

Enhancing Teaching and Learning in Competency-Based Dental Education: A Comprehensive Approach

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ABSTRACT

BACKGROUND: In the realm of dental education, the adoption of competency-based learning has emerged as a transformative approach that seeks to produce competent and skilled dental professionals. This article delves into the dynamics of teaching and learning in the context of competency-based dental education, exploring its impact on student outcomes and its evolution on dental curricula.

OBJECTIVES: The objective of this article is to shed light on the significant shift from traditional didactic models to a competency-based framework and its implications for dental institutions and educators.

METHOD: The article will begin by examining the fundamental principles of competency based dental education, emphasizing its focus on measurable and observable learning outcomes. The article delves into the innovative teaching methodologies employed in competency based dental education. It will also include discussions about the framework for assessment of the competency based dental education. The article will also address the challenges faced in implementing competency based dental education and proposes strategies to overcome these obstacles.

RESULTS: Studies have demonstrated improved student satisfaction, confidence and clinical performance, leading to a higher quality of patient care. Educators to have reported increased satisfaction and fulfillment in teaching, as they witness the tangible growth of their students skills.

CONCLUSION: Competency-based dental education represents a transformative approach that shapes the dental professionals of tomorrow. By empowering dental students with practical skills, critical thinking abilities and adaptability, competency-based dental education serves as a pathway to excellence in ever-evolving landscape of dental practice and patient care.

Keywords: Competency, Dental education, Innovative teaching

INTRODUCTION

Dentistry is a profession that necessitates a thorough understanding of several fundamental medical sciences. The methods used in education during the past few decades have evolved to incorporate both a student-centered approach and proficiency-based education. These viewpoints have substituted for the traditional teacher-centered learning approach.¹ In the ever-evolving landscape of dental education, the shift towards competency-based approaches has garnered significant attention and enthusiasm. This transformation reflects a fundamental reimagining of how we prepare the next generation of dental professionals. Competency-

based dental education focuses on assessing and developing specific skills and abilities in dental students, ensuring they are potent in key competencies required for dental practice rather than just time based progression through a curriculum.² Gone are the days when traditional didactic instruction alone sufficed, instead a paradigm shift towards competency-based dental education has taken center stage. This review article embarks on a comprehensive exploration of the multifaceted dimension of CBDE, delving into its principles, methodologies, and challenges.³

PRINCIPLES OF CBDE

Competency-based dental education is a progressive approach to training future dentists, emphasizing the acquisition of specific skills and abilities rather than solely focusing on the accumulation of knowledge. At its core, this educational model is guided by several key principles. These are

- Clearly Defined Competencies
- Measurable Learning Outcomes
- Active Learning
- Individualized Learning
- Authentic Assessment
- Feedback and Reflection
- Progression Based
- Technology Integration
- Inter professional Collaboration
- Continuous Improvement
- Patient Centered Care
- Ethical and Professional Development

First and foremost, competency-based dental education centers on defining clear, measurable learning outcomes that students are expected to achieve. These outcomes are typically derived from a comprehensive analysis of the skills and knowledge required for dental practice, ensuring that graduates are well-prepared for the complexities of patient care.⁴

Secondly, this approach emphasizes continuous assessment and feedback throughout the educational journey. Students are regularly evaluated on their ability to demonstrate these competencies, enabling educators to identify areas for improvement and tailor instruction accordingly. Feedback is essential for students to track their progress, make necessary adjustments, and enhance their skills over time.⁵

Another critical principle of competency-based dental education is learner-centeredness. It recognizes that students may progress at different rates and possess unique learning styles.⁴ Therefore, individualized learning plans and flexible pathways are often integrated to accommodate diverse student needs. This personalization encourages students to take ownership of their education and ensures that they achieve mastery in each competency before advancing.

Moreover, competency-based dental education encourages active and experiential learning. Practical, hands-on experiences, often in the form of clinical rotations or simulations, play a pivotal role in skill development. These real-world experiences help bridge the gap between

theory and practice, enabling students to apply their knowledge in clinical settings effectively.⁶

Lastly, collaboration among educators, students, and practitioners is essential in this model. Dental schools work closely with dental professionals to ensure that the competencies taught align with the needs of the field. Regular communication and collaboration with dental practitioners help to keep the curriculum relevant and up-to-date, preparing students to meet the evolving demands of modern dentistry.⁷

INNOVATIVE TEACHING METHODOLOGIES OF CBDE

Competency-based dental education (CBDE) has revolutionized the way dental professionals are trained by shifting the focus from time-based learning to outcome-based mastery of skills and knowledge.⁸ Innovative teaching methodologies within CBDE aim to foster a more personalized and effective learning experience. One key approach is the utilization of digital technology, such as virtual reality simulators and 3D printing, which allows students to practice dental procedures in a risk-free environment, enhancing their clinical skills. Additionally, problem-based learning (PBL) and case-based learning (CBL) are widely integrated into CBDE, promoting critical thinking and problem-solving abilities as students work through real-life dental cases. Team-based learning (TBL) is another methodology gaining prominence in CBDE, emphasizing group problem-solving and peer learning through case discussions, which stimulate real-world clinical scenarios.⁹ Flipped classroom model, where students engage with digital resources and self-directed learning before attending class. Interprofessional education (IPE) is another innovative strategy, enabling dental students to collaborate with other healthcare professionals to better understand holistic patient care. Continuous assessment and feedback are integral to CBDE, providing students with timely information on their progress and areas for improvement, ensuring they meet the defined competencies.¹⁰

CHALLENGES IN IMPLEMENTING COMPETENCY BASED DENTAL EDUCATION

Implementing competency-based dental education faces several challenges. First, designing a curriculum that clearly defines essential competencies and aligns them with learning objectives can be time-consuming and complex. Faculty members may require training to adapt to new teaching and assessment methods, and securing the necessary resources for hands-on and outcome-driven learning can be financially demanding. Resistance to change, both from faculty and students accustomed to traditional education models, can hinder progress. Ensuring that competency-based education meets accreditation standards and addresses the diverse backgrounds and skills of students adds another layer of complexity. Moreover, continuous evaluation and improvement are essential, requiring dedicated systems for tracking and managing competency data. Despite these hurdles, competency-based dental education holds promise for producing skilled and competent dental professionals, warranting careful planning and commitment to overcome these challenges.¹¹

ASSESSMENT OF CBDE



Millers Pyramid of assessment (1990)

It emphasizes the importance of not only acquiring knowledge but also progressively developing clinical skills and expertise. This model guides educators in designing assessment that evaluate learners of different stage of competency development, ensuring that graduates are prepared for professional dental practice.¹

STRATEGIES TO OVERCOME THE CHALLENGES FACED IN CBDE

Competency-Based Dental Education (CBDE) presents a transformative approach to dental training, but it also comes with its unique set of challenges. To address these challenges effectively, institutions must establish a robust framework for competencies that leaves no room for ambiguity. Alignment of assessment methods with these competencies is paramount, ensuring that students are evaluated on the skills and knowledge that are pertinent to their future practice.⁷ Additionally, providing timely and constructive feedback, developing individualized learning plans, and continually enhancing faculty competence in CBDE methodologies are essential components of success. Embracing technology for tracking progress and delivering simulations can further enhance practical training. A culture of continuous improvement, regular stakeholder engagement, and adaptability to the evolving landscape of dental practice are indispensable. Moreover, fostering a supportive environment for students, promoting peer collaboration, and conducting research for evaluation are strategies that can collectively overcome the challenges and lead to the successful implementation of Competency-Based Dental Education.¹²

CONCLUSION

Competency-Based Dental Education holds great promise in shaping the future of dental teaching and learning. By emphasizing individualized learning, real-world competencies, and continuous improvement, competency-based dental education aligns itself with the evolving needs of both students and the dental profession. As we move forward, it is essential to adapt and refine our educational strategies to maximize the benefits of this model while addressing any challenges that may arise. With commitment and collaboration, competency-based dental

education can pave the way for more competent, adaptable, and patient-centered dental professionals who will excel in the ever-changing landscape of healthcare.

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