



Instructional Integration of the Six Thinking Hats: EFL Teacher Practices in Yemeni Secondary Schools

دمج استراتيجيات القبعات الست للتفكير في التدريس: دراسة لممارسات معلمي اللغة الإنجليزية في المدارس الثانوية اليمنية

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ABSTRACT:

This study investigates the instructional integration of Edward de Bono's Six Thinking Hats strategy among EFL teachers in Yemeni secondary schools. It aims to identify the extent to which these teachers practice this strategy in their classrooms and the challenges they face. Using a descriptive survey design, data were collected from 96 EFL teachers in private secondary schools. The findings reveal a moderate level of integration, highlighting the need for specialized professional development to enhance critical and creative thinking in English language pedagogy.

Keywords: Six Thinking Hats; EFL Teacher Practices; Secondary Schools; Instructional Integration; Yemen.

الملخص:

تستقصي هذه الدراسة دمج استراتيجيات القبعات الست للتفكير لإدوارد دي بونو في ممارسات معلمي اللغة الإنجليزية كلغة أجنبية في المدارس الثانوية اليمنية وتهدف الدراسة إلى تحديد ممارسة المعلمين لهذه الاستراتيجية في فصولهم الدراسية والتحديات التي تواجههم. تم اتباع المنهج الوصفي المسحي، حيث جُمعت البيانات من 96 معلماً ومعلمة في المدارس الثانوية، مما يشير إلى الحاجة الماسة لبرامج تطوير مهنية متخصصة لتعزيز التفكير الناقد والإبداعي في تدريس اللغة الإنجليزية وقد كشفت النتائج مستوى متوسط من الدمج في هذه الدراسة.

الكلمات المفتاحية: القبعات الست للتفكير؛ ممارسات معلمي اللغة الإنجليزية؛ المدارس الثانوية؛ الدمج التعليمي؛ اليمن

Résumé :

Cette étude examine l'intégration pédagogique de la stratégie des "Six Chapeaux de la Réflexion" d'Edward de Bono chez les enseignants d'anglais langue étrangère (EFL) dans les écoles secondaires yéménites. L'objectif est de déterminer dans quelle mesure les enseignants appliquent cette stratégie dans leurs classes et d'identifier les défis rencontrés. En adoptant une approche descriptive, les données ont été recueillies auprès de 96 enseignants d'EFL dans des écoles



secondaires privées. Les résultats révèlent un niveau d'intégration modéré, soulignant la nécessité d'un développement professionnel spécialisé pour renforcer la pensée critique et créative dans la pédagogie de la langue anglaise.

Mots-Clés : Six Chapeaux de la Réflexion ; Pratiques des Enseignants d'EFL ; Écoles Secondaires ; Intégration Pédagogique ; Yémen.

1. Introduction:

1.1 Background of the Study:

In recent decades, English as a Foreign Language (EFL) instruction has increasingly shifted from traditional teacher-centred practices toward learner-centred and thinking-oriented pedagogies that foster deeper cognitive engagement and communicative competence. This shift reflects global educational priorities that emphasize critical thinking, creativity, emotional intelligence, and reflective learning as essential competencies for the twenty-first century. Among the instructional approaches designed to promote structured thinking is Edward De Bono's Six Thinking Hats strategy. This framework enables individuals to examine issues from multiple cognitive and affective perspectives by organizing thinking into six distinct modes: analytical, emotional, critical, optimistic, creative, and managerial. Through this structured approach, both teachers and learners can engage in balanced and purposeful reasoning processes. Within EFL contexts, such thinking-based strategies are particularly valuable, as language learning extends beyond linguistic knowledge to include cognitive, social, and emotional dimensions. Effective teaching therefore requires instructional practices that integrate emotional support, classroom organization, creativity, and critical engagement. Although the Six Thinking Hats strategy has been widely applied in educational settings to enhance students' achievement, creativity, and critical thinking, most existing research has focused primarily on learner outcomes rather than on teachers' instructional practices. Consequently, limited attention has been given to how teachers themselves adopt and utilize thinking-based strategies in their everyday classroom instruction. Understanding teachers' use of such strategies is crucial, as instructional innovation depends largely on teachers' beliefs, awareness, and pedagogical decision-making. Without examining how teachers engage with these approaches, efforts to promote modern teaching practices may remain theoretical rather than practically implemented. The Six Thinking Hats strategy was introduced by Edward De Bono in his work *Serious Creativity* (1992) as a structured method for improving decision-making and problem-solving through the use of six symbolic thinking modes. Each hat represents a specific perspective: the white hat focuses on objective information, the red hat on emotions and feelings, the black hat on critical judgment, the yellow hat on positive evaluation, the green hat on creative thinking, and the blue hat on organization and management of the thinking process. By guiding individuals to adopt different thinking perspectives systematically, the strategy aims to enhance comprehensive reasoning and balanced decision-making. Although it has been applied in various administrative, economic, and educational contexts, its use in EFL classroom teaching—particularly from the perspective of teachers—remains underexplored. In under-researched educational contexts such as Yemen, where EFL teaching faces various pedagogical and contextual challenges, examining teachers' adoption of structured thinking strategies becomes especially important. Investigating this dimension can provide valuable insights into current instructional practices and may inform future teacher development initiatives. Therefore, this study aims to explore the extent to which secondary school EFL teachers in Yemen employ the Six Thinking Hats strategy in their teaching practices and to identify the thinking modes most frequently utilized in classroom instruction.



1.2 Statement of the Problem:

Despite the increasing global emphasis on thinking-oriented instruction in English as a Foreign Language (EFL) education, the integration of structured cognitive strategies into classroom practice remains inconsistent. While numerous studies have investigated the effectiveness of the Six Thinking Hats strategy in enhancing learners' achievement, creativity, and critical thinking skills, relatively limited attention has been given to teachers' actual use of this approach in everyday instructional settings. This gap is particularly evident in developing educational contexts, where teaching practices are often shaped by contextual constraints, curriculum demands, and limited access to sustained professional development. In such environments, teachers may rely on intuitive or experience-based methods rather than systematically implementing thinking-based instructional strategies. Within the Yemeni educational context, EFL instruction continues to face pedagogical challenges related to learner motivation, engagement, and classroom interaction. These challenges underscore the need for innovative teaching approaches that foster both emotional support and structured thinking in language learning environments. Moreover, international assessment trends reflected in large-scale evaluations such as PISA and TIMSS highlight the importance of teaching practices that promote higher-order thinking skills rather than reliance on traditional instructional methods. Such findings reinforce the necessity of adopting strategies that enhance cognitive engagement in the classroom. However, there remains a lack of empirical evidence regarding whether EFL teachers in Yemeni secondary schools actively employ modern cognitive strategies such as the Six Thinking Hats in their instructional practices. It is also unclear which thinking modes are most frequently utilized and how these preferences reflect teachers' pedagogical orientations. Addressing this gap is essential for understanding the current level of instructional innovation and for informing future teacher education and curriculum development efforts.

1.3 Objectives of the Study:

This study aims to explore the extent to which secondary school EFL teachers in Yemen employ the Six Thinking Hats strategy in their instructional practices. Specifically, the study seeks to:

Examine the extent to which secondary school EFL teachers in Yemen use the Six Thinking Hats strategy in teaching.

Identify the thinking modes most frequently employed by teachers in their classroom practices.

Find out if there are statistically significant differences between male and female secondary school EFL teachers in their reported use of the Six Thinking Hats strategy.

1.4 Research Questions:

To achieve these objectives, the study addresses the following main research question:

To what extent do secondary school EFL teachers in Yemen employ the Six Thinking Hats strategy in their teaching practices?

From this main question, the following sub-questions are derived:

To what extent do secondary school EFL teachers in Yemen use the Six Thinking Hats strategy?

Which of the six thinking modes are most frequently utilized in their instructional practices?

Are there statistically significant differences between male and female secondary school EFL teachers in their reported use of the Six Thinking Hats strategy?



1.5 Scope of the Study:

This study is limited to EFL teachers working in private secondary schools in Al-Dhale Governorate during the second semester of the 2024–2025 academic year.

The scope of the study focuses on examining teachers' reported use of the Six Thinking Hats strategy and identifying the most frequently employed thinking modes in their instructional practices.

1.6 Significance of the Study:

This study contributes to the growing body of research on thinking-based instructional practices in EFL education by shifting the focus from student outcomes to teachers' pedagogical behaviour.

First, it provides empirical insights into how EFL teachers engage with structured cognitive strategies in real classroom contexts. Understanding teachers' use of such strategies is essential, as instructional innovation depends not only on the availability of modern methods but also on teachers' awareness, beliefs, and willingness to integrate them into practice.

Second, the study expands the literature on the Six Thinking Hats strategy by examining its application within teachers' instructional practices rather than focusing solely on student performance. While previous research has predominantly explored the impact of the strategy on learners' achievement and critical thinking, this study highlights its role in shaping everyday teaching practices.

Third, the study offers valuable evidence from an under-researched educational context. Examining the adoption of thinking-based strategies in the Yemeni EFL environment contributes to the diversification of global research perspectives and supports the inclusion of developing educational systems in international academic discourse.

Furthermore, the study responds to the evolving demands of contemporary education, where teaching is increasingly expected to move beyond traditional content delivery toward fostering higher-order thinking skills and learner engagement.

Finally, the findings may inform teacher education programs, curriculum developers, and educational decision-makers by identifying current instructional tendencies and potential areas for professional development. Promoting balanced thinking practices in EFL classrooms may enhance both cognitive engagement and emotional motivation, which are essential for effective language learning.

2. Results and Discussion:

The obtained data were analyzed using appropriate statistical analysis as follows:

2.1 Extent of Teachers' Use of the Six Thinking Hats:

The first research question explored the extent to which male and female English teachers in Yemen's secondary education stage employ the Six Thinking Hats teaching strategy.

Table (3) presents the mean scores and standard deviations for teachers' use of each hat, disaggregated by gender.

Table 3. Mean Scores and Standard Deviations for Teachers' Use of Six Thinking Hats by Gender (N = 96)



Thinking Hat	Gender	n	Mean	SD	Level
White	Male	52	3.19	0.37	Moderate
White	Female	44	3.24	0.28	Moderate
White	Total	96	3.22	0.33	Moderate
Black	Male	52	2.58	0.24	Moderate
Black	Female	44	2.61	0.21	Moderate
Black	Total	96	2.59	0.23	Moderate
Yellow	Male	52	3.24	0.35	Moderate
Yellow	Female	44	3.23	0.41	Moderate
Yellow	Total	96	3.23	0.38	Moderate
Red	Male	52	4.05	0.5	High
Red	Female	44	4.03	0.44	High
Red	Total	96	4.04	0.47	High
Green	Male	52	2.83	0.25	Moderate
Green	Female	44	2.86	0.5	Moderate
Green	Total	96	2.84	0.38	Moderate
Blue	Male	52	3.96	0.88	High
Blue	Female	44	3.99	0.79	High
Blue	Total	96	3.97	0.84	High

The findings indicate that Yemeni EFL teachers at the secondary stage utilize the Six Thinking Hats strategy at varying levels. The Red Hat was the most frequently employed, followed by the Blue Hat, while the Black Hat was the least used. This pattern suggests that teachers' application of the strategy is deliberate and reflective of their instructional orientations and awareness of different thinking modes. The predominance of the Red Hat aligns with the findings of Al-Sheikh (2018), who emphasized the critical role of emotional engagement in educational contexts. Conversely, this result contrasts with Al-Karimin (2017), who observed a stronger focus on analytical and critical thinking when the strategy was implemented experimentally. The relatively high use of the Blue Hat, associated with metacognitive thinking and classroom management, reflects teachers' recognition of the importance of planning, organization, and regulation of the learning process. Such an emphasis is particularly relevant in secondary education, where structured guidance is necessary to support learners' comprehension and participation.



In contrast, the limited use of the Black Hat, which promotes critical or negative thinking, suggests that teachers tend to avoid practices that may discourage learners or undermine their confidence. Instead, they prioritize creating a supportive and positive learning environment, which is also reflected in the moderate use of the Yellow Hat. This pattern indicates that teachers may postpone rigorous critical evaluation in favor of fostering emotional stability and encouragement at this developmental stage.

Furthermore, the absence of statistically significant differences based on gender—supported by a Pearson correlation coefficient of 0.98—demonstrates strong agreement between male and female teachers in their preferences for hat usage. This convergence suggests shared pedagogical beliefs and similar classroom realities across genders within the Yemeni context.

Although this study did not measure actual classroom outcomes, the findings imply that teachers' perceptions and reported practices may positively influence classroom interaction and learner motivation. Overall, teachers demonstrated moderate to high levels of use across all six hats. The Red Hat recorded the highest overall mean ($M = 4.04$, $SD = 0.47$), followed by the Blue Hat ($M = 3.97$, $SD = 0.84$), both classified as high. Conversely, the Black Hat had the lowest mean ($M = 2.59$, $SD = 0.23$), though it remained within the moderate range.

Regarding gender comparisons, male and female teachers reported very similar mean scores across all hats. Differences were minimal and not practically meaningful. Both genders demonstrated the highest engagement with the Red and Blue Hats, and comparatively lower use of the Black and Green Hats. This suggests that teachers, regardless of gender, emphasize emotional expression and intuition (Red Hat) as well as classroom management and organization (Blue Hat), while giving less emphasis to critical judgment (Black Hat) and creative idea generation (Green Hat). The consistency in mean scores reflects a shared pedagogical approach across male and female teachers.

2.2 Ranking of Thinking Hats:

Table 4 presents the ranking of the Six Thinking Hats based on the mean scores reported by the study participants in response to the question: "Which of the six hats are most commonly used by secondary school English teachers in Yemen, from their point of view?"

Table 4. Rank Order and Descriptive Statistics of Six Thinking Hats Usage (N = 96)

Rank	Thinking Hat	Mean	SD	Level
1	Red	4.04	0.47	High
2	Blue	3.97	0.84	High
3	Yellow	3.23	0.38	Moderate
4	White	3.22	0.33	Moderate
5	Green	2.84	0.38	Moderate
6	Black	2.59	0.23	Moderate



The ranking indicates that the Red Hat (emotional and intuitive thinking) was the most frequently used, followed closely by the Blue Hat (organization, management, and control of thinking processes). The Yellow Hat (optimism and positive thinking) and White Hat (facts and information) were moderately integrated, while the Green Hat (creativity and innovation) and Black Hat (critical evaluation and caution) were the least used.

These results suggest that secondary-stage EFL teachers in Yemen prioritize emotional engagement and classroom management over structured critical analysis and creative thinking. The prominence of the Red Hat may reflect the challenging socio-educational context, where teachers emphasize learner motivation and emotional support. Similarly, the high usage of the Blue Hat demonstrates teachers' awareness of the importance of planning, organization, and regulation of classroom activities.

In contrast, the limited use of the Black Hat indicates a tendency to avoid rigorous critical evaluation that might undermine learner confidence. Instead, teachers favor strategies aligned with the Yellow Hat, fostering a positive and supportive learning environment. Overall, the findings reveal a deliberate pedagogical preference: Red → Blue → Yellow → White → Green → Black. This pattern highlights the need for professional development programs to enhance teachers' capacity to integrate creative and critical thinking practices alongside emotional and organizational strategies.

2.3 Gender Differences in Hat Usage:

To examine whether male and female teachers differed significantly in their use of the Six Thinking Hats, independent samples t-tests were conducted for each hat. Table 5 summarizes these results.

Table (5) Independent Samples t-Test Results for Gender Differences in Six Thinking Hats Usage (N = 96)

Table (5) Independent Samples t-Test Results for Gender Differences in Thinking Hat Usage

Thinking Hat	Male (n = 52)Mean (SD)	Female (n = 44)Mean (SD)	t-value	df	p-value	Interpretation
White Hat	3.19 (0.37)	3.24 (0.28)	-0.73	94	.468	Not Significant
Black Hat	2.58 (0.24)	2.61 (0.21)	-0.65	94	.517	Not Significant
Yellow Hat	3.24 (0.35)	3.23 (0.41)	0.12	94	.903	Not Significant
Red Hat	4.05 (0.50)	4.03 (0.44)	0.21	94	.835	Not Significant
Green Hat	2.83 (0.25)	2.86 (0.50)	-0.39	94	.698	Not Significant
Blue Hat	3.96 (0.88)	3.99 (0.79)	-0.18	94	.859	Not Significant

The findings reveal no statistically significant differences between male and female secondary school EFL teachers in their reported use of the Six Thinking Hats strategy. This suggests that gender does not play a determining role in shaping teachers' instructional preferences regarding structured thinking strategies within the examined context. Several interpretations may explain this convergence. First, male and female teachers operate within the same institutional, curricular, and



socio-cultural framework. They are subject to similar curriculum guidelines, professional expectations, and classroom realities. Consequently, their pedagogical orientations appear to be shaped more by contextual demands than by gender-related differences. Second, the absence of gender variation may reflect shared professional training experiences. Teachers in the studied context likely received similar academic preparation and are exposed to comparable instructional resources, which may contribute to homogeneous teaching practices. Third, the findings may indicate that the adoption of thinking-based instructional strategies is primarily influenced by professional beliefs and classroom needs rather than personal demographic characteristics. This aligns with contemporary perspectives on teacher cognition, which emphasize that pedagogical decision-making is largely guided by contextual and experiential factors.

From a practical standpoint, the absence of significant gender differences suggests that professional development programs focusing on balanced implementation of the Six Thinking Hats strategy can be designed without the need for gender-specific adaptation. Training initiatives may therefore target teachers collectively, emphasizing instructional balance across emotional, creative, organizational, and critical thinking dimensions.

Overall, the results reinforce the view that secondary-stage EFL teachers in Yemen share similar pedagogical orientations regarding structured thinking strategies, regardless of gender. This finding strengthens the generalizability of the overall usage pattern identified in the study.

The results revealed that the Red Hat was the most frequently used thinking mode among EFL teachers.

This finding is consistent with the study conducted by Al-Sheikh (2018), which emphasized the importance of emotional and motivational aspects in learning environments. It also supports the findings of Setyaningtyas (2019), who reported that emotional and intuitive thinking plays a significant role in developing students' engagement in learning tasks.

However, this finding contradicts the results of Al-Karimin (2017) and Al-Amiri (2020), which reported a stronger emphasis on critical and analytical thinking when the Six Thinking Hats strategy was implemented experimentally.

Finally, the obtained means and rankings were interpreted in relation to pedagogical practice and the specific context of secondary-stage EFL classrooms. Higher mean scores indicate greater reliance on thinking styles perceived as appropriate for young learners, whereas lower scores point to areas requiring further professional support. Thus, the statistical findings offer insight into both current implementation levels and teachers' professional development needs regarding thinking-based instructional strategies.

To provide a clearer visual representation of the overall usage pattern, Figure (1) illustrates the distribution of the Six Thinking Hats based on teachers' reported practices.



Distribution of Six Thinking Hats Usage (Overall Means)

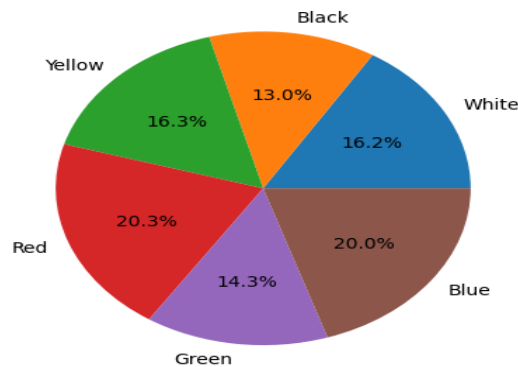


Fig.1. Overall Distribution of Six Thinking Hats Usage among Yemeni Secondary School EFL Teachers.

As shown in Figure (1), the Red Hat represents the most frequently used thinking mode, followed by the Blue Hat, whereas the Black Hat appears as the least utilized. This visual pattern supports the statistical results presented in Table (4).

3. Research Methodology:

3.1 Research Design:

This study adopted a descriptive cross-sectional survey design. The descriptive approach was selected because the study aimed to explore the current level of implementation of the Six Thinking Hats strategy among EFL teachers without manipulating variables. The design is appropriate for examining teachers' perceptions, reported practices, and differences based on demographic variables. The study is cross-sectional, as data were collected at one point in time during the second semester of the 2024– 2025 academic year.

3.2 Population and Sampling:

The study population consisted of approximately 300 secondary school EFL teachers working in private schools in Al-Dhale Governorate, Yemen (2023 Statistics).

3.2.1 Sampling Method:

A stratified random sampling technique was employed to ensure representation across districts (Damt, Joban, and Al-Hosha) and gender. From the total population, 120 questionnaires were distributed, and 96 completed questionnaires were returned, yielding a response rate of 80%, which is considered statistically acceptable for survey research.

3.2.2 Sample Size Justification:

Using Krejcie and Morgan's (1970) sample size table, a minimum sample of 169 would be ideal for a population of 300. However, due to contextual limitations and accessibility constraints, 96 valid responses were obtained. This number exceeds the minimum requirement for conducting descriptive statistics and independent samples t-tests with adequate statistical power.

3.2.3 Final sample:



The study sample consisted of 96 male and female teachers, including 52 males and 44 females, who teach English at the secondary level in the private schools of Damt, Joban and Al-Hosha districts in Al- Dhale Governorate. All participants responded to the study instrument. The following is a presentation of the specifications of that sample:

Table (1). Description of the study sample in terms of gender and years of experience

Years of Exp. Gender	Less than 5 years	5 to 10 years	More than 10 years	The total
Males	11	15	26	52
Females	10	12	22	44
The total	21	27	48	96

Table (2). Description of the study sample in terms of gender and academic qualification

Qualification Gender	Diploma	Bachelor	The total
Males	20	32	52
Females	20	24	44
The total	40	56	96

3.3 Instrument Development:

The questionnaire was developed based on the literature review and previous studies such as Al-Karimin (2017), Al-Karamaneh & Abu Sneineh (2020), and Setyaningtyas (2019). It consisted of 24 items covering the six thinking hats (4 items per hat). A five-point Likert scale was used.

3.4 Validity and Reliability:

3.4.1 Content Validity:

The instrument was reviewed by eight experts in TEFL and educational measurement.

The Content Validity Index (CVI) = 0.831, meaning that 83.1% of the items were rated as relevant and clear by experts, which exceeds the acceptable threshold of 0.80.

3.4.2 Internal Consistency Reliability

Cronbach's Alpha coefficients were calculated:



Hat	Cronbach Alpha
White	0.79
Black	0.76
Yellow	0.81
Red	0.84
Green	0.77
Blue	0.82
Total	0.86

All values exceed 0.70, indicating satisfactory internal consistency.

3.4.3 Test Retest Reliability:

To assess stability, the questionnaire was administered twice to 22 teachers (outside the main sample) with a two-week interval. Pearson correlation coefficient between the two administrations:

$r = 0.87$ ($p < .01$). This indicates strong stability over time.

3.5 Data Collection Procedures:

Questionnaires were distributed in paper form during March– April 2025. Participants were informed of the study purpose and confidentiality was assured. Completed questionnaires were collected directly, and no cases of non-response were recorded. The five-point Likert scale was adopted as follows: strongly agree (5) points, agree (4) points, somewhat (3) points, disagree (2) points, strongly disagree (1) point. Mean scores of 3.50 and above were interpreted as high, scores between 2.50 and 3.49 as moderate, and scores below 2.50 as low.

3.6 Data Analysis:

The following statistical techniques were used: Means and Standard Deviations, Rank ordering, Independent samples t-tests and Significance level was set at $\alpha \leq .05$.

Data were analyzed using SPSS Version 26. Mean interpretation was as follows: 3.50–5.00 High 2.50–3.49 Moderate 1.00–2.49 Low

4. Conclusion and Implication:

This study explored the extent to which Yemeni secondary school EFL teachers employ the Six Thinking Hats strategy in their instructional practices. The findings revealed that teachers tend to prioritize emotional and organizational thinking modes, while critical evaluation receives comparatively less emphasis. These patterns reflect context-sensitive pedagogical choices that aim to support learner motivation and classroom stability. However, they also highlight the need for greater balance in integrating different thinking dimensions into teaching practice.

The study offers several implications for EFL education. For teacher education programs, it underscores the importance of training teachers to use thinking-based strategies in a balanced and



reflective manner. For curriculum developers, it suggests the value of incorporating activities that promote diverse cognitive engagement. At the policy level, encouraging innovation in instructional practices may contribute to improving classroom interaction and learner outcomes.

The findings of this study offer insight into the use of the Six Thinking Hats strategy by EFL teachers in natural classroom contexts. Consistent with Al-Harashseh and Al-Khatib (2017), the Black Hat was used relatively infrequently, suggesting that teachers may be less inclined to engage in critical evaluation spontaneously. Similarly, Al-Sheikh (2018) emphasized the value of emotional and creative thinking, which aligns with the moderate use of the Red and Green Hats observed in this study. In contrast, prior experimental studies by Al-Karimin (2017) and Al-Amiri (2020) reported significant improvements in critical thinking; the current results indicate that such gains may be less pronounced in everyday teaching, likely due to contextual factors such as cultural emphasis on emotional support, classroom instability, and examination-oriented instructional priorities. These findings highlight the nuanced nature of strategy adoption: while teachers recognize the value of diverse thinking approaches, their application may be constrained by systemic and contextual factors. Consequently, promoting critical thinking in real-world classrooms may require targeted professional development and supportive instructional frameworks.

4.1 Limitations:

Several limitations should be considered when interpreting these findings. First, the study relied on self-reported data, which may be subject to bias or social desirability effects. Second, the sample was limited to private schools in a single governorate, restricting the generalizability of the results. Finally, the cross-sectional design limits the ability to draw causal conclusions about the relationships observed.

4.2 Recommendations for Future Research:

Future studies could address these limitations by implementing experimental designs that measure the impact of Six Thinking Hats strategies on student achievement outcomes. Classroom observations should be incorporated to validate self-reported practices, and the study sample should be expanded to include public schools for greater representativeness. Additionally, exploring the relationship between teacher professional development and the consistent use of thinking strategies may provide practical guidance for improving instructional practices. Future research may build on these findings by examining the relationship between teachers' use of thinking strategies and student performance, or by investigating how professional development influences the adoption of such approaches.

Ethical Considerations:

All participants provided informed consent, and participation was voluntary. Data were kept confidential, with no personal identifiers collected. The study protocol was reviewed and approved by the Faculty Research Committee, ensuring compliance with ethical standards for research involving human participants.

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