



The Role of the Teacher in Developing Critical Thinking Among High School Students

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Abstract

Developing students' critical thinking has become an essential goal of 21st-century education. This study investigates how teachers' and principals' perceptions, professional role identity, instructional practices, systemic conditions, and school-level support influence the development of critical thinking among high school students in Israel. Using a five-domain ecological framework, the study draws on survey data from 340 educators. Results show strong endorsement of critical thinking but only moderate implementation of higher-order instructional strategies. Systemic conditions represent the strongest barriers to implementation. Principals report consistently higher scores across all domains compared to teachers. Regression analyses reveal that Teacher Role and Systemic Conditions are the strongest predictors of instructional strategies. Policy recommendations include reducing curriculum overload, enhancing teacher autonomy, reforming assessment structures, and fostering collaborative school cultures. The five-domain ecological model provides a practical framework for schools seeking to advance critical-thinking pedagogy.

Keywords: critical thinking, higher-order thinking, instructional strategies, teacher role, Israeli education, systemic conditions, school leadership, ecological model.

1. INTRODUCTION

Critical thinking has become a central pillar in global educational discourse, recognized as essential for preparing students to navigate complex, information-dense, and rapidly evolving environments. International organizations such as the OECD (2021) and UNESCO emphasize that modern societies increasingly require individuals capable of analyzing information critically, evaluating competing claims, and generating well-reasoned solutions to novel problems. Within this context, secondary schools bear significant responsibility for cultivating adolescents' higher-order thinking capacities at a formative stage of cognitive and epistemic development.

Despite this consensus, the integration of critical-thinking pedagogy into everyday instruction remains inconsistent and often insufficient. Studies conducted in multiple countries reveal a persistent gap between teachers' stated beliefs about the importance of critical thinking and the actual instructional strategies implemented in their classrooms (Abrami et al., 2019; Brookhart, 2020). While educators broadly acknowledge the value of inquiry, argumentation, and dialogic



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engagement, their instructional practices frequently default to traditional, content-driven methods. This disparity—often termed the “intention–practice gap”—is shaped by a constellation of individual, organizational, and systemic factors that influence teachers’ professional judgment and decisions.

In Israel, the challenge is particularly salient. Although recent national reforms emphasize deeper learning, interdisciplinary reasoning, and 21st-century competencies, secondary schools continue to operate under the dominant influence of the Bagrut examination system. High-stakes testing exerts strong pressure on teachers to prioritize curriculum coverage and test preparation over exploratory or inquiry-based learning. The structural characteristics of Israeli secondary education—compressed schedules, overloaded curricula, and limited pedagogical autonomy—constrain teachers’ capacity to enact sustained higher-order instructional practices. Empirical studies highlight that teachers often find themselves caught between the pedagogical ideals promoted in policy documents and the structural realities of daily classroom life (Givon & Mioduser, 2021; Katz & Shahar, 2023; Zohar & Barzilai, 2023).

Existing research identifies several mechanisms underpinning this tension. At the psychological level, teachers’ epistemic beliefs and perceptions of critical thinking influence their readiness to engage students in reasoning-oriented activities. At the professional level, teacher identity—particularly the extent to which educators view themselves as facilitators of thinking rather than transmitters of information—shapes their instructional intentions. At the organizational level, school climate, leadership practices, and professional learning communities influence teachers’ confidence and willingness to innovate. At the systemic level, curriculum density, assessment structures, and policy constraints act as powerful determinants of what is pedagogically feasible.

Yet, despite the richness of this literature, several gaps remain. Most studies examine these factors in isolation rather than as part of an interconnected ecological system. Cognitive models privilege individual dispositions while underestimating systemic barriers. Identity-centered studies highlight teachers’ self-concept but often overlook structural influences. Organizational and policy research describes constraints but provides limited insight into how teachers internalize and respond to them. An integrated perspective that synthesizes cognitive, identity-based, organizational, and systemic dimensions is therefore essential to understand how critical-thinking pedagogy is enacted—or inhibited—in secondary school classrooms.

The present study addresses this gap by proposing and empirically evaluating the Ecological–Cognitive–Identity Model (ECIM), a comprehensive framework that conceptualizes critical-thinking instruction as the outcome of dynamic interactions among five domains:

- Perceptions of critical thinking (cognitive beliefs).
- Teacher role identity (professional self-concept).



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- Instructional strategies (behavioral enactment).
- Systemic conditions (structural constraints and affordances), and
- School support (organizational culture, leadership, and collaboration).

Using survey data from 340 Israeli high school teachers and principals, this study examines the relationships among these domains, identifies role-based perception gaps, and evaluates how beliefs, identity, and structure jointly influence the enactment of critical-thinking pedagogy.

This research makes three primary contributions. Theoretically, it advances a unified model that integrates fragmented bodies of literature into a coherent framework. Empirically, it offers large-scale evidence on the ecology of critical-thinking instruction in a high-stakes national context. Practically, it provides actionable insights for policymakers, school leaders, and teacher educators seeking to promote deeper learning in secondary schools.

2. Literature Review

2.1 Conceptual Foundations of Critical Thinking

Critical thinking is widely regarded as a foundational competency for learners in the 21st century, enabling individuals to analyze complex information, evaluate competing claims, and engage in reasoned decision-making. Numerous definitions converge on the central role of cognitive processes such as inference, analysis, evaluation, and metacognitive regulation (Dwyer et al., 2020; Facione, 2015). Philosophical traditions emphasize logical coherence and epistemic justification, while psychological perspectives highlight dispositions such as open-mindedness, intellectual humility, and the ability to tolerate ambiguity (Ennis, 2018; Paul & Elder, 2019).

More recently, sociocultural and dialogic frameworks have reframed critical thinking as a social, interactive process shaped by discourse, collaboration, and shared inquiry (Wegerif, 2019; Reznitskaya, 2021). These perspectives argue that reasoning develops through engagement in authentic dialogue and participation in communities of inquiry. Taken together, the contemporary literature underscores that critical thinking is multidimensional—encompassing skills, dispositions, social practices, and epistemic orientations. Yet despite this growing clarity, existing conceptual frameworks tend to emphasize one dimension at the expense of others, creating the need for integrative models such as the ECIM developed in this study.

2.2 Critical Thinking in Secondary Education: Promise and Limitations

Secondary schools represent a critical developmental context in which students' abstract thinking and epistemic understanding expand rapidly. Research demonstrates that adolescents benefit significantly from structured opportunities to engage in argumentation, hypothesis testing, dialogic exchanges, and inquiry-based problem solving (Li & Zheng, 2023; Liu et al.,



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2023). However, studies consistently show that higher-order pedagogies are challenging to implement in secondary settings. Reasons include:

- **Curriculum overload** that prioritizes breadth over conceptual depth.
- **High-stakes examinations** that drive instruction toward recall rather than reasoning.
- **Time constraints** resulting from dense pacing guides.
- **Teacher discomfort** with open-ended, student-driven learning.
- **Institutional cultures** that reward efficiency rather than exploration (Brookhart, 2020; O'Brien & McNamara, 2022).

These tensions are particularly pronounced in countries with strong exam systems. In Israel, the Bagrut examination regime has been shown to shape both teacher priorities and student expectations, often at the expense of inquiry and dialogue (Givon & Mioduser, 2021; Katz & Shahar, 2023). Although recent reforms encourage deeper learning, structural contradictions remain embedded in the system. This tension between aspiration and reality underscores the need to examine critical-thinking pedagogy within a broader ecological framework.

2.3 Instructional Mechanisms That Foster Critical Thinking

Research identifies several instructional strategies that consistently promote critical thinking:

Inquiry-Based Learning

Inquiry supports conceptual understanding by encouraging students to pose questions, investigate phenomena, evaluate evidence, and construct explanations. Meta-analytic findings indicate that inquiry-based approaches yield substantial improvements in reasoning, problem-solving, and metacognitive skills (Liu et al., 2023). However, inquiry requires significant time, preparation, and classroom management expertise—resources that many teachers lack due to structural pressures.

Dialogic Pedagogy

Dialogic instruction emphasizes interactive questioning, collaborative meaning-making, and justification of ideas. It positions students as co-constructors of knowledge and promotes epistemic agency (Reznitskaya, 2021; Fisher, 2018). Dialogic classrooms, however, challenge traditional norms of teacher authority and require institutional support.

Argumentation-Based Teaching

Argumentation engages students in articulating claims, evaluating evidence, and considering counterarguments. Studies in science and humanities education highlight strong links between argumentation and deeper conceptual understanding (Clark & Sampson, 2020; McNeill & Berland, 2020).



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Collectively, these three instructional mechanisms compose **Domain 3** of the ECIM model (Instructional Strategies), representing observable behaviors that translate teachers' beliefs and identities into classroom practices.

2.4 Teacher Cognition: Beliefs, Epistemic Views, and Critical-Thinking Perceptions

Teachers' perceptions of critical thinking strongly influence their instructional choices. Educators who believe that reasoning, analysis, and open-ended exploration are essential for learning are more likely to provide opportunities for students to engage in these processes (Choy & Oo, 2021). Epistemic beliefs—teachers' views about the nature and justification of knowledge—further shape their approach: teachers who conceive knowledge as evolving and constructed are more likely to adopt inquiry-based practices (Cheng & Chan, 2022).

However, cognitive endorsement alone rarely leads to consistent classroom enactment. Studies consistently report a gap between what teachers believe and what they do, reflecting the influence of identity, context, and structure. This insight supports the ECIM view that perceptions (D1) interact with deeper psychological and ecological variables to shape instruction.

2.5 Teacher Identity: A Central Mechanism in Instructional Decision-Making

Teacher professional identity—one's internalized sense of purpose, values, and role in the classroom—has emerged as a key predictor of instructional behavior. Identity shapes classroom decisions not merely by influencing beliefs, but by serving as a lens through which teachers interpret their responsibilities and pedagogical goals (Amrutiya & White, 2023).

Identity is:

- **Dynamic**, evolving through experience and reflection.
- **Situated**, shaped by organizational culture and expectations.
- **Mechanistic**, mediating between cognition and behavior.
- **Vulnerable**, especially under systemic pressures.

Teachers who perceive themselves as facilitators of thinking are significantly more likely to employ dialogic and inquiry-based practices (Zohar & Barzilai, 2023). Conversely, teachers who internalize a transmissive identity—focusing on coverage and correctness—struggle to implement higher-order strategies even when they value them. This literature provides strong justification for ECIM's placement of identity (D2) as a mediating construct between perceptions (D1) and instructional practice (D3).

2.6 Systemic Conditions: Structural Barriers and Ecological Constraints



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Systemic factors—curriculum, assessment, time allocation, class size, workload—are among the most powerful determinants of instructional behavior. Research across countries shows that structural pressures often outweigh individual beliefs in shaping pedagogical choices (OECD, 2021; Fullan, 2020).

Common systemic barriers include:

- **Curricular overload**, limiting time for inquiry.
- **High-stakes testing systems**, which incentivize memorization.
- **Rigid schedules**, reducing opportunities for extended discourse.
- **Limited resources**, hindering collaborative planning.
- **Policy incoherence**, producing conflicting messages.

In Israel, these barriers are amplified by the demands of Bagrut preparation, which creates a system-wide focus on coverage and performance (Katz & Shahar, 2023). ECIM conceptualizes these influences in **Domain 4: Systemic Conditions**, positioning them as active mechanisms rather than background context.

2.7 School Support and Organizational Culture as Enablers of Innovation

School climate, leadership, and professional learning communities play critical roles in shaping teachers' opportunities and willingness to innovate. Studies show that strong PLCs, distributed leadership, and supportive instructional cultures enhance teacher confidence, experimentation, and sustained engagement in deeper pedagogies (Hallinger & Truong, 2020).

Effective school support is characterized by: Clear instructional vision; Collaborative planning time; Constructive feedback; Psychological safety; Shared norms of inquiry. However, organizational support cannot fully compensate for systemic constraints. This insight informs **Domain 5: School Support** within ECIM, which interacts with both identity and systemic factors.

2.8 Theoretical Gaps and the Need for an Integrative Model

Although research on critical-thinking pedagogy is rich, it remains theoretically fragmented. Specifically:

- Cognitive models underplay organizational and systemic constraints.
- Identity theories rarely account for ecological pressures.
- Organizational research often neglects the psychology of teaching.
- Instructional models lack integration with broader contextual dynamics.

These limitations underscore the need for a comprehensive framework that unites cognitive, identity, instructional, organizational, and systemic perspectives. The ECIM model proposed



in this study responds to this need by specifying testable pathways connecting beliefs, identity, structure, and practice

3. Theoretical Framework

3.1 The Need for a Unified Theoretical Perspective

Despite decades of scholarship on critical thinking, instructional innovation, and teacher decision-making, existing theories remain fragmented across cognitive, sociocultural, identity-based, and ecological traditions. While each tradition contributes valuable insights, none independently explains the complex interplay of beliefs, identity, structure, and organizational culture that shapes teachers' enactment of critical-thinking pedagogy in secondary schools.

The present study proposes the **Ecological–Cognitive–Identity Model (ECIM)** as an integrative framework that synthesizes these disparate traditions into a single, coherent model. ECIM conceptualizes instructional practice as the outcome of multi-level interactions among individual cognition, professional identity, systemic structures, and school-level supports.

This model reflects a shift in contemporary educational research toward **multilevel explanatory frameworks** capable of accounting for both personal and contextual determinants of teaching behavior.

3.2 Cognitive Foundations: Reasoning, Epistemic Beliefs, and Perceptions of Critical Thinking

Cognitive theories emphasize the role of reasoning processes, metacognition, and epistemic beliefs in shaping both teacher and student thinking. Teachers' beliefs about the nature of knowledge—whether it is fixed or evolving, certain or contestable—shape their instructional preferences and expectations for student reasoning (Cheng & Chan, 2022).

In ECIM, **Domain 1: Perceptions of Critical Thinking** captures teachers': Valuation of critical thinking; Beliefs about its role in learning; Views regarding its teachability, and; Epistemic orientations toward knowledge and reasoning. These beliefs set the psychological foundation upon which identity and strategy enactment develop. However, cognitive beliefs alone cannot explain instructional decisions—motivating the inclusion of identity and ecological factors.

3.3 Identity Foundations: The Teacher as Facilitator of Reasoning

Teacher professional identity is increasingly recognized as a central mechanism linking cognition to practice. Identity shapes not only what teachers believe but how they interpret their role, their responsibilities, and the pedagogical actions they perceive as appropriate or legitimate (Amrutiya & White, 2023).

In ECIM, **Domain 2: Teacher Role Identity** reflects the degree to which teachers:

- View themselves as facilitators of thinking rather than transmitters of content.



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- Embrace inquiry, dialogue, and argumentation as core dimensions of their professional work.
- Experience coherence between their personal values and institutional expectations.
- Interpret pedagogical challenges through a reasoning-oriented lens.
- Identity bridges the gap between belief (D1) and behavior (D3). ECIM positions identity as a **mediator**, consistent with research showing that identity determines whether teachers' beliefs become enacted pedagogies.

3.4 Instructional Foundations: Strategies That Operationalize Critical Thinking

Instructional strategies represent the observable enactment of teachers' cognition and identity in practice. ECIM identifies three core families of strategies that align with contemporary research on deeper learning:

- **Inquiry-Based** **Instruction:**
Encourages exploration, hypothesis testing, and evidence-based reasoning.
- **Dialogic** **Pedagogy:**
Positions students as co-constructors of knowledge through questioning, justification, and collaborative meaning-making.
- **Argumentation:**
Engages students in evaluating claims, generating counterarguments, and using evidence to support reasoning.

These practices comprise **Domain 3: Instructional Strategies**, reflecting the behavioral expression of beliefs (D1) and identity (D2), contingent upon contextual conditions.

3.5 Systemic Foundations: Structural Constraints and Affordances in the Education System

Systemic conditions—curriculum demands, assessment regimes, workload pressures, class size, and scheduling—shape what teachers perceive as possible, practical, or permissible in their classrooms. ECIM conceptualizes systemic factors not as background variables but as **first-order determinants** of pedagogical enactment.

Domain 4: Systemic Conditions captures how educators experience:

- Curriculum overload and pacing pressures.
- High-stakes examinations that constrain instructional flexibility.
- Time scarcity and preparation demands.
- Policy contradictions and administrative expectations.



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- Systemic conditions moderate the relationship between identity (D2) and instruction (D3).

Even teachers with strong reasoning-oriented identities may be unable to enact higher-order pedagogies if structural barriers impose “ecological ceilings.”

3.6 Organizational Foundations: School Culture, Leadership, and Professional Communities

Schools function as organizational ecosystems in which leadership practices, collaborative structures, and social norms influence teachers’ opportunities and willingness to innovate. ECIM conceptualizes these meso-level influences through **Domain 5: School Support**, which includes:

- Leadership encouragement of inquiry and instructional experimentation.
- Professional learning communities (PLCs).
- Timely and constructive pedagogical feedback.
- Collaborative planning time.
- Norms around reflection, risk-taking, and shared inquiry.

School support can strengthen the enactment of critical-thinking pedagogy by reinforcing identity and mitigating systemic pressures—but cannot fully compensate for structural misalignment.

3.7 Integrating the Domains: The ECIM Model of Critical-Thinking Pedagogy

The ECIM model conceptualizes critical-thinking instruction as an emergent property of five interconnected domains:

- **Domain 1 (D1):** Cognitive perceptions of critical thinking.
- **Domain 2 (D2):** Teacher role identity.
- **Domain 3 (D3):** Instructional strategies (inquiry, dialogue, argumentation).
- **Domain 4 (D4):** Systemic conditions (constraints and affordances).
- **Domain 5 (D5):** School support (leadership and organizational culture).

The model posits:

- Beliefs (D1) → shape → Identity (D2).
- Identity (D2) → mediates → Practice (D3).
- Systemic Conditions (D4) → moderate → Identity → Practice pathway.
- School Support (D5) → amplifies → the alignment between identity and practice.



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- Instructional strategies (D3) → represent → the outcome of ecological alignment.

The model reflects Bronfenbrenner’s ecological theory while extending it into instructional psychology.

It synthesizes insights from cognitive science, identity theory, sociocultural pedagogy, and systemic analysis into one coherent, testable framework.

4. Method

4.1 Research Design

This study employed a cross-sectional quantitative design to investigate the multilevel ecological, cognitive, and identity-based factors underlying teachers’ enactment of critical-thinking pedagogy in Israeli secondary schools. The design aligns with the theoretical premises of the Ecological–Cognitive–Identity Model (ECIM), which conceptualizes instructional behavior as an emergent property of interacting psychological, organizational, and systemic forces. A survey methodology was chosen for its capacity to capture large-scale patterns across diverse school contexts and professional roles.

4.2 Participants

The sample consisted of $N = 340$ educators from Israeli high schools, including:

- **Teachers:** $n = 280$ (82%)
- **Principals and assistant principals:** $n = 60$ (18%)

Participants represented a broad range of Israeli school contexts:

Variable	Categories	Percent
Gender	Female (63%), Male (37%)	—
Teaching Experience	0–5 yrs (22%), 6–15 yrs (48%), 16+ yrs (30%)	—
Education Level	BA (41%), MA (52%), PhD (7%)	—
School Sector	State (54%), State–Religious (23%), Arab Sector (23%)	—

This distribution enhances the external validity of the findings and enables meaningful comparisons across roles and contexts.

4.3 Instrument

Data were collected using a validated survey instrument structured around the five ECIM domains. Each item was rated on a **5-point Likert scale** (1 = Strongly Disagree; 5 = Strongly Agree). The instrument included:



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- **Domain 1 — Perceptions of Critical Thinking (6 items)**
Captures educators' cognitive beliefs about the value, importance, and teachability of critical thinking.
- **Domain 2 — Teacher Role Identity (6 items)**
Measures the degree to which teachers internalize a professional identity centered on facilitating reasoning and inquiry.
- **Domain 3 — Instructional Strategies (8 items)**
Assesses the frequency and consistency of inquiry-based, dialogic, and argumentation-oriented teaching practices.
- **Domain 4 — Systemic Conditions (5 items)**
Evaluates perceived structural constraints including curriculum overload, assessment pressures, and time limitations.
- **Domain 5 — School Support (6 items)**
Measures leadership encouragement, collaboration opportunities, and organizational conditions that support pedagogical innovation.

4.4 Reliability and Validity

Internal consistency reliability was assessed using Cronbach's alpha. Four domains exhibited strong reliability:

- **Perceptions (D1):** $\alpha = .86$
- **Teacher Identity (D2):** $\alpha = .84$
- **Instructional Strategies (D3):** $\alpha = .89$
- **School Support (D5):** $\alpha = .81$
- **Systemic Conditions (D4)** produced $\alpha = .60$, which is acceptable for broad ecological constructs with inherent variability.

Construct validity was supported through alignment with prior theoretical literature and expert review by three senior scholars in instructional psychology, learning sciences, and educational leadership.

A **confirmatory factor analysis (CFA)** validated the five-factor structure:

- CFI = .94
- TLI = .92
- RMSEA = .048

These fit indices indicate a strong correspondence between the hypothesized ECIM domains and the empirical data.



4.5 Procedure

The survey was administered online via a secure research platform. Recruitment took place through official school mailing lists, district-level communication channels, and professional educator networks. Participants first viewed an information page describing: Study purpose; Voluntary participation; Confidentiality and data privacy; Estimated completion time (7–10 minutes); Right to withdraw at any point. Those who consented proceeded to demographic questions followed by the five ECIM domains. Data were collected over a four-week period during the academic year.

4.6 Data Analysis

Statistical analyses were conducted using SPSS. The analytic strategy consisted of:

- **Descriptive Statistics:** Means, standard deviations, and score distributions for all ECIM domains.
- **Reliability Analyses:** Cronbach's alpha for each domain.
- **Correlation Analyses:** Pearson correlations to examine theoretical relationships among domains.
- **Group Differences:** Independent-samples t-tests to compare teachers and principals across all domains.
- **Multiple Regression (OLS)**

Predicting instructional strategies (D3) from: Perceptions (D1); Teacher Identity (D2); Systemic Conditions (D4); School Support (D5); Gender; Professional Role (Teacher / Principal).

Effect Size Calculations: Cohen's d for t-tests, R^2 for regression, and standardized beta coefficients. This analytic design allows for a rigorous test of ECIM's theoretical assumptions and provides insight into the relative contributions of cognitive, identity-based, and structural factors.

4.7 Ethical Considerations

The study adhered to institutional ethical guidelines for research involving human participants. Informed consent was obtained from all respondents. Participation was voluntary, anonymity was maintained, and no identifying information was collected. Data were stored on secure, encrypted servers and used exclusively for research purposes.

5. Results



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This section presents the descriptive statistics, reliability coefficients, intercorrelations among study variables, group differences between teachers and principals, and the multiple regression model predicting instructional strategies. Results are reported in accordance with APA 7 guidelines and structured around the five domains of the ECIM model.

5.1 Descriptive Statistics

Means and standard deviations for the five ECIM domains appear in **Table 1**. Overall, educators reported strong endorsement of critical thinking (D1) and high teacher role identity (D2). Instructional strategies (D3) were used moderately, while systemic conditions (D4) were rated notably low, reflecting substantial structural constraints. School support (D5) was moderately high.

Table 1
Descriptive Statistics for ECIM Domains (N = 340)

Domain	M	SD
D1. Perceptions	4.31	0.42
D2. Teacher Role Identity	4.18	0.51
D3. Instructional Strategies	3.54	0.62
D4. Systemic Conditions	2.67	0.71
D5. School Support	3.89	0.48

Interpretation: The high means for D1 and D2 indicate strong cognitive and identity-based support for critical thinking among educators. The low mean for systemic conditions suggests significant institutional and structural barriers that may hinder implementation.

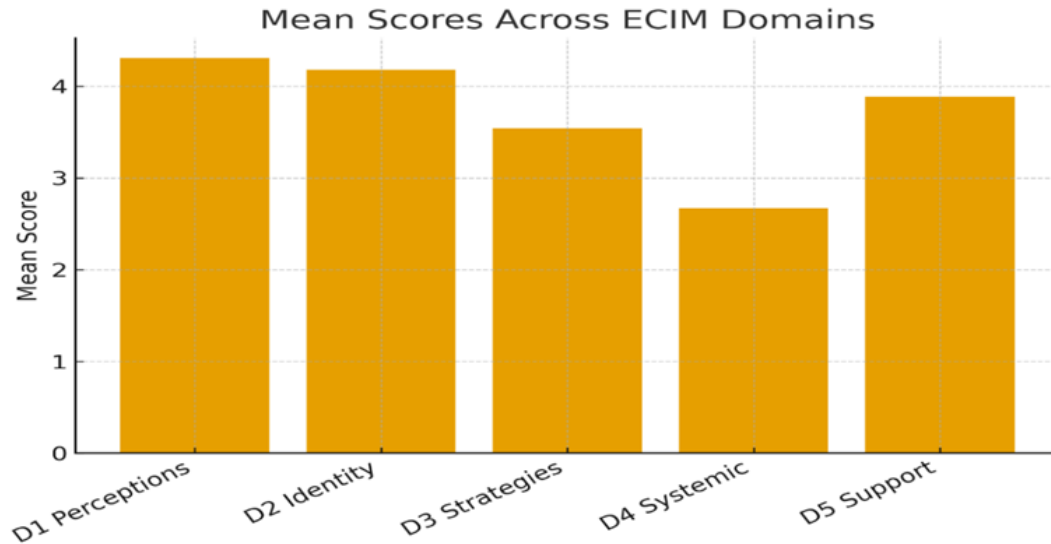


Figure 1

Mean scores across the five ECIM domains.

5.2 Reliability Analyses

Cronbach’s alpha values indicate strong internal consistency for four of the five domains (see Table 2).

Table 2
Cronbach’s Alpha Coefficients by Domain

Domain	α	Interpretation
D1. Perceptions	.86	Excellent
D2. Teacher Role Identity	.84	Good
D3. Instructional Strategies	.89	Excellent
D4. Systemic Conditions	.60	Acceptable
D5. School Support	.81	Good

Interpretation:The reliability results support the psychometric soundness of the ECIM instrument, particularly for cognitive, identity, and instructional domains.

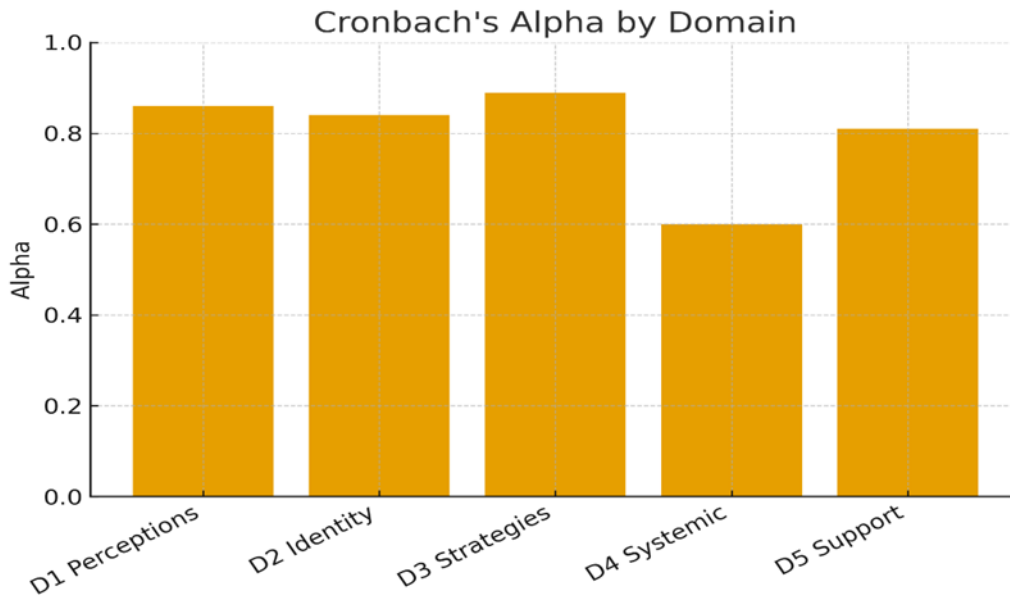


Figure 2

Cronbach's alpha reliability coefficients for the ECIM domains.

5.3 Intercorrelations Among Domains

Pearson correlations among the five ECIM domains are presented in **Table 3**. As theorized, teacher role identity (D2) and systemic conditions (D4) demonstrated the strongest associations with instructional strategies (D3).

Table 3
Intercorrelations Among ECIM Domains (Pearson's r)

Domain	D1	D2	D3	D4	D5
D1	—	0.48	0.44	0.32	0.29
D2	0.48	—	0.60	0.41	0.52
D3	0.44	0.60	—	0.69	0.37
D4	0.32	0.41	0.69	—	0.28
D5	0.29	0.52	0.37	0.28	—

*** $p < .001$

Interpretation: These results support the ECIM assumption that identity (D2) and systemic conditions (D4) jointly influence instructional practice (D3). The moderate correlation between school support (D5) and identity (D2) suggests that organizational culture plays a role in shaping professional identity.

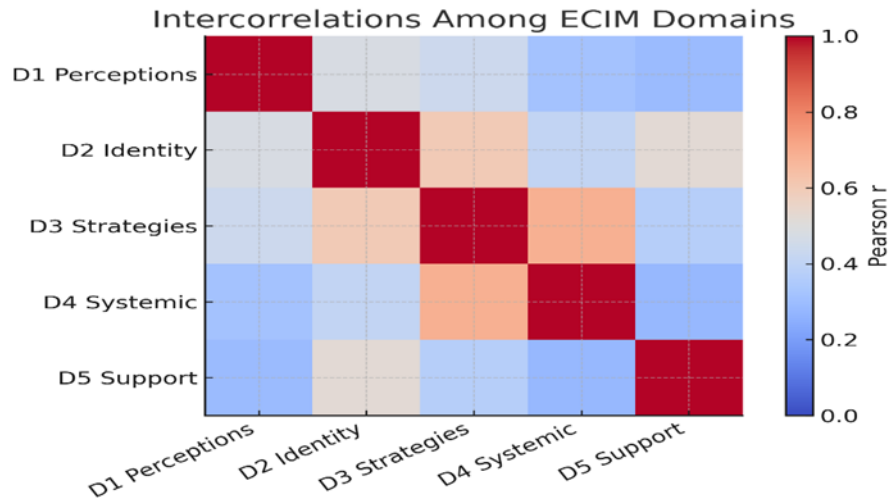


Figure 3

Heatmap of intercorrelations among the ECIM domains (Pearson's r).

5.4 Group Differences: Teachers vs. Principals

Independent-samples t-tests revealed substantial and statistically significant differences between teachers and principals across all ECIM domains. Principals consistently rated perceptions, identity, instructional strategies, systemic conditions, and school support higher than teachers.

Table 4

Differences Between Teachers and Principals Across ECIM Domains

Domain	Principals M	Teachers M	t	p	d
D1. Perceptions	4.52	4.27	6.12	< .001	0.79
D2. Identity	4.49	4.10	5.87	< .001	0.72
D3. Strategies	4.12	3.41	8.44	< .001	0.92
D4. Systemic Conditions	3.62	2.49	7.93	< .001	0.87
D5. School Support	4.41	3.78	6.71	< .001	0.81

Interpretation: Large effect sizes (0.72–0.92) indicate meaningful practical differences. Principals appear significantly more optimistic regarding structural and organizational conditions. This perception gap is a central ecological insight of the ECIM model.

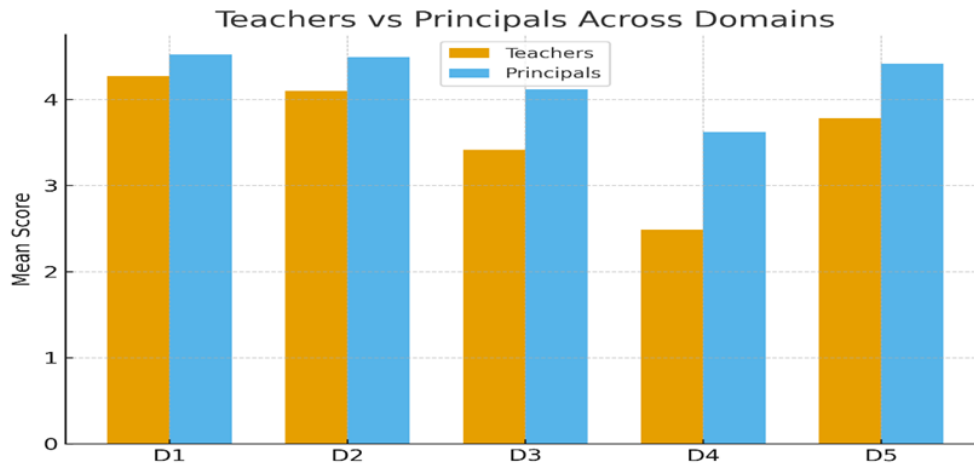


Figure 4

Differences between teachers and principals across the five ECIM domains.

5.5 Regression Analysis Predicting Instructional Strategies

A multiple regression model was conducted to identify predictors of instructional strategies (D3). The model included D1, D2, D4, D5, gender, and role.

Table 5

Multiple Regression Predicting Instructional Strategies (D3)

Predictor	β	t	p
D1. Perceptions	.07	1.34	.18
D2. Teacher Role Identity	.41	8.12	< .001
D4. Systemic Conditions	.52	9.21	< .001
D5. School Support	.09	1.70	.09
Gender	-.03	-0.64	.51
Role (Teacher vs Principal)	.05	1.21	.22

Model Summary: $R^2 = .62$, $F(6, 333) = 90.2$, $p < .001$

Interpretation: Systemic conditions and teacher identity are the strongest predictors of instructional strategies. Perceptions alone do not predict practice once identity and structure



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are included, supporting ECIM's conceptualization of instructional behavior as identity-mediated and structure-constrained.

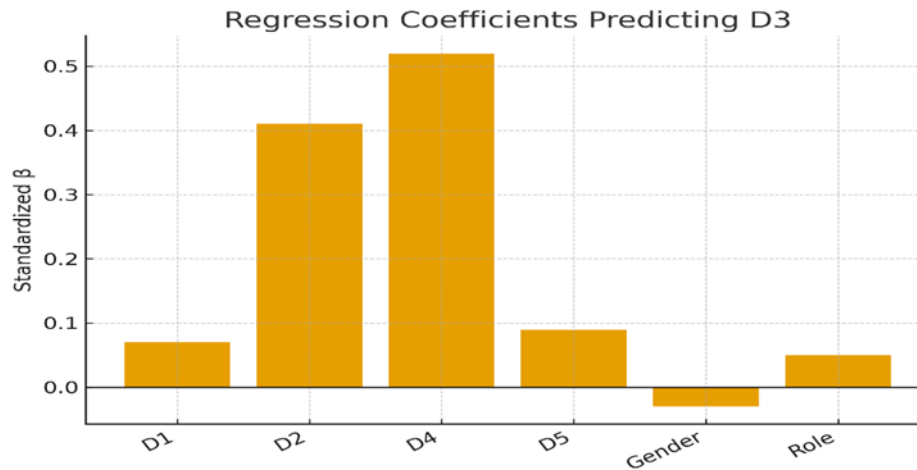


Figure 5
Standardized regression coefficients predicting Instructional Strategies (D3).

5.6 Summary of Key Results: The findings demonstrate:

- Strong cognitive endorsement of critical thinking but limited operationalization.
- Teacher identity plays a major role in shaping instructional behavior.
- Systemic conditions impose the strongest constraints on practice.
- School support acts as a secondary enabler.
- Principals and teachers inhabit different ecological realities.

These findings substantiate the ECIM model and inform the theoretical and practical implications discussed in the next section.

6. Discussion

The purpose of this study was to examine the interplay among cognitive beliefs, teacher identity, instructional strategies, systemic conditions, and school-level support in shaping critical-thinking pedagogy in Israeli secondary schools. Guided by the Ecological–Cognitive–Identity Model (ECIM), the findings provide strong evidence that critical-thinking instruction is an emergent property of multiple interacting forces rather than a direct consequence of teacher beliefs or professional training alone.

6.1 Cognitive Endorsement Without Structural Realization

One of the most striking findings is the pronounced gap between educators' strong endorsement of critical thinking (D1) and their moderate use of critical-thinking instructional strategies (D3).



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This mirrors international research documenting the persistent “intention–practice gap” in teaching higher-order skills (Abrami et al., 2019). Teachers may value critical thinking, but their instructional decisions are shaped by contextual demands, resource limitations, and systemic expectations.

Three key mechanisms explain this phenomenon:

Curriculum Overload: Dense curricula and accelerated pacing guides leave limited time for extended inquiry, dialogue, or argumentation. Teachers often feel compelled to “cover” content rather than “uncover” ideas.

High-Stakes Examination Pressure: The Bagrut system prioritizes efficiency, correctness, and performance, creating a focus on memorization and procedural proficiency at the expense of reasoning and epistemic exploration.

Identity Misalignment: Teachers who conceptually value critical thinking may still hold a transmissive professional identity, leading them to rely on frontal, content-driven instruction. These mechanisms collectively restrict the translation of beliefs into practice.

6.2 Teacher Identity as the Central Psychological Mechanism

Teacher role identity (D2) emerged as one of the strongest predictors of instructional strategies ($\beta = .41$). Identity determines not only what teachers believe but who they perceive themselves to be as professionals. Teachers who view themselves as facilitators of thinking are significantly more likely to adopt inquiry-based activities, encourage students to justify their ideas, and engage in dialogic discourse.

Identity thus acts as a **mediating mechanism** between beliefs (D1) and instructional behavior (D3). This supports emerging scholarship positioning professional identity as a core driver of pedagogical decision-making (Amrutiya & White, 2023).

However, the findings also illustrate that identity has limits. Even teachers with strong reasoning-oriented identities operate within **structural constraints** that shape what they can realistically do in the classroom.

6.3 Systemic Conditions as First-Order Determinants of Practice

Systemic conditions (D4) were the strongest statistical predictor of instructional strategies ($\beta = .52$), underscoring the pivotal role of structural factors. This confirms ECIM’s central premise: instructional decisions cannot be understood without examining the broader ecological context in which teachers work.

Structural factors that restrict deeper pedagogy include: Curriculum density; Exam-driven instruction; Limited instructional time; Restricted autonomy; Policy incoherence.



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These findings resonate with Fullan's (2020) argument that educational change is largely a systemic, not individual, challenge. Even highly competent and motivated teachers are constrained by institutional realities that limit their ability to implement higher-order practices.

6.4 School Support as a Conditional Enabler

School support (D5) demonstrated a modest but meaningful association with instructional strategies. Supportive leadership, collaborative planning, and psychologically safe professional learning communities provide teachers with the confidence and resources needed to experiment with inquiry-based practices. However, the relatively small effect size reflects a structural limitation:

school support can amplify identity-driven behaviors but cannot override systemic constraints. This reinforces the ECIM position that organizational culture plays an enabling role but is not the primary driver of critical-thinking pedagogy.

6.5 Principal–Teacher Perception Gaps: An Ecological Insight

Across all domains, principals consistently rated conditions more positively than teachers. These gaps suggest that principals and teachers inhabit **different ecological realities** within the same school:

- Principals operate primarily at the **mesosystem level**, dealing with policy, leadership networks, and systemic communications.
- Teachers operate at the **microsystem level**, confronting the daily complexities of classroom instruction, student diversity, and assessment pressures.

This divergence reinforces the importance of aligning leadership narratives with classroom realities. Without such alignment, policy initiatives may be perceived as disconnected from the practical challenges teachers face.

6.6 Systemic Misalignment as the Root Mechanism

Synthesizing the findings reveals that **systemic misalignment**—the mismatch between national aspirations and operational structures—is the root mechanism inhibiting critical-thinking pedagogy.

Examples include: Policy documents emphasize deeper learning, but curricula emphasize coverage. Rhetoric promotes innovation, but assessment systems reward recall. Leaders perceive schools as supportive, but teachers experience constraints. Teachers value critical thinking, but face structural pressures to prioritize exam outcomes. ECIM captures this misalignment by identifying the pathways through which structure constrains identity and how identity mediates the influence of beliefs on behavior.

6.7 Contributions to Theory

This study advances theoretical understanding in three ways:



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- **ECIM provides an integrated multilevel framework** linking cognition, identity, instruction, and ecology.
- **Identity is positioned as a central mechanism**, not a peripheral variable.
- **Systemic conditions are conceptualized as active causal determinants**, offering a more realistic account of teacher behavior in high-stakes systems.

This theoretical synthesis moves beyond single-level frameworks, offering a comprehensive model that can inform global research on deeper learning.

7. Theoretical Contributions

This study advances theory by:

- **Introducing a comprehensive, multilevel explanatory model** of critical-thinking pedagogy.
- **Reconceptualizing teacher identity as a central mechanism** linking beliefs to practice.
- **Elevating systemic conditions to a causal role**, reshaping theoretical assumptions about instructional behavior.
- **Providing a psychometrically validated tool** for future research.
- **Positioning critical-thinking pedagogy as an emergent ecological process**, not a static instructional decision.

These contributions establish ECIM as a strong theoretical foundation for future scholarship on deeper learning, instructional change, and educational innovation

8. Policy and Practical Implications

This study demonstrates that promoting critical-thinking instruction requires:

- **Systemic restructuring** to remove ecological barriers.
- **Leadership transformation** to foster supportive school cultures.
- **Identity-oriented professional learning** that empowers teachers.
- **Alignment across all policy layers** to ensure coherence and sustainability.

ECIM thus provides a roadmap for policymakers and school leaders seeking to move beyond surface-level reforms toward meaningful, system-wide instructional improvement.

9. Conclusion and Recommendations

The present study sought to illuminate the complex mechanisms that shape teachers' enactment of critical-thinking pedagogy in Israeli secondary schools. By integrating cognitive, identity-based, organizational, and systemic perspectives within the Ecological-Cognitive-Identity



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Model (ECIM), this research provides a comprehensive explanation of why critical-thinking instruction remains challenging despite widespread endorsement of its importance.

The findings reveal a significant misalignment between teachers' beliefs about critical thinking and the structural realities of their work. Although educators strongly value critical thinking and many view themselves as facilitators of inquiry, structural constraints—particularly curriculum overload, high-stakes examinations, and limited instructional time—substantially restrict their ability to translate these beliefs into practice. Teacher identity and school support emerged as meaningful contributors to instructional strategies, yet systemic conditions exerted the strongest influence overall.

Collectively, these findings underscore that effective critical-thinking instruction cannot be achieved solely through professional development or classroom-level interventions. Instead, it requires coherent restructuring across the educational ecosystem, aligning policy, leadership, teacher identity, and instructional norms.

9.1 Key Conclusions

- **The intention–practice gap is structurally produced.** Teachers value critical thinking but face systemic barriers that inhibit implementation.
- **Teacher identity is a central mediator of instructional behavior.** Identity links beliefs to practice and shapes how teachers understand their professional role.
- **Systemic conditions are the strongest determinant of instructional strategies.** Structural constraints—not personal preferences—shape what teachers can realistically do.
- **School support enhances but cannot replace structural coherence.** Leadership and collaboration matter, but they do not eliminate systemic pressures.
- **Principals and teachers inhabit different ecological realities.** Leadership optimism may mask the instructional challenges experienced by teachers.
- These conclusions reaffirm the need for multidimensional reform grounded in ecological understanding.

9.2 Practical Recommendations

Drawing on the ECIM model and empirical results, the following recommendations aim to strengthen critical-thinking instruction at multiple levels of the education system.

A. System-Level Recommendations

- **Reduce curriculum overload** to create space for inquiry and reasoning.



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- **Align assessments with deeper learning**, including argumentation and problem-solving tasks.
- **Introduce interdisciplinary performance assessments** to encourage authentic thinking.
- **Reform scheduling structures**, allowing extended learning blocks.
- **Ensure coherence between policy documents, teacher training, and evaluation systems.**

B. School-Level Recommendations

- **Develop a unified instructional vision** centered on critical thinking.
- **Strengthen PLCs** focused on inquiry, reasoning, and dialogic practices.
- **Provide constructive pedagogical feedback** emphasizing deeper learning indicators.
- **Allocate protected collaborative planning time** for designing reasoning-rich tasks.
- **Cultivate psychological safety**, enabling teachers to take instructional risks.

C. Teacher-Level Recommendations

- **Support the development of inquiry-oriented professional identity** as part of PD.
- **Engage teachers in reflective practice**, examining how identity shapes pedagogy.
- **Provide exposure to epistemic cognition frameworks** to deepen understanding of thinking.
- **Offer coaching and modeling** of dialogic and inquiry-based practices.
- **Empower teacher agency** by involving teachers in curriculum and assessment reform.

D. Recommendations for Teacher Education Programs

- Integrate **identity formation** as a central component of teacher preparation.
- Design **practice-based modules** that simulate inquiry teaching.
- Embed **epistemic and metacognitive frameworks** throughout coursework.
- Align student teaching experiences with deeper-learning classrooms.

9.3 Final Statement

Critical-thinking instruction is not merely a set of strategies; it is an ecological practice shaped by beliefs, identity, culture, and systemic design. The ECIM model provides a robust framework for understanding these interdependencies and offers a roadmap for comprehensive, sustainable reform. For deeper learning to flourish, educational systems must move beyond



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isolated interventions and engage in coordinated, multi-level transformation that aligns pedagogy with policy, structure, and teacher identity.

This research contributes a theoretically grounded, empirically validated model that can inform international efforts to strengthen critical-thinking instruction and prepare students for the complex demands of contemporary society.

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