Implementation Strategies for Effective Chalk Talks: Optimizing Pedagogy Through Integration with Complementary Teaching Methods

Stratégies de mise en œuvre pour des « chalk talks » efficaces: Optimiser la pédagogie par l'intégration de méthodes d'enseignement complémentaires

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Abstract

Background: Chalk talks are a dynamic teaching method that combine real-time visual explanations with active learner engagement, fostering deeper understanding and participation. Despite being a traditional approach, chalk talks remain highly relevant, particularly when integrated with modern pedagogical strategies.

Methods: This narrative review was conducted to explore implementation strategies that enhance the effectiveness of chalk talks in medical education. A targeted search of PubMed, Scopus, and Google Scholar was performed using keywords such as "chalk talk", "medical education", "PowerPoint integration", "simulation", "bedside teaching", and "case-based learning". Peer-reviewed articles, editorials, and educational reports published in English between 2000 and 2025 were considered. Out of 92 references initially screened, 22 articles were selected for analysis and narrative synthesis.

Results: The analysis showed varying emphasis on different teaching methodologies. PowerPoint presentations were discussed in 16 articles, reflecting their central role as a structured digital tool. Simulations were reported in 9 articles. Demonstrations and bedside teaching were discussed in 7 articles each, while case-based learning was reported in 6 articles. Across studies, effective chalk talks were consistently linked with careful planning, clear visual organization, and interactive delivery. Integration with complementary methods enhanced learner engagement, participation, and knowledge retention. Reported limitations included reduced suitability for complex visuals, time constraints, and visibility challenges in large classrooms.

Conclusion: Chalk talks remain a versatile and effective teaching method when strategically combined with complementary approaches. Their adaptability allows educators to create interactive, learner-centered environments that strengthen conceptual understanding and promote skill development in medical education.

Keywords: Chalk Talk, PowerPoint, Medical Education, Teaching, Methods

Résumé

Contexte : Les conférences à la craie sont une méthode d'enseignement dynamique qui combine explications visuelles en temps réel avec un engagement actif de l'apprenant, favorisant une compréhension et une participation plus profondes. Bien qu'il s'agisse d'une approche traditionnelle, les discussions à la craie restent très pertinentes, notamment lorsqu'elles sont intégrées aux stratégies pédagogiques modernes.

Méthodes : Cette revue narrative a été réalisée pour explorer des stratégies de mise en œuvre qui améliorent l'efficacité des conférences à la craie dans l'enseignement médical. Une recherche ciblée sur PubMed, Scopus et Google Scholar a été effectuée à l'aide de mots-clés tels que « charlerie à la craie », « éducation médicale », « intégration PowerPoint », « simulation », « enseignement au chevet » et « apprentissage basé sur les cas ». Des articles évalués par des pairs, éditoriaux et rapports éducatifs publiés en anglais entre 2000 et 2025 ont été pris en compte. Sur 92 références initialement sélectionnées, 22 articles ont été sélectionnés pour analyse et synthèse narrative.

Résultats : L'analyse a mis en valeur une attention variable sur différentes méthodologies d'enseignement. Les présentations PowerPoint ont été abordées dans 16 articles, reflétant leur rôle central en tant qu'outil numérique structuré. Des simulations ont été rapportées dans 9 articles. Les démonstrations et l'enseignement au chevet ont été abordés dans 7 articles chacun, tandis que l'apprentissage basé sur les cas a été rapporté dans 6 articles. Dans toutes les études, les conférences efficaces à la craie ont été constamment associées à une planification minutieuse, une organisation visuelle claire et une présentation interactive. L'intégration avec des méthodes complémentaires a renforcé l'engagement, la participation et la rétention des connaissances des apprenants. Les limitations signalées comprenaient une adaptabilité réduite aux visuels complexes, des contraintes de temps et des difficultés de visibilité dans les grandes salles de classe.

Conclusion : Les conférences à la craie restent une méthode d'enseignement polyvalente et efficace lorsqu'elles sont stratégiquement combinées à des approches complémentaires. Leur adaptabilité permet aux enseignants de créer des environnements interactifs centrés sur l'apprenant, qui renforcent la compréhension conceptuelle et favorisent le développement des compétences dans l'enseignement médical.

Mots clés: Discussion à la craie, Power Point, Formation médicale, Enseignement, Méthodes

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Introduction

Chalk talk is a dynamic teaching method that involves the instructor using a chalkboard to illustrate concepts visually while engaging students in discussions, fostering an interactive learning environment (1,2). It is a teaching method that has been around for decades and continues to evolve, incorporating modern approaches to maximize student engagement and understanding (3). This method not only enhances understanding, but also promotes active participation, allowing students to pose questions and react with their ideas in real time. To maximize the effectiveness of chalk talks, educators can combine multimedia resources with collaborative learning techniques that complement this traditional method, thereby developing a more comprehensive learning environment (4,5).

In this study, our objective is to explore various implementation strategies that can enhance the efficacy of chalk talk, focusing on how these integrations can lead to improved student outcomes and deeper engagement with the material.

Methods

This narrative review was conducted to explore the implementation and integration strategies of chalk talk as a teaching method in medical education. Relevant literature was identified through a targeted search of databases including PubMed, Scopus, and Google Scholar, using keywords such as “chalk talk”, “medical education”, “bedside teaching”, “simulation”, “PowerPoint integration”, and “case-based learning”.

We included peer-reviewed articles, editorials, and educational reports published primarily in English from 2000 to 2025. Preference was given to studies describing practical applications, evaluation data, or theoretical models related to chalk talk and its integration with other pedagogical tools. The initial database search identified 92 references. After screening titles, abstracts, and full texts, 22 articles were selected for detailed analysis. All data are summarized in the PRISMA flow diagram (Figure 1).

Results

The selected articles included narrative reviews, original research articles, and educational reports focusing on chalk talks in medical and health professions education.

The analysis of the literature showed varying attention to different teaching methodologies. PowerPoint presentations were discussed in 16 articles, reflecting their central role as a structured digital tool for content delivery. Simulations were discussed in 9 articles, pointing to their growing importance in experiential and skills-based learning. Demonstrations and Bedside teaching were discussed in 7 articles, and Case-based learning in 6 articles, emphasizing its contribution to developing reasoning and problem-solving skills through real-world scenarios.

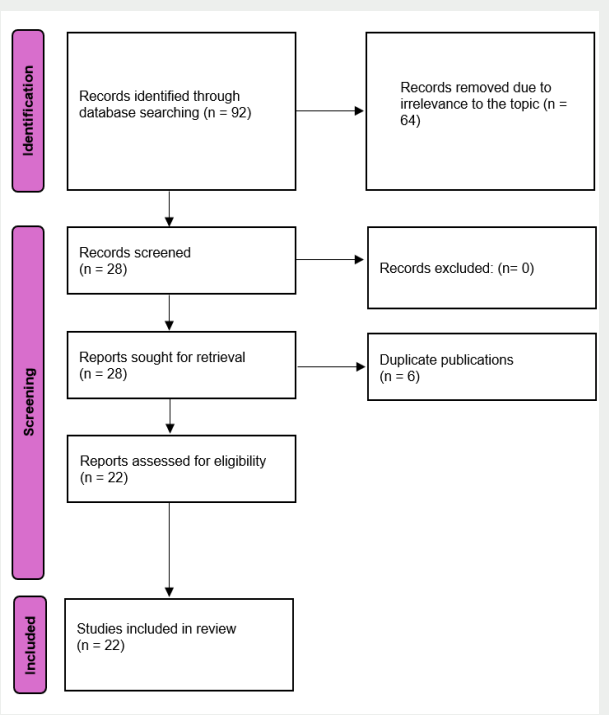


Figure 1. PRISMA flow diagram

Beyond these frequencies, several common themes emerged. Effective chalk talks were consistently linked with careful planning, clear visual organization, and interactive delivery. Integration with complementary methods, particularly PowerPoint, simulations, demonstrations, bedside teaching, and case-based learning, was associated with improved learner engagement and knowledge retention. Studies also reported gains in student participation, confidence, and conceptual understanding when chalk talks were used either alone or in combination with other modalities.

Nevertheless, limitations were noted, including reduced suitability for highly complex visuals, time constraints, and visibility issues in large classrooms.

Discussion

Core elements of Effective Chalk Talks

An effective chalk talk relies on two foundational pillars: meticulous planning and effective delivery. First, planning and preparation provide the foundation for success. Educators must begin by delineating specific and measurable learning goals that correlate with established frameworks such as Bloom’s taxonomy so that the objectives focus on concrete results rather than abstract concepts (6). A well-structured visual "board map" contributes significantly to overall organization, acting as an overlying framework to structure content systematically and ensure coherence throughout the session (7). Beyond this, instructional scripts act to reduce cognitive strain for both teachers and students, increasing instructors' confidence (8,9).

Equally important are the delivery mechanisms that provide active interaction and clarity. Interactive

participation is the basis of effective chalk talks; encouraging questions, discussions, and student participation converts passive recipients into contributors, improving understanding (10). The organized use of visual aids, such as diagrams, lists, and deliberate spatial organization, further clarifies complex ideas and improves retention (7,10,11). This approach is illustrated in Figure 2, which shows the collaboratively developed chalk talk board during a session on polytrauma management with 4th-year medical students in our surgery department.

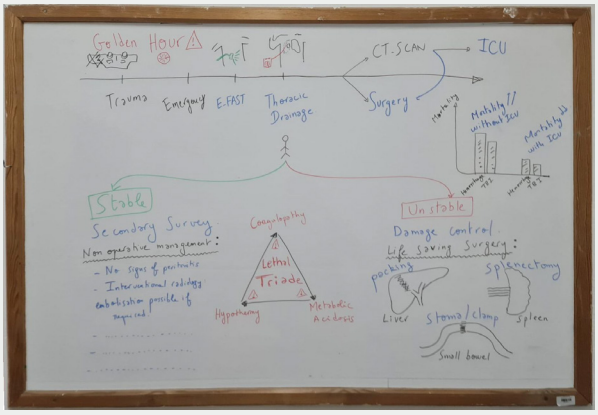


Figure 2. Chalk talk board in our surgery department illustrating the step-by-step management of polytrauma, co-constructed with 4th-year medical students during a teaching session. Key concepts were progressively added using a color-coded system to enhance clarity and engagement

Finally, pacing and clarity facilitate accessibility: Educators must present information in clear language, adjust their pace to match audience needs, and pause regularly to address questions, fostering a learning-conducive environment (1,12). Together, these elements create active, learner-centered interactions that maximize educational impact. Table 1 summarizes the role of educators and learners in a chalk-talk session.

Table 1. Educators' and learners' roles in a chalk-talk teaching session

Phase	Educator's role	Learner's role
Before the learners arrive	-Prepare the table with missing words or texts -Insert images to be captioned or completed -Define the pedagogical objectives of the session. -Anticipate interaction and guide collective reflection	Observe the prepared table. -Think about missing elements and possible connections -Prepare to interact and participate actively
During the Chalk Talk	-Progressively complete the content with the participation of the learner Encourage interaction and co-construction of knowledge by asking open-ended questions -Give immediate feedback and reformulate if necessary -Delete and rewrite as needed for clarification	-Be active in the construction of knowledge -Propose ideas and fill in missing elements. -Interact with the educator and peers -Take notes
Before the learners leave	-Make a quick summary of the session content. -Check comprehension by asking a learner to reformulate or summarize -Allow learners to take a photograph of the board -Suggest ways of exploring the subject further	-Take a picture of the board if authorized. -Ask questions if necessary -Express your feelings about the activity - summarize the content of the session

Integrating Chalk Talks with Other Teaching Methods

Chalk talks can be effectively combined with various teaching approaches to improve learning experiences in different contexts. When integrated with PowerPoint lectures, chalk talks complement the organized and graphic mode by allowing interactive spontaneity, elaboration of key points, and easy diagrams that clarify concepts (6,13,14). A hybrid approach allows for a seamless transition between two teaching modalities, using PowerPoint for the structured delivery of content and complex visuals while incorporating chalk talks to clarify fundamental concepts or engage students in problem-solving exercises (13,15,16). Digital chalk talks (DCTs) further extend this combination by allowing real-time speaking and drawing and thus closely mimicking traditional chalk talks (3,17). In addition, the use of student-generated mini-chalk talks (MCT) after a PowerPoint lecture helps reinforce learning and encourage active engagement (18,19).

In simulation-based teaching, chalk talks are a useful tool for both pre-simulation preparation and post-simulation debriefing (20). Before a simulation, chalk talks aid in the creation of a cognitive framework, guiding learners through important medical decision-making and communication approaches (20). During the simulation, their flexibility allows for real-time clarification where feasible. After the simulation, a chalk talk can allow for rich visual representations of shared decisions and event sequences. The interactive aspect of chalk talks promotes discussion and critical thinking, thus enriching the learning process (7,11). DCTs also provide flexibility for application in both face-to-face and virtual environments, providing a versatile method to illustrate complex processes and reinforce important takeaways (17).

When combined with live demonstrations, chalk talks help students establish a basic knowledge of key concepts, procedural steps, and potential pitfalls before observing a skill in action (6,20).

During the demonstration, concise chalk talk elements can explain critical anatomy, mechanisms, or decision-making processes as they occur in real time (7,11). Subsequently, chalk talks reinforce key learning goals by summarizing the material demonstrated, responding to questions, and offering visual algorithms to support retention (2,11). Encouragement of learners to present short chalk talks on the illustrated process also solidifies their understanding and promotes active learning (21).

Bedside teaching also benefits from the use of chalk talks, specifically through MCT, which are brief, focused sessions on clinically relevant topics that are met during patient care (11,22). These MCTs take advantage of teachable moments to provide just-in-time education, and visual support, such as quick diagrams on a notepad or whiteboard, enhances understanding (22). Interactive diagramming, where students are engaged in the creation of visual representations of differential diagnoses or treatment strategies, promotes participation and better comprehension (7,13). Chalk talks can also be a very useful tool for patient education, helping clinicians to clearly convey diagnoses and management plans (7,11). MCTs improve both student confidence and teaching competence, and can be a valuable component of clinical teaching (6,21).

Finally, chalk talks can be easily incorporated into case-based learning (CBL) to provide a dynamic and interactive teaching approach (11). At the start of a CBL session, a chalk talk may be used to present the clinical case, describing symptoms, and establish the problem-solving framework (20). During the session, chalk talks can serve to arrange differential diagnoses, graphically describe pathophysiology and pharmacology, and explain complex mechanisms through the use of visual aids such as Venn diagrams (11). As management strategies are discussed, chalk talks can outline treatment algorithms and graphically compare different approaches (11). In conclusion, a summary chalk talk reinforces the points and ensures that diagnostic reasoning, management principles, and generalizable concepts are well grasped (17,20). By integrating chalk talks with other teaching methods, educators can create a more interactive, stimulating, and effective learning environment that promotes better understanding and retention of fundamental concepts (1,23).

Evaluating the Effectiveness of Integrated Chalk Talk Strategies

The evaluation of the efficacy of integrated chalk talk techniques needs to employ different evaluation methodologies and monitoring of successful indicators. Pre- and post-testing may be used to measure knowledge gain and retention prior to and after the introduction of chalk talk sessions (2,18,24). For example, the case study by Betharia et al.(18) used pre- and post-session quizzes to assess concept understanding and recall after a session combining chalk talk with PowerPoint. Another study evaluating virtual chalk talks found a higher percentage of possible points in knowledge assessment questions after the talks (17). Collecting student feedback through evaluations and surveys is crucial to understanding their opinions on chalk talks as a teaching method (4,10,21). Studies in this area used pre- and post-session surveys to measure student responses to knowledge questions, confidence in skills, and beliefs about topics discussed in chalk talks (10). Moreover, student feedback can also demonstrate what students find important in the context of chalk talk mode, such as practice and interactive time (17). Faculty observation and peer review can also be a way to evaluate the effectiveness of chalk talk delivery and integration (6).

Feedback from peers and faculty on the delivery, content and design of chalk talks can also provide valuable information (20). Success metrics are heightened student engagement as assessed by participation increases, greater in-class attention, and positive student feedback (17). Improved skills and knowledge are another key metric, typically demonstrated through improved test scores, greater clinical proficiency, and the ability to implement learned concepts (24). Finally, the creation of a good learning environment is crucial, characterized by a supportive and interactive environment to enhance student confidence and motivation (13). The students noted that chalk talk sessions decreased their anxiety levels and allowed a safe space for the development of leadership and communication skills (20).

Limitations of chalk talk

Despite the many advantages associated with the chalk talk method, it also presents some limitations. Among the significant disadvantages is its unsuitability for certain topics, especially those that require the use of intricate diagrams, detailed anatomy, or abundant terminologies (7,13). For example, studies have indicated that students tend to prefer PowerPoint for subjects such as anatomy due to its clarity in presenting detailed anatomical structures and complex visuals (13). Furthermore, the pace of a chalk talk is slower than that of a PowerPoint presentation and can prevent detailed exploration of large topics in a limited time (23). The act of taking notes is also exhausting for students during long, uninterrupted chalk-talk lectures (25), and once a student gets distracted, it is hard to follow the lecturer's train of thought (25). Additionally, the process of drawing diagrams on the board in the course of lectures can be rather time-consuming (23), and effectiveness can be compromised by factors such as poor handwriting, a dirty board, or poor chalk (26). In large classrooms, the visibility of the board has a tendency to create difficulties for students seated at the back (1). While interactivity is a strength, a less competent teacher may inadvertently create a one-way communication channel (23). Finally, chalk talk is less visually stimulating than a presentation incorporating animations and 3D graphics, which can affect the engagement of some learners (12).

Conclusions

Chalk talk is an active and versatile teaching method that can be used effectively in various educational settings. However, its limitations, such as time restrictions and the inability to produce complex graphics, suggest that it should be used in conjunction with other teaching methods, such as PowerPoint presentations, simulations, and bedside teaching.

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