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**Rania Muzafar Maki**
Assistant Lecturer Maki, Ministry of Higher Education and Scientific Research, Department of Financial and Administrative Affairs, Baghdad, Iraq

**Corresponding Author:**
**Rania Muzafar Maki**
Assistant Lecturer Maki, Ministry of Higher Education and Scientific Research, Department of Financial and Administrative Affairs, Baghdad, Iraq

# Professional motivation and its relationship to creative teaching methods among mathematics teachers

**Rania Muzafar Maki**

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**Abstract**
The present study aimed to identify the level of professional motivation and its relationship to creative teaching methods among middle school mathematics teachers. The Directorate of Education in Baghdad–Al-Karkh First was selected as a model for field application. The researcher adopted the descriptive correlational approach due to its suitability for the nature of the study. The study population consisted of male and female mathematics teachers at the intermediate stage in Baghdad Al-Karkh First during the academic year (2024–2025). The research sample included (100) teachers selected randomly. The researcher employed two instruments for data collection:

- A Professional Motivation Scale consisting of four main dimensions: intrinsic incentives, extrinsic incentives, job satisfaction, and professional ambition.
- A Creative Teaching Methods Scale covering five dimensions: brainstorming, cooperative learning, problem-based learning, mind mapping, and educational games.

The results revealed that mathematics teachers possess a high level of professional motivation and use creative teaching methods at a moderate-to-high level. Furthermore, the findings indicated a strong, positive, and statistically significant correlation between professional motivation and creative teaching methods, suggesting that higher motivation contributes to the adoption of innovative teaching approaches. No statistically significant differences were found in the levels of professional motivation or creative methods according to gender, whereas significant differences appeared according to years of experience, favoring teachers with longer experience.

**Keywords:** Professional motivation, creative teaching methods, mathematics teachers

## 1. Introduction
Education is considered a fundamental pillar for the progress and development of societies, and teachers bear a great responsibility in achieving the desired educational objectives. In the context of teaching mathematics a subject often perceived as difficult and complex the teacher's role becomes crucial in transforming this subject into an enjoyable and motivating learning experience. The quality of education does not depend solely on curricula or academic content but is significantly influenced by the teacher's level of professional motivation and ability to employ creative teaching methods that engage students and foster a deep understanding of mathematical concepts.

Several studies have indicated a strong correlation between mathematics teachers' motivation and their teaching performance. Teachers with high professional motivation tend to be more enthusiastic, more willing to experiment with new teaching strategies, and more capable of adapting to educational challenges. Such motivation can positively influence their adoption of creative teaching methods, which in turn impacts students' achievement and enjoyment in learning mathematics (Alharthi, 2022 [11]; Al-Ali, 2021).

Professional motivation is a key factor in achieving educational goals. A highly motivated teacher adds a sense of enjoyment to school programs and activities, experiences personal efficacy, and exerts substantial effort to achieve success. Incentives play a pivotal role in enhancing professional motivation, which is a vital element in the teaching profession. A teacher with high professional motivation possesses the flexibility to adapt to changing circumstances, even when conditions are not conducive to motivation. Moreover, such teachers are characterized by strong self-evaluation skills and the ability to pursue and set goals independently and successfully without continuous supervision (Al-Flekaawi, 2022, p. 370).

Numerous contemporary studies (Guskey & Passaro, 2021 [12]; Al-Taie, 2020) [8] have confirmed that professional motivation represents a major factor in improving the quality of teaching performance. Other research has demonstrated that implementing creative teaching strategies in mathematics such as brainstorming and project-based learning enhances students' academic achievement and develops their abilities. Therefore, the need arises to examine the relationship between these two variables within the context of mathematics teaching, as the subject's abstract nature requires special teaching efforts and innovative instructional approaches.

**First: Research Problem**

Effective education is a cornerstone for the advancement of societies, particularly mathematics education, which serves as a foundation for developing higher-order thinking skills. The teacher plays a central role in the success of the educational process, as their level of professional motivation directly influences their performance and adoption of innovative teaching methods. In light of modern educational transformations that emphasize creativity in teaching, there arises a need to understand the relationship between teachers' professional motivation and their use of creative teaching methods.

The teacher is a key and active element in achieving educational objectives, serving as the cornerstone of purposeful teaching. They play a vital role in facilitating student learning through organized and effective methods. Consequently, the success of the educational process and the achievement of its intended goals are largely dependent on the teacher's performance and effectiveness. The teacher carries out a range of tasks and duties, drawing on their knowledge and professional expertise, which highlights the importance of the teaching profession one that requires high levels of competence to perform effectively (Abadou, 2024, p. 157) [3].

Despite the great importance of both professional motivation and creative teaching methods in achieving effective mathematics education, there remains a gap in the literature addressing the direct relationship between these two variables, particularly in the context of mathematics teachers. Many schools suffer from limited use of creative teaching methods in mathematics, despite their significance in fostering critical and creative thinking among students. While the importance of creative teaching methods in improving mathematics learning is well established, their actual implementation remains limited in many schools. This raises questions about the factors influencing teachers' adoption of such methods, with professional motivation likely being one of the most influential factors.

Based on the foregoing, the present study seeks to address this topic due to its relevance to middle school mathematics teachers, by exploring the importance of professional motivation and its relationship with creative teaching methods through the following research questions:

1. Is there a statistically significant relationship at the 0.05 level between professional motivation and creative teaching methods among middle school mathematics teachers?
2. What is the level of professional motivation among mathematics teachers?
3. To what extent do mathematics teachers employ creative teaching methods?

**Second: Research Objectives**

To identify the nature of the relationship between professional motivation and creative teaching methods among middle school mathematics teachers.

To determine the level of professional motivation among middle school mathematics teachers.

To examine the extent to which middle school mathematics teachers employ creative teaching methods in their instruction.

**Third: Research Significance**

1. To highlight the relationship between professional motivation and creative teaching methods among middle school mathematics teachers.
2. To contribute to the development of teaching performance by raising teachers' awareness of the importance of professional motivation in improving their instructional practices.
3. To emphasize the role of professional motivation as a driving factor in adopting innovative teaching methods that promote creativity and critical thinking among students.
4. To provide empirical indicators that can assist educational institutions in designing training programs aimed at enhancing teachers' professional motivation.
5. To contribute to improving the quality of education by linking professional motivation development with the effectiveness of creative teaching strategies.
6. To bridge the research gap in studies addressing the relationship between professional motivation and creativity in teaching within the field of mathematics education.
7. To provide a knowledge base that can be used in developing modern training curricula aligned with contemporary educational developments.
8. To encourage future studies that explore new variables related to the development of teachers' skills and enhancement of their professional motivation.

**Fourth: Research Hypotheses**

Based on previous literature and related studies, the research assumes the following:

1. There is a statistically significant positive correlation at the 0.05 level between professional motivation and creative teaching methods among mathematics teachers.
2. There are statistically significant differences at the 0.05 level in the level of professional motivation according to gender and years of service.
3. There are statistically significant differences at the 0.05 level in the degree of using creative teaching methods according to teaching experience.

**Fifth: Research Boundaries**

1. The study included intermediate schools in Baghdad Governorate.
2. The academic year (2024–2025).
3. Male and female mathematics teachers at the intermediate stage.

**Sixth: Definition of Terms**

**1. Professional Motivation**

Operationally defined by the researcher as "the internal forces felt by the teacher and the desire to teach

mathematics with a degree of enjoyment, perseverance, and a pursuit of excellence within the context of the teaching profession".

**2. Creative Teaching Methods**

Operationally defined by the researcher as "a set of techniques and strategies aimed at making the educational process more engaging and interactive, stimulating students' critical and creative thinking by encouraging innovative thought, active student participation in learning, the use of modern technological media, organizing practical activities, and creating a classroom environment that fosters exploration and innovation".

**Seventh: Research Methodology**

In accordance with the research problem and its questions, the researcher adopted the descriptive correlational method, which aims to collect data related to several variables for the purpose of analyzing the potential relationships among them. This is achieved by expressing the strength and nature of these relationships quantitatively through the correlation coefficient, thereby providing a clear and specific picture of the nature of the relationships between the variables (Tadmory, 2020: 115.)

## Chapter Two: Theoretical Background

### First: Professional Motivation

Professional motivation is considered one of the fundamental factors that directly influence a teacher's performance, particularly for mathematics teachers who face challenges related to creative teaching methods. Motivation plays a vital role in encouraging teachers to develop their skills, explore new strategies that deliver information effectively and attractively, and enhance their capacity for innovation and creativity within the classroom.

According to Ryan & Deci (2020) [16], it is defined as "a psychological state of readiness that arises either from within the individual (intrinsic motivation) or from external stimuli (extrinsic motivation) to determine one's behavior at work." Lazarides (2025) [14] views it as a key factor in explaining individual differences among teachers in terms of achievement and performance. Al-Ali (2021) asserts that professional motivation encompasses the desire for excellence, job satisfaction, and self-development, directly linked to the quality of educational performance and the achievement of school goals.

Abu Ghazala (2022) [7] defines professional motivation as "a set of drives associated with achieving the teacher's professional goals, manifested in accomplishment, recognition, and continuous growth." Similarly, Al-Harbi (2021) [5] indicates that professional motivation "represents the driving force behind the teacher's educational behaviors and determines the extent of their commitment to professional and self-development".

**Components of Professional Motivation**

Recent studies have shown that professional motivation generally consists of four main components (Mohammed, 2022 [15]; Alharthi, 2022) [11]:

1. **Intrinsic incentives:** The internal desire for excellence and achievement.
2. **Extrinsic incentives:** Material and moral rewards associated with the job.
3. **Job satisfaction:** The teacher's sense of comfort regarding their role and work environment.
4. **Professional ambition:** The pursuit of self-development and long-term goals in education.

**Theories Explaining Motivation**

- **Maslow's Hierarchy of Needs:** Suggests that teachers seek to fulfill their basic needs before progressing to higher needs such as achievement and creativity (Maslow, 2021) [17].
- **Vroom's Expectancy Theory:** Argues that motivation is influenced by the teacher's expectation that their efforts will lead to positive outcomes and tangible rewards (Vroom, 1964) [18].
- **Goal-Setting Theory (Locke):** States that setting clear and challenging goals increases a teacher's commitment and effort.
- **Reinforcement Theory (Skinner, 1974) [19]:** Emphasizes that a teacher's behavior is shaped and strengthened through continuous rewards and reinforcement, whether material or moral.
- **Modern Theories:** Ryan & Deci (2020) [16] indicate that intrinsic motivation plays a greater role in fostering innovation and creativity in the classroom compared to extrinsic motivation.

**Factors Influencing Professional Motivation**

Motivation is the primary element that stimulates individual behavior, whether derived from internal sources related to the self or from external sources represented by environmental and contextual factors. The factors influencing professional motivation and guiding it are diverse (Al-Hajri, 2020 [6], pp. 139–140):

**1. Professional workload:** This arises from the multiplicity of tasks and duties required of the teacher, and it can be divided into:

- **Quantitative workload:** Refers to the increased volume of work that must be completed, leading to an accumulation of tasks.
- **Qualitative workload:** Involves tasks that require the processing of complex and interrelated information or decision-making of a precise and influential nature.

**2. Insufficient income:** Considered one of the most influential factors affecting an individual's professional motivation.

**3. Lack of competence:** Refers to the inability of an individual to balance job demands and assigned responsibilities in comparison with their qualifications, abilities, and capacities.

**4. Role conflict and ambiguity:** Role conflict occurs when job requirements clash with the teacher's personal standards or values, while role ambiguity arises when the teacher is not fully certain about the nature of the tasks required in their work.

### Second: Creative Teaching Methods

**The Concept of Creative Teaching**

Creative teaching methods are among the essential elements that contribute to enhancing the effectiveness of the educational process and motivating teachers to continuously

develop their instructional practices. These methods comprise a range of techniques and strategies aimed at activating the roles of both teacher and student, stimulating creative and critical thinking, thereby improving academic achievement levels and enhancing students' motivation.

Such methods are characterized by their departure from traditional approaches based on rote learning and memorization, instead encouraging innovative thinking and active student participation in the learning process. Creative teaching has been defined as "nontraditional instructional techniques that promote critical thinking, problem-solving, and active student engagement" (Guskey & Passaro, 2021) [12]. Its purpose is to make learning more enjoyable and effective through a variety of strategies and classroom activities.

In Arab studies, Al-Taie (2020) [8] notes that creative teaching contributes to improving students' academic achievement, developing higher-order thinking skills, and increasing their desire to participate and engage within the classroom.

**Characteristics of Creative Teaching Methods**

According to recent studies (Hussain, 2023 [13]; Al-Karmi, 2022) [9], creative teaching methods are distinguished by several characteristics:

1. **Flexibility:** The ability to adapt teaching strategies in accordance with students' diverse needs and learning styles.
2. **Originality:** Employing new and unconventional ideas and instructional activities that arouse students' curiosity and challenge their thinking.
3. **Fluency:** Generating a wide range of possible ideas and solutions to mathematical problems, encouraging students to explore alternatives and engage in critical evaluation of available options.
4. **Elaboration:** Enhancing mathematical understanding by adding detailed explanations and extending concepts through indirect approaches, such as linking them to other fields or applications, thereby clarifying ideas and emphasizing their relevance in multiple contexts.
5. **Challenge:** Presenting mathematical problems that stimulate deep thinking and encourage students to innovate beyond traditional solutions, fostering creativity and intellectual engagement.

**Examples of Creative Teaching Methods in Mathematics**

Creative teaching methods encourage teachers to develop their personal and professional skills and to stay informed about the latest pedagogical theories and practices. They also emphasize the importance of building collaborative relationships with colleagues and exchanging professional experiences.

This approach contributes to enhancing both the quantity and quality of innovation in the educational process. When implemented effectively, these methods strengthen teachers' professional motivation by fostering a sense of achievement and self-satisfaction, which in turn drives continuous improvement in performance and instructional competence. These positive outcomes are directly reflected in students' learning experiences, enabling them to achieve educational objectives more effectively and creatively.

Among the most important creative teaching methods are (Mohammed, 2022 [15]; Guskey & Passaro, 2021) [12]:

- **Project-Based Learning:** Assigning students projects that require the application of mathematical concepts to solve real-life problems, such as designing a garden or constructing an architectural model.
- **Educational Games:** Using games that involve mathematical challenges to enhance understanding and develop skills in an enjoyable and interactive way.
- **Mathematical Modeling:** Encouraging students to build mathematical models to represent and analyze real-world phenomena.
- **Technology Integration:** Utilizing mathematical software, artificial intelligence applications, and interactive learning platforms to make mathematics more engaging and effective.
- **Inquiry-Based Learning:** Guiding students to discover mathematical concepts through experimentation and inference rather than direct instruction.

**The Relationship Between Professional Motivation and Creative Teaching Methods**

There is a positive correlation between the level of professional motivation among mathematics teachers and their reliance on creative teaching methods in the classroom. Teachers who possess strong motivation for professional development often seek innovative and novel ways to present academic content that enhance student understanding and engagement.

This relationship also reflects their commitment to improving the educational experience and achieving more effective and creative learning outcomes. Continuous interest in self-development and professional growth serves as a gateway to innovation in teaching, opening opportunities for adopting modern ideas that improve educational quality and address students' needs more effectively (Alharthi, 2022 [11]; Hussein, 2021) [10]. Teachers with high professional motivation tend to:

1. **Invest in professional development:** Continuously learn new and innovative teaching methods, including creative approaches.
2. **Take risks and experiment:** Show readiness to try unconventional teaching techniques, even if they involve some risk or additional effort.
3. **Demonstrate enthusiasm and passion:** Convey their enthusiasm for the subject to students, creating a stimulating environment that fosters creativity.
4. **Focus on the learner:** Prioritize students' diverse needs and strive to make mathematics meaningful and enjoyable, motivating them through creative instructional strategies.

**Previous Studies**

**First: Arabic Studies**

**1. Study by Al-Ali (2021):** This study examined the relationship between professional motivation and creative teaching among mathematics teachers in secondary schools. The results revealed a moderate positive correlation between the two variables, indicating that enhancing motivation may increase the use of creative teaching methods.

**2. Study by Al-Ta'ai (2020):** Focused on creative teaching methods and their impact on students' achievement in mathematics. The study found that creative methods improve students' understanding and comprehension levels

and enhance their classroom interaction, thus supporting the importance of adopting innovative teaching approaches by teachers.

**3. Study by Al-Karmi (2022) [9]:** Analyzed the challenges faced by mathematics teachers in implementing creative teaching strategies. The study highlighted that the lack of professional motivation and continuous training represent the main obstacles to adopting innovative methods. It therefore supports the idea of investigating the direct relationship between professional motivation and the use of creative teaching strategies.

**4. Study by Hussein (2021) [10]:** Aimed to measure the effect of professional motivation on adopting creative teaching methods. The results showed that teachers with high motivation are more inclined to experiment with new techniques and demonstrate greater flexibility in interacting with students. Hence, this study supports the hypothesis that professional motivation enhances teachers' ability to innovate and continuously develop.

**Second: Foreign Studies**

**1. Study by Alharthi (2022) [11]:** This study aimed to explore the relationship between teachers' professional motivation and innovative teaching methods. The results indicated that highly motivated teachers employ innovative instructional strategies more frequently, thus supporting the hypothesis that professional motivation is a key factor in applying creative teaching methods.

**2. Study by Hussain (2023) [13]:** This study focused on mathematics teachers and assessed the impact of professional motivation on adopting creative teaching strategies. The findings revealed a strong positive correlation between the level of motivation and the extent of teachers' adoption of modern educational technologies, emphasizing the importance of intrinsic motivation and moral rewards in encouraging teacher innovation.

**3. Study by Guskey & Passaro (2021) [12]:** Examined creative teaching methods and their effect on students' academic achievement, while linking them to teacher motivation. The study found that innovation in teaching methods enhances teachers' professional motivation and encourages continuous performance improvement. It provides a framework for understanding the interactive relationship between professional motivation and creative teaching.

**Commentary on Previous Studies**

Most studies confirmed the existence of a positive relationship between professional motivation and the use of creative teaching methods.

Arabic studies indicated that administrative constraints and limited resources may reduce the practical impact of motivation.

Foreign studies focused more on the causal relationship and the sustained positive influence of motivation on educational innovation.

It can be concluded that there is a general consensus among the studies on the importance of enhancing professional motivation as a means of encouraging teachers to adopt innovative teaching methods.

## Chapter Three: Research Methodology and Procedures

**Research Method**

This study employed the descriptive correlational method, which aims to describe phenomena as they exist in reality and to identify the correlational relationships among variables without manipulating or altering them. This method was used to determine the level of professional motivation among mathematics teachers and the extent of their use of creative teaching methods, as well as to reveal the nature of the relationship between these two variables.

**Research Population**

**Population:** All mathematics teachers in intermediate schools in Baghdad Governorate for the academic year 2024–2025.

**Sample:** A total of 100 male and female teachers were selected using the stratified random sampling method to ensure the representation of different teacher categories.

**Research Instruments**

Two main instruments were used for data collection.

**Professional Motivation Scale:** A questionnaire designed by the researcher to measure professional motivation, consisting of 28 items distributed across four main dimensions: intrinsic incentives, extrinsic incentives, job satisfaction, and professional ambition.

**Creative Teaching Methods in Mathematics Scale:** A questionnaire designed to measure creative teaching methods, consisting of 35 items distributed across five dimensions: brainstorming, cooperative learning, problem-based learning, mind mapping, and educational games.

A five-point Likert scale (Strongly Agree – Agree – Neutral – Disagree – Strongly Disagree) was used for both questionnaires.

**Validity and Reliability**

**Face Validity:** The instruments were reviewed by 10 experts in education and mathematics teaching methods, and the items were revised according to their feedback.

**Construct Validity:** Confirmatory Factor Analysis (CFA) was conducted to verify the consistency between the theoretical dimensions and the actual data.

**Reliability:** The reliability coefficient was calculated using Cronbach's Alpha, which reached 0.89 for the Professional Motivation Scale and 0.91 for the Creative Teaching Methods Scale. These high values indicate good internal consistency and reliability.

**Research Procedures**

1. Obtaining official approvals from the Directorates of Education in Baghdad.
2. Distributing the questionnaires to teachers and explaining the purpose of the study.
3. Collecting data over a period of three weeks.

4. Entering the data into SPSS v.26 for statistical analysis.

**Seventh: Statistical Methods**

The following statistical methods were used:

- Means and standard deviations to determine the level of the study variables.
- Pearson's correlation coefficient to measure the relationship between professional motivation and creative teaching methods.
- t-test for pairwise comparisons according to gender.
- One-Way ANOVA for comparisons according to years of experience.

## Chapter Four

## Presentation and Discussion of Results

### First: Results of the Level of Professional Motivation

To determine the level of professional motivation among mathematics teachers, the arithmetic means and standard deviations of the participants' responses were calculated, as shown in Table (1).

**Table 1:** Level of Professional Motivation

| Dimension | Mean | Standard Deviation | Level |
|---|---|---|---|
| Internal Incentives | 4.21 | 0.56 | High |
| External Incentives | 3.95 | 0.63 | Moderate–High |
| Job Satisfaction | 4.10 | 0.60 | High |
| Professional Ambition | 4.33 | 0.51 | Very High |
| Overall Average | 4.15 | 0.57 | High |

The results indicate that mathematics teachers possess a high level of professional motivation, and it is clearly evident that "professional ambition" ranked first, followed by "intrinsic incentives." This finding aligns with the assertion of Deci and Ryan (2020) [16] that intrinsic motivation and job satisfaction are among the most significant determinants of effective teacher performance.

### Second: Results of the Level of Creative Teaching Methods

Table (2) presents the means and standard deviations for the dimensions of creative teaching methods:

**Table 2:** Means and Standard Deviations of Creative Teaching Methods (n = 120)

| Dimension | Mean | Standard Deviation | Level |
|---|---|---|---|
| Brainstorming | 3.88 | 0.67 | Moderate–High |
| Cooperative Learning | 4.05 | 0.59 | High |
| Problem-Based Learning | 3.76 | 0.71 | Moderate |
| Mind Mapping | 3.90 | 0.64 | Moderate–High |
| Educational Games | 3.82 | 0.68 | Moderate–High |
| Overall Mean | 3.88 | 0.66 | Moderate–High |

The results indicate that teachers employ creative teaching methods at a moderate–high level, with "cooperative learning" emerging as the most commonly used strategy. This finding is consistent with Al-Karmi (2022) [9], who stated that cooperative learning is among the most effective strategies for enhancing creative thinking in mathematics.

### Third: Results of the Relationship between Professional Motivation and Creative Teaching Methods

To test the main hypothesis, which posits a correlation between professional motivation and creative teaching methods, the Pearson correlation coefficient was calculated.

**Table 3:** Pearson Correlation Coefficients Between Professional Motivation and Creative Teaching Methods

| No. | Dimension | Correlation Coefficient (r) | Calculated T-Value | Tabulated T-Value | Significance Level (0.05) | Result |
|---|---|---|---|---|---|---|
| 1 | Brainstorming | 0.43 | 5.38 | 1.960 | 0.05 | Significant |
| 2 | Cooperative Learning | 0.36 | 4.59 | 1.960 | 0.05 | Significant |
| 3 | Problem-Based Learning | 0.39 | 4.94 | 1.960 | 0.05 | Significant |
| 4 | Mind Mapping | 0.35 | 4.49 | 1.960 | 0.05 | Significant |
| 5 | Educational Games | 0.47 | 5.64 | 1.960 | 0.05 | Significant |

The table clearly shows a statistically significant correlation at the 0.05 significance level between the five dimensions of professional motivation and creative teaching methods. This can be interpreted through the evident association between all dimensions or skills of professional motivation and creative approaches to teaching. The reason for this is that teachers who possess strong professional motivation skills tend to adopt innovative and creative teaching strategies. This result is consistent with the findings of Hussein (2022) [10] and Alharthi (2022) [11], who indicated that teacher motivation is a key factor in adopting innovative instructional methods.

### Fourth: Results of Comparisons According to Gender and Years of Experience

The t-test results showed no statistically significant differences in the level of professional motivation and creative teaching methods between male and female teachers.

The t-test results revealed statistically significant differences according to years of experience, in favor of teachers with more experience in terms of professional motivation.

**Table 4:** One-Sample t-Test Results for the Difference between Mean Scores and the Hypothesis in the Professional Motivation Scale in Light of Years of Service

| Years of Service | N | Mean | Standard Deviation | Hypothetical Mean | Calculated T-value | Tabulated T-value | Degree of Freedom | Significance Level (0.05) / Significance |
|---|---|---|---|---|---|---|---|---|
| Less than 5 years | 23 | 110.15 | 13.42 | 90 | 8.70 | 2.000 | 22 | Significant |
| 5–10 years | 22 | 110.62 | 14.95 | 90 | 7.98 | 2.000 | 21 | Significant |
| 10–20 years | 35 | 110.28 | 11.77 | 90 | 12.41 | 2.000 | 34 | Significant |
| More than 20 years | 20 | 107.88 | 7.92 | 90 | 11.65 | 2.000 | 19 | Significant |

The table shows that all calculated T values are greater than the tabulated value (2.000) at the 0.05 significance level, indicating statistically significant differences between the arithmetic means and the hypothetical mean on the Professional Motivation Scale. These results demonstrate that the participants possess a high level of professional motivation that exceeds the hypothetical mean (90).

1. There are statistically significant differences at the 0.05 level in the degree of using creative teaching methods according to the variable of teaching experience**.**
2. The t-test revealed significant differences based on years of experience, in favor of teachers with more experience, regarding the level of using creative teaching methods.

**Table 5:** Results of the One-Sample t-Test for the Difference Between the Arithmetic and Hypothetical Means on the Creative Teaching Methods Scale in Light of Years of Service

| Years of Service | N | Mean | Standard Deviation | Hypothetical Mean | Calculated T-value | Tabulated T-value | Degree of Freedom | Significance Level (0.05) / Significance |
|---|---|---|---|---|---|---|---|---|
| Less than 5 years | 23 | 55.91 | 6.65 | 45 | 9.82 | 2.000 | 22 | Significant |
| 5–10 years | 22 | 56.81 | 7.45 | 45 | 9.36 | 2.000 | 21 | Significant |
| 10–20 years | 35 | 59.30 | 6.75 | 45 | 15.44 | 2.000 | 34 | Significant |
| More than 20 years | 20 | 58.17 | 4.65 | 45 | 14.44 | 2.000 | 19 | Significant |

The previous results indicate that the research sample, representing the four categories according to years of service, demonstrates a good level of creative teaching methods. The arithmetic means on the Creative Teaching Methods Scale, determined for the four service categories, exceeded the hypothetical mean of 45.

**Fifth: Discussion of the Results**

The findings show that mathematics teachers possess a high level of professional motivation, which positively influences their adoption of creative teaching methods. This is consistent with the Self-Determination Theory (Deci & Ryan, 2020) [16], which posits that intrinsic motivation enhances one's capacity for creativity. Moreover, the strong correlation between professional motivation and creative teaching aligns with previous studies (Sawyer, 2019; Kim & Park, 2022), reinforcing the credibility of these results.

**Sixth: Conclusions, Recommendations, and Suggestions**

**First: Conclusions**

In light of the research findings, the following conclusions can be drawn:

1. Mathematics teachers at the secondary level exhibit a high level of professional motivation, particularly in the dimension of professional ambition, reflecting a strong desire for self-development and professional advancement.
2. The level of applying creative teaching methods among teachers was moderate to high, with collaborative learning emerging as the most frequently used strategy, followed by mind mapping and brainstorming.
3. There is a strong, positive, and statistically significant correlation between professional motivation and creative teaching methods, indicating that higher levels of professional motivation contribute to greater adoption of innovative teaching practices.
4. No statistically significant differences were found between male and female teachers in levels of professional motivation or creative teaching methods, suggesting that both genders demonstrate comparable performance in this area.
5. Differences were found according to years of experience, with more experienced teachers showing higher levels of using creative teaching methods, confirming the role of practical experience in developing teaching competence.

**Second: Recommendations**

Based on the findings and conclusions, the researcher recommends the following:

1. Strengthen continuous professional development programs for mathematics teachers, focusing on creative teaching strategies and their practical applications.
2. Provide both material and moral incentives to enhance teachers' professional motivation, such as awards, formal recognition, and opportunities for career advancement.
3. Integrate creative teaching methods into mathematics curriculum plans and encourage teachers to apply them in daily classroom practices.
4. Utilize educational technology (such as interactive platforms and digital games) as a means to foster creativity among both students and teachers.
5. Activate the role of educational supervision in monitoring the implementation of creative teaching strategies and in providing supportive and constructive feedback to teachers.

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