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The Effect of Meetings Management Using the UML Method on the Development of Problem-Solving Skills among Personnel in the Education Department

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ABSTRACT

Objective: This study aimed to evaluate the effect of meeting management using the UML method on enhancing problem-solving skills among education department personnel in Qeshm.

Methods: A semi-experimental design with pre-test and post-test control groups was employed. The study sample included 40 participants randomly assigned to test and control groups. The test group received training on managing meetings using the UML method through six structured sessions, while the control group did not receive such training. Problem-solving skills were assessed using a six-factor questionnaire developed by Cassidy and Long, which evaluated indigence, control, innovation, contact, opposition (avoidance), and self-confidence. Pre-test and post-test data were analyzed using descriptive statistics (mean, standard deviation) and inferential methods (analysis of covariance).

Results: Results indicated a significant improvement in problem-solving skills in the test group compared to the control group. Specifically, the UML-based meeting management enhanced participants' abilities in all six problem-solving domains. Training sessions helped participants develop clearer communication, greater confidence, and improved innovation in addressing challenges.

Conclusions: These findings underscore the effectiveness of UML as a structured method for meeting management, particularly in fostering problem-solving skills in educational settings. Given its impact on both individual and organizational development, the UML method offers a practical framework for enhancing meeting efficiency and addressing professional challenges. This approach can be widely adopted in similar contexts to support personnel development and promote collaborative problem-solving.

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Introduction

Meeting management is a critical aspect of any organization, and its success depends on the planning, execution of activities, and documentation of results. Utilizing UML in this context can help create a visual model of processes and activities, allowing team members to easily exchange ideas and collaborate. This language provides specific symbols and patterns, enabling a better understanding of complex topics and aiding in the clarification of expectations and responsibilities. Meeting management refers to the process of planning, organizing, executing, and evaluating meetings. This process includes setting meeting objectives, inviting participants, preparing the agenda, managing time, and following up on results and actions after the meeting. The primary goal of meeting management is to ensure that meetings are effective and efficient, contributing to the achievement of organizational goals. The importance and need for effective meeting management in organizations lead to improved efficiency, strengthened communication, effective decision-making, and the creation of an environment conducive to innovation, tracking, and evaluation.

Problem-solving skills not only contribute to personal and academic growth but also play a significant role in improving the efficiency and effectiveness of organizations. In today's complex and dynamic world, these skills are recognized as one of the key necessities for success in both educational and administrative fields.

In general**,** problem-solving skills are highly important in both educational and administrative environments. These skills not only aid personal growth but can also lead to enhanced performance in organizations and institutions. In our complex and changing world, possessing such skills has become a necessity.

In the view of the majority of people, solving a problem represents the most effective method of thinking (Atkinson and his colleagues, 2004). The process of problem-solving can be defined as a behavioral and cognitive one. It enables individuals to identify and discover effective strategies for dealing with problematic or difficult situations. (Nezu, 1986). From Gagne (1985) perspective, proficiency in problem-solving entails not only the ability to process information but also the utilization of fundamental principles, scientific methods, techniques, equipment, and analytical abilities, as well as creativity in diverse contexts through the application of specific approaches. Therefore, the primary determinant of effective problem-solving abilities is the capacity to

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effectively manage the utilization of these skills (Junason, 2009). In the contemporary era, factors such as development institutions, structural complexity, and their activities have led to an increase in effective environmental variants and so forth for managers. To perform their duties more effectively and to exert control over the institution, managers typically seek assistance from other members. Consequently, managers often engage in meetings and interactions with colleagues to exchange information or make decisions collectively.

Direct meetings, which may be held as a congress, commission, consultation meeting, or in other cases, may include lectures until the celebration of meetings and official conferences (Karimi, 2008). The management of meetings can be divided into four categories, each with its specific objectives: decision-making meetings, consultative meetings, crisis meetings, and meetings for analysis and lectures. Each of these meetings is approached with a specific set of management techniques. If the executive and the meeting's responsible party plan for the meeting, they must consider the role of the members and their contractual style. Furthermore, they must discuss the goal of the meeting, coordinate the actions of the members, and facilitate a discussion among the members. Finally, they must provide a reaction from the meeting members and control and access the total performance of the meeting. Based on the general definition of management, meeting management is released to this process (Herman and Herman, 2005). It is essential to have a clearly defined objective, to draft a plan for the meeting, to identify the members and their respective roles, to determine the time and place of the meeting, to decide on the means of initiating, conducting and concluding the meeting, to establish control and direction over the contributions of the members, to create an environment conducive to discussion, to foster a sense of cooperation in the discussion, to define the responsibilities, decisions and outcomes of the meeting, to ensure transparency in the proceedings, to follow up on the actions agreed upon in the meeting and so on. These are the key characteristics of effective meeting management (Ghavam, 2013).

Unified Modeling Language (UML), as a standard language for analyzing, designing, and documenting software systems, has recently become a valuable tool in meeting management. In today's world, where organizations strive to improve efficiency and effectiveness in their processes, the use of UML can enhance communication, clarify goals, and facilitate decision-making.

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One of the most effective styles in meeting management, particularly in the context of frequent meetings or critical decision-making situations, is the branching analysis of a subject, discussion topic, or problem. This approach is also known by various other names, including chart/diagram analysis of a problem, storyboard analysis, and coded analysis of recognizing a problem (Janason, Tesmer, & Hanoom, 1999). Johnson, M., & Wang, T. (2019) Indicated also discusses potential challenges in adopting a UML-based approach and provides recommendations for overcoming these barriers. Ultimately, the findings underscore the value of UML as a powerful tool for guiding and managing organizational change initiatives. In this method, the problem, performance, or subject under discussion is analyzed and developed using a conceptual chart, conceptual map, and syllogistic analysis. Bonaceto, et al (2005) posited that UML can be employed as a tool, theory, or method in a multitude of domains, including the analysis of mental and cognitive processes, the production of scientific knowledge, the sampling of cognitive processes, the analysis of duties, the simulation of cognitive processes, the method of system access, the production of theoretical frameworks (agent analysis), and the production of methods and systems based on cognition (mind-based). The UML method is employed in conjunction with the simulation of human performance, the analysis of complex tasks, the sampling of human performance, the processing of problems, and the management of domains. This method is utilized for the organization of elements, the analysis of a theoretical subject (agent) and the detailed skills of a single overall skill, the discovery of factors and areas of a subject or problem (the 'why'), and the simulation of how human performance operates (Balsamo and Morino, 2003). The filtering analysis method of UML is primarily used for the analysis of problems or structural performance until a solution is identified and formulated (Balsamo and Morino, 2003). Gebretsadik, K. K. (2020) conclude with recommendations for managers to adopt a more integrated approach to UML, fostering a culture of collaboration and continuous improvement.

The Unified Modeling Language (UML) is widely used in software engineering education and application development. Lu & Alexandru (2023) conducted a systematic review of UML diagramming tools for higher education, evaluating their features and proposing guidelines for tool design. Maruyama et al. (2022) explored educational environments for UML programming, focusing on task and model management functions for STEAM-related subjects. In another study, Maruyama et al. (2022) investigated UML programming methods for secondary school students

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using model-driven development and domain-specific languages. Fabri et al. (2021) examined the applicability of UML and Relationship Management Methodology (RMM) in developing distance teaching applications, addressing the need for specialized methodologies in this complex domain. These studies collectively highlight the importance of UML in education and software development, emphasizing the need for appropriate tools, learning environments, and methodologies to support effective teaching and application of UML concepts.

The utilization of the UML method for decision-making in the event of uncertainty (Bonaceto et al, 2005) represents a key aspect of the problem-solving process. The ability to make decisions at meetings is a crucial skill in modern organizations and educational institutions. Problem-solving and decision-making are essential managerial abilities. However, despite their evident importance, these skills are not yet fully recognized or applied in management methods for decision-making in meetings, which are often faced with challenges that require further investigation in this domain. In this context, preliminary research suggests that the use of structured methods in managing meetings can effectively enhance problem-solving skills.

UML is a powerful tool for modeling and analyzing systems and processes. This language helps design and development teams respond to the needs of their projects with greater clarity and precision. By using UML, processes can be effectively managed, contributing to improved efficiency and quality of systems.

Utilizing UML in meetings can significantly enhance the efficiency and clarity of discussions. By creating a visual and logical structure for conversations, teams will be better equipped to collaborate effectively, make informed decisions, and deliver tangible results. Ultimately, these impacts can lead to the enhancement of project quality and success.

In light of the aforementioned, the present study was conducted to examine the impact of the UML method on the development of problem-solving abilities among personnel in the education sector in Qeshm.

Material and Methods

This study is a form of applied research and is classified as interventional research. To achieve the research goal and draw inferences about causality, the DF-free variant effect (meetings management in the UML method) will be used to facilitate the development of the dependent

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variant (solving problem skills), while also addressing the issue of controlling all interventionist variants. The semi-experimental research method will be employed to achieve these objectives. The research plan is a pre-posttest with a control group. The experimental group comprises half of the sample members, while the other half are placed in the control group. The two groups were assessed on two occasions. The initial measurement is conducted through the administration of a pretest, while the subsequent measurement is carried out through the administration of a posttest. The posttest differs from the pretest in that it is conducted with the experimental group, who receive the free variant, and the control group, who do not receive the free variant. The statistical community for this research comprises all personnel engaged in education in Qeshm, as identified from the education institutions in the city. In a research project where there is an intervening possibility (use of a free variant), it is possible to make incidental use of a usable choice (Hidari, 2011). In this study, the researchers employed the incidental simple sampling method to select the research statistic sample. In simple incidental sampling, each defined community member has an equal and free chance of being included in the sample (Delavar, 2010). As the statistic community in this research includes both men and women, has a record of service, and exhibits different job tendencies, there were no difficulties encountered regarding the two reasons for sampling sharing. 1- In simple incidental sampling, the proportionate quantity of each gender is not a choice. 2- The statistical community exhibits a high degree of inter-similarity and homogeneity about cultural and occupational tendencies.

It is therefore recommended that a greater number of samples be selected to represent a tendency, while fewer samples should be selected from other tendencies, as this has no significant impact on the research results and their applicability to the wider community (Hidari, 2011).

To assess the efficacy of problem-solving skills among the educational personnel of Qeshm, a questionnaire was employed to ascertain the methods employed by respondents when attempting to resolve a given problem (Cassidy & Long, 1996). The scale comprises 24 items, with two response options, and is designed to assess six factors related to problem-solving approaches. These factors include: indigence, control, innovation, contact, opposition (avoidance), and self-confidence.

The results of the studies, which were conducted to develop a scale for measuring problem-solving strategies, indicate that this scale is a useful and reliable tool for this purpose. In different research

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studies on problem-solving methods, the permanent index achieved a score of 0.74, indigence 0.67, control 0.73, innovation 0.84, contact 0.64, prevention 0.76, and self-confidence 0.61. A small group of 20 individuals, similar to the research group, was selected to perform the test. The calculation was derived from the Kuder-Richardson Formula, with the permanent index for indigence reaching 0.80, control 0.68, innovation 0.89, contact 0.75, prevention 0.73, and self-confidence 0.71. Subsequently, a questionnaire was administered to both control and experimental groups to assess their problem-solving abilities before the commencement of the study. Subsequently, the free variant, comprising meetings management conducted by UML guidelines, was carried out throughout six meetings (for the test group). Following the completion of the free variant for the test group, a post-test in problem-solving was conducted for both groups. The data from this test were analyzed using SPSS-20 software to test the research hypotheses and compare the control and test groups. The results of this analysis are presented below.

Results

Table 1 presents a statistical description of the pretest results for each subject in terms of their ability to solve problems independently. In the subsequent descriptive analysis of the data, the researchers employed indices of descriptive tendency, including the mean and standard deviation.

Table 1. Description of points statistically in solving problem pretest level in separation to groups of experimental and control

Variable	Group	Mean	SD	N	Max.	Min.
Solving problem(total)	Experimental	11.97	4.58	20	18	1.5
	Control	11.58	4.28	20	18.50	2
Indigence	Experimental	1.52	0.91	20	3	0
	Control	1.65	0.91	20	3	0
Control	Experimental	2.02	1.09	20	3.50	0
	Control	2.12	0.99	20	3	0
Innovation	Experimental	1.82	0.87	20	3	0
	Control	1.72	0.91	20	3.5	0
Contact	Experimental	2.22	1.03	20	4	0
	Control	2.15	0.844	20	3	0
opposition(avoid)	Experimental	2.32	0.97	20	3	0
	Control	2.22	0.88	20	4	0.50
Self-confidence	Experimental	2.05	0.84	20	3.50	0
	Control	1.97	1.08	20	3	0

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Table 2 should be used to present the statistical points related to the resolution of the post-test problem in the context of the separation of groups. In the descriptive analysis of the data, the mean and standard deviation were employed as descriptive tendency indexes.

Table 2. Description of points statistically in solving problem skills pos test level in separation groups of control and test

Variable	Group	Mean	SD	N	Max.	Min.
Solving problem(total)	Experimental	18.02	3.81	20	23	8.50
	Control	12.62	3.58	20	19	4
Indigence	Experimental	2.55	0.90	20	4	1
	Control	1.77	0.83	20	3	0.5
Control	Experimental	3.22	0.76	20	4	1.50
	Control	2.20	0.65	20	3	1
Innovation	Experimental	2.92	0.94	20	4	1
	Control	1.87	0.75	20	3.50	0.5
Contact	Experimental	3.17	0.83	20	4	1.50
	Control	2.22	0.85	20	3.50	0
Opposition(avoid)	Experimental	3.12	0.72	20	4	1.50
	Control	2.42	0.78	20	4	1
Self-confidence	Experimental	3.02	0.85	20	4	1
	Control	2.02	1.12	20	3.50	0

In the context of previously utilized instruments, the covariance analysis test is employed to evaluate and refine existing theoretical frameworks and objectives. One of the prerequisites for the application of this test is that the data in question must be normally distributed. In this case, the Smirnov test is employed.

Table 3. Results of Kolmogorov - Smirnov Test for reviewing normality of data

Variable	Quantity of Kolmogorov-Smirnov Z	P
Solving problem(total)	0.936	0.344
Indigence	0.897	0.398
Control	1.202	0.111
Innovation	1.584	0.506
Contact	1.306	0.347
Opposition(avoid)	0.985	0.287
Self-confidence	1.207	0.109

In light of the outcomes depicted in the upper table, it can be concluded that the quantity of Kolmogorov, Smirnov, and Z in the 0/5 level is normal. Therefore, the use of parametric tests is permissible.

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A further supposition for conducting multi-variant covariance test analysis is the similarity of dependent variants among groups. This supposition was reviewed using the Lovin test. The results of this test are presented in Table 4.

Table 4. Result of the Levene's test for equality of variances

Variable	F	DF1	DF2	P
Solving problem(total)	0.08	1	38	0.847
Indigence	0.187	1	38	0.426
Control	0.098	1	38	0.631
Innovation	0.125	1	38	0.322
Contact	0.061	1	38	0.845
Opposition(avoid)	0.117	1	38	0.845
Self-confidence	0.063	1	38	0.087

As demonstrated in Table 4, the results of the Lovin test are not statistically significant in any of the variants. In contrast, our zero theory is founded upon the premise of variant variance similarity, which leads us to conclude that an alternative supposition regarding the covariance analysis test in the context of multi-variant meaning variance similarity is warranted.

The primary hypothesis:

The utilization of the UML method for the management of meetings has been observed to facilitate the development of problem-solving abilities amongst personnel within the education department of Qeshm.

Table 5. Results of solving problem covariance analysis

Source	SS	DF	MS	F	P
Covariate	148.515	1	148.515	168.72	0.001
Group	291.429	1	291.429	33.07	0.001
Error	32.56	37	0.880		
Total	10156.50	40			

Table 5 presents the results of the post-covariance analysis, which were used to address the identified problem points. Concerning the data presented in the upper table, it can be concluded that quantity F = 33/07 with freedom levels (df=38, df=1) in the meaningful level of Alfa=0/05 is significant. Therefore, it can be inferred that the elimination of the pretest influence from the posttest results about the groups and the differences among the groups at the 0.95 level of confidence is significant. Therefore, the initial hypothesis is rejected, and the research theory is confirmed. This indicates that the utilization of the UML method in managing meetings has a

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positive impact on the problem-solving abilities of personnel in the education department of Qeshm.

The first hypothesis: Managing meetings in the UML method, causes development in personnel solving problem skills (indigence deduction) at the education department of Qeshm.

Table 6. Results of indigence point covariance analysis

Source	SS	DF	MS	F	P
Covariate	4.960	1	4.960	76.06	0.001
Group	7.858	1	7.858	12.51	0.001
Error	2.413	37	0.065		
Total	221.75	40			

Table 6 presents the results of the indigence point post-test covariance analysis. Concerning the data presented in the upper table, it can be seen that quantity F=12/510 with freedom levels (df=38, df=1) in a meaningful level of Alf= 0/05 is significant. It can therefore be concluded that when the influence of the pretest is eliminated from the results of the posttest about the groups, the difference among the groups is significant at the 0.95 level of confidence. Consequently, the null hypothesis is rejected and the alternative hypothesis is confirmed. This indicates that the application of the UML method in the context of meetings has resulted in an enhancement of problem-solving abilities, specifically in the area of indigence deduction, among personnel within the education department in Qeshm.

Second hypothesis: managing meetings in the UML method, causes the development of control skills in solving problems of education department personnel at Qeshm.

Table 7. Results of control point covariance analysis

Source	SS	DF	MS	F	P
Covariate	15.87	1	15.87	104.97	0.001
Group	11.73	1	11.73	77.61	0.001
Error	5.95	37	0.15		
Total	324.25	40			

Table 7 presents the results of the control points in the post-test covariance analysis. Concerning the data presented in the upper table, it can be concluded that the quantity of f=77/619 with a freedom level (df=38, df=1) in a meaningful level of Alfa=0/05 is significant. Therefore, it can be inferred that the influence of the pretest on the results of the posttest can be eliminated. Furthermore, the difference among the groups in the 95% level of confidence is also significant.

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Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. This indicates that the UML method of managing meetings has a positive effect on the development of problem-solving skills among education department personnel in Qeshm.

Third hypothesis*:* managing meetings in the UML method causes the development of innovation skills in solving problems of education department personnel at Qeshm.

Table 8. Results of innovation covariance analysis

Source	SS	DF	MS	F	P
Covariate	4.67	1	4.67	65.68	0.001
Group	9.15	1	9.15	12.73	0.001
Error	2.63	37	0.071		
Total	269.50	40			

Table 8 presents the results of the post-test covariance analysis for the Innovation Point. Concerning the upper table data, the quantity of f=12/738 with freedom levels (df=38, df=1) in a meaningful level of Alfa=0/05 is significant. Therefore, it can be concluded that the influence of the pretest on the results of the posttest can be eliminated. About the groups, the difference among the groups in the 95% level of confidence is significant. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. This indicates that the UML method of managing meetings has a positive effect on the development of problem-solving skills among education department personnel in Qeshm.

Fourth hypothesis*:* managing meetings in the UML method causes the development of personnel contact skills in Qeshm of education department.

Table 9. Results of contact covariance analysis

Source	SS	DF	MS	F	P
Covariate	6.57	1	6.57	32.12	0.001
Group	7.98	1	7.98	38.92	0.001
Error	7.57	37	0.205		
Total	20.54	40			

Table 9 presents the results of the contact point post-test covariance analysis. Concerning the data presented in the upper table, it can be concluded that the quantity of f=38/924 with freedom levels (df=38, df=1) in a meaningful level of Alfa=0/05 is significant. Therefore, it can be inferred that the influence of the pretest on the results of the posttest can be eliminated. Furthermore, it can be stated that the difference among the groups in the 95% level of confidence is significant. Therefore,

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the null hypothesis is rejected and the alternative hypothesis is accepted. This indicates that the application of the UML method in the management of meetings has resulted in an enhancement of interpersonal communication skills among personnel employed in the education sector within the Qeshm municipality.

Fifth hypothesis*:* managing meetings in the UML method causes the development of contact skills (indigence deduction) in solving the problem of education department personnel at Qeshm.

Table10. Results of prevention covariance analysis

Source	SS	DF	MS	F	P
Covariate	6.80	1	6.80	90.80	0.001
Group	3.92	1	3.92	32.39	0.001
Error	4.48	37	0.12		
Total	334.50	40			

Table 10 presents the results of the prevention point post-test covariance analysis. Concerning the data presented in the upper table, the quantity of f=32/397 with freedom levels (df=38, df=1) in a meaningful level of Alfa=0/05 is significant. Therefore, it can be concluded that the influence of the pretest on the results of the posttest can be eliminated. About the groups, the difference among the groups in the 95% level of confidence is significant. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. This indicates that the UML method of managing meetings has a positive impact on the development of problem-solving skills, specifically the ability to make deductions, among personnel in the education department in Qeshm.

Sixth hypothesis: managing meetings in the UML method causes the development of self-confidence in solving the problem of education department personnel at Qeshm.

Table 11. Results of self-confidence covariance analysis

Source	SS	DF	MS	F	P
Covariate	1.95	1	1.95	22.75	0.001
Group	8.55	1	8.55	99.28	0.001
Error	3.18	37	0.08		
Total	303.000	40			

Table 11 presents the results of the self-confidence points post-test covariance analysis. Concerning the upper table data, the quantity of f=99/288 with freedom levels (df=38, df=1) in a meaningful level of Alfa=0/05 is significant. Therefore, it can be concluded that when the

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influence of the pre-test is eliminated from the results of the post-test about the groups, the difference among the groups in the 95% level of confidence is significant. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. This indicates that the UML method of managing meetings has a positive effect on the self-confidence of personnel in the education department in Qeshm, enabling them to solve problems effectively.

Discussion

The findings of this study indicate that the participants in the test group, who underwent training in the UML method, exhibited significantly higher levels of problem-solving proficiency compared to the control group and the overall sample. The findings are consistent with those of previous research, including studies by Akhtari et al (2007), Jonassen et al (1999). This result indicates that the effective management of meetings, when personnel development is a factor, necessitates the utilization of systematic problem-solving techniques that are analytically oriented, as exemplified by the Unified Modelling Language (UML). From the perspective of time savings, energy expenditure, and expenditure in general, the use of this method has been confirmed as an effective approach to managing meetings for problem-solving purposes in the research conducted by Jonassen et al (1999). Other research has corroborated these findings, as demonstrated by Buttler,J,K, (1994). He examined the relationship between the effects of assertive management styles and the objectives of the conversation. Furthermore, it has been demonstrated that when negotiators utilize a unifying style with intimacy, as opposed to a competitive style (dominance), the outcome is more favorable. However, the use of obligation and prevention styles is less effective. The objective of this study is to ascertain whether there is a discernible difference in the attainment of goals when these four styles are employed. The findings of this study indicate that the unity style (cooperation) is highly effective, whereas the other three styles are less so. It should be noted that the UML method employed in this research is a type of make-consisting model. Another significant contribution to the field of international relations is the research conducted by Akhtari et al (2007), which has helped to elucidate the current research findings. A review of the inefficiency factors of results managers' official meetings revealed that meetings are inefficient due to 10 important reasons.

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The absence of a clearly defined meeting order results in individuals participating in meetings without having adequately prepared for them, which subsequently leads to a lack of active participation. 2) A lack of belief, particularly among managers, that official meetings can be an effective means of resolving difficulties and providing relief. 3) The celebration of meetings is often conducted in a manner that is incongruous with the context of the work itself. Meetings are frequently held during working hours or after hours, which is a practice that is antithetical to the very nature of work. 4) It is typical for managers from disparate meetings and of varying natures to lack precise information, which results in meetings being conducted and controlled inadequately, particularly about the subject matter or problem at hand. 5) The absence of order and a clearly defined objective, coupled with an inability to control meetings that relate to management skills, result in a deficiency in the overall efficacy of the meetings. 6) The role of meeting members is not clearly defined, resulting in a lack of accountability. 7) The majority of meetings are conducted unilaterally by managers, who attempt to impose their opinions upon the participants. 8) In the majority of cases, the participants lack access to the necessary statistical and information resources, and on occasion, they are even unaware of the subject matter under consideration. Consequently, they act with a high degree of reliance on conjecture, personal preferences, and aspirations. 9) The majority of decisions taken in meetings are not followed up by the relevant parties and do not receive the necessary attention due to a lack of accountability.10) It is recommended that individuals be compelled to participate in meetings and that they be invited to do so without consideration of their level of interest or the information they possess. This research is based on the theory that managing meetings using the UML method can facilitate the development of problem-solving skills. The current research provides evidence that the free variant partially addresses this issue. In other words, this research presents a design and performance of variants, levels, and main activities of managing meetings using the UML method. Therefore, the resulting outcome is to be anticipated. Thus, when the free variant of managing meetings in the UML method is performed, personnel feel that they have the ability to react effectively in challenging situations and are not overwhelmed by them. The UML is a valuable tool for planning and problem-solving, as it allows for the control of problematic situations and the demonstration of confidence in personnel abilities. It can therefore be deduced that the most effective method of prevention is to reflect the tendency to overcome problems by facing them head-on while

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increasing the contact between personnel and encouraging a positive belief in their ability to overcome problems and face them directly. Consequently, the UML method is the most significant factor in the management of meetings and the resolution of problems.

Implications for Educational Management: The findings suggest that implementing the UML method in meeting management can foster a culture of problem-solving and collaboration among personnel. This has broader implications for educational administration, indicating that structured methodologies can enhance overall effectiveness in addressing challenges faced in educational environments.

Recommendations for Future Practice: Given the positive outcomes observed, it is recommended that educational departments, particularly in small cities like Qeshm, adopt the UML method in their meeting management practices. Continuous training and application of this method can further strengthen problem-solving skills among staff, leading to better decision-making and operational efficiency.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Farhangian University.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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