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Critical thinking in teachers' perception: Critical remarks based on research

Abstract

Research objectives (aims) and problem(s): This study investigates teachers' perceptions of critical thinking (CT) as an essential competence in contemporary education. It examines teachers' self-assessed levels of CT, their preparedness to develop CT in students, and the barriers that hinder its effective implementation in teaching practice.

Research methods: A quantitative survey was conducted among 213 teachers from various educational levels in southern Poland. The structured questionnaire included self-assessment items and Likert-scale questions measuring teachers' attitudes toward CT. Data analysis employed descriptive statistics, correlation analysis, and nonparametric tests (Mann–Whitney U and Kruskal–Wallis).

Structure of the article: The article begins with a conceptual overview of CT in the context of the information society, followed by a description

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of the research methodology. Subsequent sections present and discuss the empirical findings and their implications for educational practice.

Research findings and their impact on the development of educational sciences: Teachers highly value CT but often feel underprepared to teach it. Only 7.5% reported being very well prepared, and many cited obstacles such as a lack of methodological tools, insufficient training, and low student motivation. The results emphasize the need for systematic support and teacher education focused on CT instruction.

Conclusions: The study underscores the importance of professional development that enhances teachers' competence and confidence in fostering CT. Strengthening CT-oriented curricula and training programs is vital for preparing students to think critically in a complex, information-driven world.

Introduction

In the face of today's global challenges, the practice and theory of contemporary education inevitably focus on developing competencies that help individuals find meaning in their social and professional lives, understand the impact of local actions on global processes, and solve real problems. In this sense, education plays a transformative role, and its content must address important issues of social development, while nurturing the values of cooperation, solidarity, equality, and inclusiveness. Individuals must learn to cope with unpredictable and unknown future situations (Colomer et al., 2021).

In today's mediatized society (Krotz, 2007) and globalized world (McLuhan, 2004), interconnected through dense networks of interdependencies, complex problems at global, local, and individual levels are increasingly becoming a challenge for both individuals and social groups. Citizens now face the need to evaluate the reliability of information, protect themselves and their loved ones from manipulation, especially media manipulation, and make decisions and judgments based on information that is not always as accurate as one would wish.

In this context, the development of critical thinking (CT) in the educational process becomes a key issue (Yasir & Alnoori, 2020; Duron et al., 2006), as does teacher perception of CT; that is, an assessment of how

teachers understand this competence and to what extent they are willing and able to develop it among their students (Choy & Cheah, 2009). As Joanna M. Łukasik (2016) notes, teachers present themselves in the classroom as unique individuals whose self-understanding and worldview are shaped by their own biographies.

In today's digitalized world, in which individuals are bombarded with information, the ability to critically evaluate facts, information, and phenomena observed is an extremely important competence. Therefore, teachers' attitudes toward critical thinking, as well as their understanding of this phenomenon are crucial. These attitudes help shape students' own views on CT, their understanding of it, and their perceived need to acquire and develop this competence.

According to researchers, teachers face many barriers to developing CT among students (Aliakbari & Sadeghdaghighi, 2013). However, the most important factor supporting students' acquisition and development of this competence is the opportunity to observe it in their teacher, who should model strong critical thinking skills themselves. Teachers should be open to different perspectives and capable of discussing and adopting various positions. It is also essential for teachers to reflect on CT: what they think about this competence, how prepared they are to develop it, and how much importance they assign to it in their work.

Critical thinking is described as a key competence in efforts to transform the current unfavorable development model into one oriented toward sustainable development (SD) (Rieckmann, 2012). Faced with the challenges of the information society in a global context, each individual must critically assess social, economic, and environmental realities and make decisions based on this critical analysis. Without the support of teachers in the formal education system, the acquisition of this competence by young citizens, future decision-makers, is very difficult, if not impossible.

In this text, we focus on the issue of teachers' views on critical thinking in the didactic process. After attempting to conceptualize the term *critical thinking*, we present the methodological assumptions of the study. We then analyze the opinions expressed by teachers on the importance

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of critical thinking in a "global information society" (van Dijk, 2020). The article concludes with a discussion of the results and final conclusions.

Critical thinking: An attempt at conceptualization

Critical thinking has been analyzed by researchers in various scientific fields. The twentieth century can be characterized as a period of in-depth reflection on what critical thinking is, how it can be taught, and how individuals can be supported in acquiring and developing this competence (Glaser, 1941; Ennis, 1985; Paul & Elder, 2006). Many authors also emphasize the importance of education and teachers' actions in shaping students' CT at every educational stage (Laabidi & Laabidi, 2023; Phillips, 2023; Lombardi et al., 2022; Alsaleh, 2020; Behar-Horenstein & Niu, 2011; Choy & Cheah, 2009).

To conceptualize the term *critical thinking*, it is worth recalling John Dewey's classic definition from the early 20th century: critical thinking is "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (Dewey, 1910). A more contemporary, and also very simple, definition is presented by Robert Ennis, who argues that "critical thinking is reasonable, reflective thinking that is focused on deciding what to believe or do."

In the 1980s, Michael Scriven and Richard Paul (1987) offered a definition that describes critical thinking as "an intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action." At the end of the 20th century, Diane F. Halpern (1998) proposed her conceptualization of the term: "Critical thinking is the use of cognitive skills or strategies that increase the probability of a desirable outcome. It is purposeful, reasoned, and goal-directed." She later continued her reflections and research on critical thinking (Halpern, 2007, 2013, 2014).

Currently, one of the best-known and most highly regarded definitions is the one proposed by Facione (1990), who defines critical thinking as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (p. 2).

Critical thinking is a multifaceted concept that has received many definitions in the scientific literature. All of the aforementioned definitions emphasize key characteristics such as reflexivity, logic, and the ability to evaluate information independently. Critical thinking is understood as a competence that facilitates active, informed, and safe functioning in the complex reality of the global information society. In this regard, it becomes crucial to understand how teachers view critical thinking, as their approach affects the effectiveness of its development in the educational process.

Teachers' perceptions of critical thinking

According to the literature, "perception" is shaped, among other factors, by a person's experiences, needs, and professional or educational context. Through these experiences and needs, individuals develop a coherent model of the world that enables them to react appropriately and anticipate various situations (Sainn et al., 1980). Therefore, teachers' perceptions of critical thinking have a significant impact on how these skills are integrated into educational settings. Recent research has examined various aspects of this topic, shedding light on both the understanding and implementation of CT in classrooms (Brookfield, 2012).

Teachers' perspectives play a key role in how CT is incorporated into the educational process. Their views influence how they design lessons, engage students in reasoning processes, and assess students' ability to think independently. Moreover, teachers' attitudes toward critical thinking determine their willingness to create an open, inquiry-based learning environment in which students are encouraged to question assumptions, analyze arguments, and formulate well-founded conclusions.

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Understanding how teachers perceive critical thinking is therefore crucial for improving learning strategies and supporting the development of this competence in education. The next stage of this project presents the methodological assumptions that form the foundation for the detailed analysis and interpretation of the results that follow.

Methodological assumptions of the study

The purpose of the study was to diagnose and describe teachers' opinions on CT, with particular emphasis on their self-assessment of this competence, satisfaction with its level, and perceived importance in a mediatized society. The study employed a quantitative survey method within the nomothetic paradigm.

The research tool was an author-constructed questionnaire developed specifically for this study, consisting of 25 items divided into three parts:

– Self-assessment of critical thinking competence – 10 statements rated on a 5-point Likert scale (1 = definitely not; 5 = definitely yes). *Example item:* "I am able to evaluate the credibility of information presented in the media."
– Evaluation of teaching and developing critical thinking – 9 statements referring to methods and strategies that teachers use to foster students' CT, also measured with 5-point Likert scales. *Example item:* "I encourage students to verify sources of information before accepting them as true."
– Teachers' needs and attitudes toward improving critical thinking – 6 semi-open and open-ended questions related to perceived barriers, needs, and preferred forms of professional development.

Only the closed-ended items were used to calculate internal consistency, yielding Cronbach's α = .894, which indicates high reliability. Open-ended responses were analyzed qualitatively and served to complement the quantitative data. The main research problem was formulated

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as follows: *What is teachers' perception of critical thinking as a key competence in contemporary education?*

The sampling method was convenience sampling (Creswell & Creswell, 2017). Questionnaires were distributed electronically to schools in southern Poland, and participation was voluntary and anonymous.

A total of 213 teachers participated in the study. The sample characteristics were as follows:

– Gender: 77% female, 23% male
– Level of education taught: kindergarten – 2.8%; early childhood (grades 1–3) – 9.4%; elementary (grades 4–8) – 34.3%; secondary school – 53.5%
– Teaching experience: <6 years – 13.1%; 6–10 years – 15%; 11–15 years – 12.2%; 16–20 years – 15%; 21–25 years – 19.7%; >25 years – 13.1%
– Place of work: large city – 55%; small city – 28.6%; rural area – 15.5%
– Subjects taught: science (math, physics, biology, chemistry, geography) – 25.3%; humanities (Polish, history, social studies) – 24.8%; foreign languages – 13.1%; computer science – 6%; early education and kindergarten – 14.6%; special education, psychology, pedagogy, or speech therapy – 16.4%

These sociodemographic variables were treated as independent variables (see Table 1) and were used to test for potential differences in teachers' self-assessment of critical thinking and in their approaches to developing this competence among students. The study thus provides insight into how demographic and professional factors relate to teachers' understanding and development of critical thinking in the context of modern education.

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Table 1. Variables included in the study

Independent variables	Dependent variables
Gender	Preparedness to develop CT
Years of teaching experience	Self-assessed CT
Level of education taught	Perceived impact of CT on student success
School location	Willingness to participate in CT training
	Preparedness to develop CT

Source: own research

Critical thinking in the context of teachers' perception – based on research results

The collected data were analyzed using frequency distributions and basic descriptive statistics (mean, median, and standard deviation). Non-parametric tests (Mann–Whitney U and Kruskal–Wallis H) were used for ordinal and quantitative variables, while correlations were assessed using Spearman's ρ coefficient. All analyses were performed at a significance level of $α = .05$.

a) Perceived importance and benefits of critical thinking

Teachers were asked to assess the importance of critical thinking (CT) in the contemporary social, economic, and environmental context, which constitute the three pillars of sustainable development. Respondents most often indicated that CT protects against manipulation and persuasion (41.8%) and enables the recognition of falsehoods, misinformation, and fake news (37.6%). About one-third (31.5%) stated that CT helps in formulating constructive criticism, and one in four teachers (26.3%) considered it essential for self-monitoring and planning professional development. Nearly one-fifth (19.7%) believed that CT supports the solving of complex problems. Other responses (e.g., improving communication, supporting independent opinion formation) were selected by fewer than

10% of respondents. No significant relationships were observed between these responses and independent variables such as gender, workplace, or subject taught.

b) Teachers' preparedness to develop CT

On a five-point scale (1 = completely unprepared; 5 = very well prepared), the median level of teachers' readiness to develop critical thinking skills in students was M = 3.18 (SD = 0.97; Median = 3.0), which reflects a moderate level of preparedness. Almost half (47.9%) of respondents reported moderate preparation, 26.3% good preparation, and only 7.5% very good preparation. Meanwhile, 13.1% considered themselves poorly prepared, and 5.2% completely unprepared. There were no significant differences in preparation between men and women (U = 4467.5, p = .203) or among teachers with different levels of teaching experience (p > .05).

c) Self-assessment of critical thinking

When asked to assess their own CT skills, most respondents rated them as average or sufficient for their profession (27.7% each). About one-quarter (25.8%) expressed a desire to further develop their CT skills, while 11.7% rated their CT level as too low and only 6.1% as very high. A positive and statistically significant correlation was found between CT self-assessment and the willingness to develop CT in students (Spearman's ρ = .316, p < .001), which suggests that teachers who rate their CT more highly also feel more confident in developing it. Male teachers tended to rate their critical thinking skills slightly higher than female teachers (M = 3.46 vs. 3.27; U = 4918.0, p = .042), although the effect size was small.

d) Perceived impact of CT on students' educational success

Respondents generally attached high importance to CT for student learning outcomes (M = 4.06, Median = 4.0). In fact, 34.3% rated the impact as "very high" and 39.4% as "high," while 23.0% considered it moderate. Only 3.8% viewed the impact as low or insignificant. The Kruskal–Wallis analysis showed a significant effect of teaching experience (H(5) = 13.90, p = .016): teachers with more than 25 years of experience perceived

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the impact of CT on achievement as greater (Mdn = 4.39) compared to teachers with 11–15 years of experience (Mdn = 3.76; U = 393.0, adj. *p* = .026). No significant effect of gender or workplace was found.

e) Barriers to developing critical thinking

Teachers most often highlighted low student motivation (38.0%), low teacher motivation (37.6%), and a lack of methodological competence (36.2%) as the main barriers to developing critical thinking. Other notable obstacles included an overloaded curriculum (30.5%), a lack of appropriate teaching materials (22.5%), and students' insufficient logical-thinking skills (21.6%). The results indicate that both systemic and individual factors hinder the effective promotion of critical thinking in schools.

Table 2 presents the benefits and barriers to developing CT as reported by the teachers who participated in the study.

Table 2. Benefits and barriers to developing CT according to teachers

Category	Response	% of respondents
Benefits	Protects against manipulation/persuasion	41.8
	Helps recognize fake news/disinformation	37.6
	Builds constructive criticism	31.5
	Supports self-management and personal development	26.3
	Helps solve complex problems	19.7
	Improves communication and decision-making	<10
Barriers	Lack of student motivation	38.0
	Lack of teacher motivation	37.6
	Lack of methodological competence	36.2
	Curriculum overload/time constraints	30.5
	Lack of materials	22.5
	Low student logical-thinking skills	21.6

Note. Multiple responses were allowed.
Source: own research

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f) Willingness to participate in training

Almost all respondents expressed interest in training aimed at improving CT instruction: 46.0% answered "definitely yes" and 43.2% "rather yes" (M = 4.32; Median = 4.0). Female teachers showed a significantly greater willingness to participate in training compared to male teachers (U = 5085.0, *p* = .0019). Readiness to participate in training was not correlated with the level of preparation (ρ = .028, *p* = .689), indicating that teachers at all levels of readiness are open to professional development. Nevertheless, teachers with less experience (<10 years) demonstrated slightly greater motivation to participate in training than teachers with more than 25 years of experience (Mdn = 4.71 vs. 4.27). Table 3 presents teachers' readiness, perceived impact, CT self-assessment, and willingness to participate in training.

Table 3. Teachers' preparedness, perceived impact, self-assessed CT and willingness to participate in training

Variable	M	Mdn	SD	Scale range	% Low (1–2)	% Moderate (3)	% High (4–5)
Preparedness to develop CT	3.18	3.0	0.97	1–5	18.3	47.9	33.8
Self-assessed CT	3.32	3.0	0.91	1–5	17.8	55.4	26.8
Perceived impact of CT on student success	4.06	4.0	0.88	1–5	3.8	23.0	73.6
Willingness to participate in CT training	4.32	4.0	0.81	1–5	2.3	8.5	89.2

Note. Higher means indicate stronger agreement or greater perceived preparedness/impact. CT = critical thinking. Source: own research

g) Protective function of CT in the media context

A large majority of teachers (66%) considered CT to be *very* protective against manipulation and risks associated with new media use, while 26.7% rated it as *moderately* protective and 7.3% as *weakly* protective. Teachers working in large cities were significantly more likely to perceive CT as a protective factor than those in small towns (Mdn = 4.74 vs. 4.46; U = 4321.0, *p* = .041). This suggests greater media awareness among educators in urban environments.

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Overall, the data indicate that teachers highly value critical thinking but often feel inadequately prepared to teach it effectively. The results highlight a gap between awareness and practical competences in teaching CT; significant links between CT self-assessment and teaching confidence; gender differences in motivation for training; and the need for targeted professional development, especially for less experienced teachers.

Table 2. Group differences by gender, workplace, and seniority (nonparametric tests)

Variable	Test	Test statistic	p-value	Direction of difference / Comment
Preparedness (F vs. M)	Mann–Whitney U	4467.5	.203	n.s. (no significant difference)
Willingness to participate in training (F vs. M)	Mann–Whitney U	5085.0	**.0019**	Women > Men
Self-assessed CT (F vs. M)	Mann–Whitney U	4918.0	**.042**	Men > Women (small effect)
Perceived impact of CT × Workplace	Kruskal–Wallis H(2)	4.69	.096	n.s.

Source: own research

Discussion and conclusions

"Throughout nearly 300 years of policymaking in the United States, educators have promoted eight broad goals of schooling: basic academic skills, critical thinking and problem solving, social skills and work ethic, citizenship, physical health, emotional health, the arts and literature, and preparation for skilled employment" (Rothstein, Wilder, & Jacobsen, 2007, p. 8). This quotation alone shows that critical thinking is currently considered an extremely important competence.

The results of the survey highlight the key role of teachers in developing this competence in today's global information society. The majority of teachers surveyed (more than 66%) consider critical thinking an important factor in protecting against media manipulation and supporting students' educational success. This is in line with international

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research demonstrating that critical thinking skills are crucial for functioning in a complex, globalized world (Brookfield, 2012; Facione, 1990). In addition, a study conducted in Chile by Martín Cáceres and colleagues (2020) concluded that "critical thinking skills are a stronger predictor of successful life decisions than other factors, such as intelligence" (p. 1).

One of the key findings of the survey concerns teachers' self-assessment of their critical thinking competences. Only 6.1% of respondents rated their CT level as very high, which indicates the need for further development of this skill. These results support Halpern's (1998) observations, which emphasize that developing critical thinking requires not only knowledge but also appropriate strategies and a conscious approach to teaching.

Similarly, the findings regarding teachers' preparation to develop CT among students are concerning: only 7.5% of respondents feel very well prepared for this task. According to Aliakbari and Sadeghdaghighi's (2013) study, the lack of appropriate methodological tools and teaching materials can be serious barriers to teaching critical thinking. Comparable results were reported by Wei Liu (2023), who found no significant effect of gender or professional experience on teachers' perceptions of CT. However, teachers who lacked confidence and clear strategies for teaching CT had difficulty nurturing these skills among students.

The respondents identified several barriers to developing CT among students, including a lack of motivation among students (38%) and teachers (37.6%) and a lack of methodological competence (36.2%). These findings are consistent with the global literature, where similar factors are cited as obstacles to implementing CT in classrooms (Behar-Horenstein & Niu, 2011). At the same time, as Choy and Cheah (2009) point out, teachers' attitudes and their ability to model CT are crucial to the development of this competence in students. Similarly, Ab Kadir (2018) suggests that both teachers' knowledge and attitudes about CT are essential to promoting it in classrooms.

The survey results show that teachers recognize the great importance of CT in managing and protecting themselves from misinformation. More than 41.8% of respondents considered CT to be crucial for protection

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against manipulation, which is in line with van Dijk's (2020) findings emphasizing the role of critical analysis in understanding networked reality.

However, only 17.7% of surveyed teachers identified CT as a helpful skill in solving complex problems. This result points to a potential gap in teachers' awareness of how CT can be applied in decision-making. This issue was discussed extensively by Rieckmann (2012) in the context of education for sustainable development. Augustine Enabueale (2011), on the other hand, stresses that CT includes elements such as analyzing and evaluating information, drawing reasoned conclusions, considering different perspectives, distinguishing fact from false information, engaging in inquiry, and applying higher-order thinking to problem solving.

The results of the study underscore the need for training and workshops that help teachers develop their CT competencies. Brookfield (2012) suggests that such training should focus on practical techniques to support CT instruction. Similarly, Arthur L. Costa (2001) argues that teacher training should emphasize practical teaching methods, such as interacting with students and providing feedback because these aspects are more important than the content of instruction itself. It is also necessary to create and provide teachers with teaching materials that support CT development. As Facione (1990) notes, structured learning tools can significantly influence the quality of critical thinking instruction.

There is a clear need for further research in this area, particularly on the specific needs of teachers in Poland in the context of global educational challenges. In conclusion, the results of this study contribute to international discussions on the importance of CT in education and point to the need for comprehensive teacher support in this domain.

Recommendations for educational practice

Based on the research conducted, the following implications for educational practice can be proposed to improve the development of CT among both teachers and students:

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a) Reform of teacher training programs

– Introduction of compulsory CT modules: Teacher training programs should include practical courses and workshops on teaching critical thinking, including strategies for developing this competence in students. These classes should focus on modeling CT in didactic practice, not just on theory.

– Use of activating methods: Courses for teachers should employ problem-based learning (PBL) and case studies, which require information analysis, argumentation, and decision-making.

– Training on misinformation and fake news: Teacher training should include the analysis of disinformation and fake news so that teachers can effectively cultivate students' ability to assess the credibility of information.

b) Evaluation and development of teachers' competences

– Implementation of self-assessment tools: Teacher education and professional development should incorporate self-assessment of CT skills (e.g., through questionnaires and evaluations).

– Regular professional development: Continuous training opportunities should be offered for teachers at different stages of their careers.

c) Implementation of changes in education policy

– Mandatory CT training for teachers: As part of their professional development, teachers should participate in continuing education courses designed to develop CT skills. Such training should span different subjects and educational levels, as critical thinking is not limited to a single discipline.

– Provision of teaching materials: Teachers should be supported with ready-made lesson plans and instructional resources to facilitate CT development.

– Creation of educational platforms: Educational platforms should be developed to provide materials, examples of analyses, and interactive exercises.

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d) Modification of the core curriculum

– Increased emphasis on CT: Official educational documents and curricula should place greater emphasis on CT. Skills such as information analysis and argumentation should be integrated into assessments of student progress.

– School-level changes: Schools should create environments that promote CT, for example, by introducing debates, research projects, and teamwork opportunities so that students can regularly practice CT. Teacher-leaders who implement CT-oriented methods should be supported in sharing their expertise with colleagues.

e) Monitoring and evaluating effectiveness

– Regular evaluation: Schools should implement ongoing evaluation of CT curricula and conduct research on the effectiveness of teaching methods and their impact on student development.

Method limitations

Like any research approach, the one we used also has its limitations. First, the data collected in the study were declarative (self-reported), that is, we relied on teachers' statements regarding their perception of CT competence. In future research using more in-depth qualitative methods, we will seek to understand the meaning that teachers assign to CT: what their beliefs, understandings, and conceptualizations of CT are.

In addition, it would be worthwhile to use a sampling method other than convenience sampling in future studies, because with this nonprobabilistic approach, the results cannot be generalized to the entire population. Nevertheless, our study provides valuable insight into teachers' perceptions of critical thinking at different levels of education and offers a useful starting point for further discussion and research.

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Conflict of interest

The authors declare no conflict of interest.

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