.) (1956). *Taxonomy of Educational Objectives. The Classification of Educational Goals*. Vol. 1: Cognitive Domain. USA: David McKay Company, Inc.
- Capaldo, N., & Rondanini, L. (2002). *La scuola italiana al bivio: modelli e ordinamenti a confronto* [The Italian school at the crossroads: comparing models and systems]. Gardolo, Italy: Erickson.
- Council of the European Union (2018). *Council Recommendation of 22 May 2018 on key competences for lifelong learning* (2018/C 189/01). Brussels, Belgium: Official Journal of the European Union. Retrieved May 3, 2022, from: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&rid=7](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7).
- Ennis, R. H. (1964). A Definition of Critical Thinking. *The Reading Teacher*, 17(8), 599-612.
- Halpern, D. F. (1998). Teaching Critical Thinking for Transfer Across Domains: Dispositions, Skills, Structure Training, and Metacognitive Monitoring. *American Psychologist*, 53(4), 449-455.
- Hargreaves, A., Lieberman, A., Fullan, M., & Hopkins, D. (2005). International Handbook of Educational Change – Introduction. In A. Hargreaves (Ed.), *Extending Educational Change. International Handbook of Educational Change* (pp. vii-xi). The Netherlands: Springer.
- Hargreaves, A. (2005). Introduction. Pushing the Boundaries of Educational Change. In A. Hargreaves (Ed.), *Extending Educational Change. International Handbook of Educational Change* (pp. 1-14). The Netherlands: Springer.
- Hoekstra, A., & Beijaard, D. (2006). *Teacher Change: when, how and why?* [Draft copy]. Paper presented at AERA 2006. Retrieved April 28, 2022, from: [https://www.researchgate.net/publication/27701606\\_Teacher\\_Change\\_When\\_How\\_and\\_Why](https://www.researchgate.net/publication/27701606_Teacher_Change_When_How_and_Why).
- Imperio, A. (2022). *L'educazione al pensiero critico a scuola* [Critical thinking education at school; e-book]. Collana Umberto Margiotta. Roma, Italy: Armando Editore.
- Imperio, A., Kleine Staarman, J., Basso, D. (2020). Relevance of the socio-cultural perspective in the discussion about critical thinking. *Ricerche di Pedagogia e Didattica. Journal of Theories and Research in Education*, 15(1), 1-19. Retrieved April 30, 2022, from: <https://doi.org/10.6092/issn.1970-2221/9882>.
- Johnson, A., Kimball, R., Melendez, B., Myers, L., Rhea, K.K., & Travis, B. (2009). Breaking with Tradition: Preparing Faculty to Teach in a Student-Centered or Problem-Solving Environment. *Primus: Problems, Resources, and Issues in Mathematics Undergraduate Studies*, 19(2), 146-160.
- Mercer, N. & Littleton K. (2007). *Dialogue and the Development of Children's Thinking. A sociocultural approach*. London, England: Routledge.
- Ministero dell'Istruzione, dell'Università e della Ricerca [MIUR] (2018). *Indicazioni Nazionali e Nuovi Scenari* [National Indications and New Scenarios] (Ministerial notice 3645/18). Retrieved April 30, 2022, from: <https://www.miur.gov.it/-/nota-di-trasmissione-documento-indicazioni-nazionali-e-nuovi-scenari>
- Moseley, D., Baumfield, V., Elliott, J., Higgins, S., Miller, J., Newton, D., & Gregson, M. (2005). *Frameworks for Thinking: A Handbook for Teaching and Learning*. Cambridge, England: Cambridge University Press.
- Richardson, V., & Placier, P. (2001). Teacher change. In V. Richardson (Ed.), *Handbook of research on teaching* (pp. 905- 947). Washington, DC: American Educational Research Association.
- Sala, A., Punie, Y., Garkov, V., & Cabrera Giraldez, M. (2020). *LifeComp: The European Framework for Personal, Social and Learning to Learn Key Competence* (EUR 30246 EN). Luxembourg: Publications Office of the European Union. Retrieved January 24, 2021, from: <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/lifecomp-european-framework-personal-social-and-learning-learn-key-competence>.
- Sternberg, R. J. (1986). *Critical thinking: Its nature, measurement, and improvement* (ED272882). Retrieved April 30, 2022, from ERIC database.
- Wallace, B. (2001). *Teaching Thinking Skills Across the Primary Curriculum*. London, England: David Fulton Publishers.