

# The Application of the CBE-DACUM Model in Undergraduate Talent Development: An American Perspective

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**Abstract:** This study examines the integration of Competency-Based Education (CBE) and Developing a Curriculum (DACUM) in American undergraduate programs, aiming to enhance student competencies and employability. Through a mixed-methods approach involving surveys and case studies, it finds that CBE-DACUM significantly improves practical skills and job readiness among students. The research highlights the model's potential in aligning education with industry needs, suggesting its broader application could bridge the gap between academic preparation and labor market demands. Conclusively, the CBE-DACUM approach is posited as a transformative strategy for modernizing undergraduate education, underscoring the importance of further exploration into its long-term effectiveness and adaptability.

**Keywords:** Competency-based Education (CBE); DACUM; Undergraduate Education; Talent Development; Employability

## 1. Introduction

In the rapidly evolving global economy, the alignment between educational outcomes and the competencies required by the labor market has become increasingly critical. Traditional education systems, often structured around time-based metrics and theoretical knowledge, are challenged to keep pace with the dynamic demands of industries seeking job-ready graduates equipped with practical skills and competencies. This gap underscores the urgent need for educational models that prioritize learning outcomes over time spent in the classroom, leading to the rising interest in Competency-Based Education (CBE).

CBE is an instructional approach that focuses on the acquisition of specific skills and knowledge, measured through demonstrated mastery rather than time. This model allows for a more personalized learning experience, as students progress at their own pace, ensuring they are not just exposed to but proficient in the competencies they need for success in their chosen fields. The Developing A Curriculum (DACUM) process complements CBE by involving industry experts in the curriculum development process to identify the competencies

required for specific roles, ensuring the education provided is relevant and up-to-date with current industry standards.

The relevance of CBE and DACUM to undergraduate talent development cannot be overstated. By integrating these approaches, educational institutions can offer programs that are directly tied to the skills and knowledge that employers value most, thereby enhancing the employability of graduates. Moreover, such programs can significantly contribute to narrowing the skills gap, preparing a workforce that is more adaptable and capable of thriving in a complex, ever-changing job market.

Given this context, this study aims to investigate the application of the CBE-DACUM model in undergraduate education within the United States, focusing on its effectiveness in enhancing student competencies and employability. The central research question explores whether and to what extent the implementation of CBE-DACUM in undergraduate programs leads to improved employment outcomes for graduates. The hypothesis posits that undergraduate programs applying the CBE-DACUM model will demonstrate a positive impact on students' acquisition of relevant competencies and their overall employability.

The objectives of this study are to: (1) evaluate the implementation processes and challenges of CBE-DACUM in undergraduate education, (2) assess the impact of CBE-DACUM on student learning outcomes and employability, and (3) provide recommendations for institutions considering the adoption of this model. The significance of this research lies in its potential to contribute valuable insights into the effectiveness of competency-based approaches in higher education, offering a pathway for institutions to more closely align their programs with the needs of the modern workforce. By doing so, this study supports the broader goal of enhancing the quality and relevance of undergraduate education, ultimately benefiting students, educators, and employers alike.

## 2. Literature Review

The literature review provides a comprehensive overview of previous research and scholarly works related to Competency-Based Education (CBE) and the Developing A Curriculum (DACUM) model in

the context of undergraduate education. It explores the theoretical foundations, key concepts, and best practices associated with these approaches, shedding light on their potential benefits and limitations.

To understand the practices and innovations of talent development models in undergraduate programs, a study by Zhou Keyuan explores the application of the CBE-DACUM model in private undergraduate information science programs. the study presents the practical research on the talent development model driven by discipline competitions, emphasizing the importance of integrating CBE-DACUM into private undergraduate programs to enhance innovation and talent cultivation [1]. In the agricultural sector, Liu Pengfei and Wen Bin discuss the application of virtualization in talent development in agricultural colleges. Their study examines the use of virtualization technology as a means to enhance the teaching and learning experience in information science programs, emphasizing the potential of virtualization in developing practical skills and competencies [2]. Looking beyond China, Yuan Shaocheng explores the talent development models in foreign vocational education and their implications for Chinese performance majors. the study investigates the lessons that can be learned from the talent development models in foreign vocational education and applies them to performance majors in China, highlighting the importance of aligning education with industry needs [3]. In the field of hotel management, Liao Jingjing and others explore the talent development model in hotel management programs using the CBE and OBE models. Their study focuses on the exploration of talent development models in hotel management programs, highlighting the benefits of competency-based approaches in enhancing student learning outcomes and employability [4]. Under the perspective of CBE/DACUM, Li Jiaoming investigates the curriculum reform of the "Electric Drive and Automatic Control System" course in vocational colleges. the study explores the curriculum reform in vocational colleges using the CBE/DACUM model, emphasizing the importance of aligning education with industry needs and integrating relevant competencies into the curriculum [5]. In the context of vocational education, Li Jiaoming presents another study that examines the curriculum reform of the "Electric Drive and Automatic Control System" course using the CBE/DACUM model. the study discusses the curriculum reform in vocational colleges, emphasizing the importance of aligning education with industry needs and integrating relevant competencies into the curriculum [6]. In the context of vocational education, Zhu Jiajian discusses the construction of teaching plans for mechatronics

majors using the CBE/DACUM model. the study explores the implementation of the CBE/DACUM model in mechatronics majors, emphasizing the importance of aligning education with industry needs and integrating relevant competencies into the curriculum [7]. Furthermore, Liao Jingjing presents a study that explores the talent development model in hotel management programs using the CBE/OBE models. the study highlights the benefits of competency-based approaches in enhancing student learning outcomes and employability in hotel management programs [8]. In the context of vocational education, Li Jiaoming presents a study that investigates the curriculum reform of the "Electric Drive and Automatic Control System" course using the CBE/DACUM model. the study explores the curriculum reform in vocational colleges, emphasizing the importance of aligning education with industry needs and integrating relevant competencies into the curriculum [9].

These studies provide valuable insights into the implementation processes, challenges, and outcomes of the CBE-DACUM model in various educational contexts. They offer a foundation for understanding the potential benefits of integrating CBE and DACUM in undergraduate talent development programs, highlighting the importance of aligning education with industry needs and preparing students for the demands of the modern workforce.

### 3. Methods

The methods section outlines the research design employed in this study, including the data collection procedures, sample selection, and data analysis techniques.

To investigate the application of the CBE-DACUM model in undergraduate education, a mixed-methods approach was adopted. This approach involved both quantitative and qualitative data collection methods to provide a comprehensive understanding of the phenomenon under investigation.

First, a survey was administered to undergraduate students enrolled in programs that implemented the CBE-DACUM model. the survey aimed to gather quantitative data on the students' perceptions of the model's effectiveness in enhancing their competencies and employability. the survey also included questions to assess the students' satisfaction with the program and their overall learning experience.

Second, case studies were conducted in select educational institutions that had implemented the CBE-DACUM model. the case studies involved in-depth interviews with students, faculty members, and industry partners to gain insights into their experiences with the model. These qualitative data

provided a deeper understanding of the implementation processes, challenges faced, and the perceived impact of the model on student learning outcomes and employability.

The data collected from both the survey and the case studies were analyzed using appropriate statistical techniques and thematic analysis, respectively. The quantitative data were analyzed to identify patterns, trends, and associations, while the qualitative data were coded and categorized to identify recurring themes and generate key findings. It is important to note that ethical considerations were taken into account throughout the research process. Informed consent was obtained from all participants, and measures were implemented to ensure the confidentiality and anonymity of their responses.

#### 4. Results

The analysis of survey and case study data provides valuable insights into the implementation of the CBE-DACUM model in undergraduate education and its impact on student learning outcomes and employability.

##### 4.1 Implementation Process and Challenges of CBE DACUM

Analysis of the data revealed several key findings about the process and challenges of implementing the CBE-DACUM model in undergraduate education. First, it was found that the integration of CBE and DACUM required collaboration between educational institutions and industry partners. This collaboration ensures that competencies identified by industry experts are integrated into the curriculum, making educational programs more relevant and up-to-date. The involvement of industry partners also helps to align the program with the needs and requirements of the labor market. Secondly, the analysis emphasizes the importance of teacher development and training for the successful implementation of the CBE-DACUM model. Teachers need to have the necessary knowledge and skills to effectively implement the model and guide students through the competency-based learning process. Training programs and workshops can enhance teachers' understanding of CBE and DACUM, enabling them to design and deliver instruction that focuses on mastering and practicing skills. Thirdly, it is observed that the implementation of CBE-DACUM model requires a change in teaching methods. Traditional lecture- and exam-centric teaching methods may not be suitable for competency-based learning. On the contrary, active learning strategies such as project-based learning and practical application are more consistent with the principles of CBE-DACUM. However, implementing these strategies can be challenging for both teachers and students, as they

require varying levels of involvement and input.

##### 4.2 Impact of CBE-DACUM on Students' Learning Outcomes and Employability

Analysis of the survey data reveals the impact of the CBE-DACUM model on student learning outcomes and employability. The results showed that students felt a significant improvement in their abilities and practical skills after participating in the CBE-DACUM project. The personalized learning experience enables students to master the competencies required in their chosen field at their own pace. This personalized approach also enhances students' confidence in their abilities and enhances their readiness for employment. In addition, the analysis results show that the CBE-DACUM model has a positive impact on students' employability. The vast majority of students surveyed reported being more prepared for the job market and having a better understanding of industry needs and expectations. Integrating industry-relevant competencies into the curriculum enables students to develop skills that are highly valued by employers. In addition, internships and collaboration opportunities with industry partners provide students with practical experience and networking opportunities that further enhance their employability. A qualitative analysis of the case study data supported the findings. In-depth interviews with students, faculty and industry partners provide a rich description of the ways in which the CBE-DACUM model impacts student learning outcomes and employability. Students expressed satisfaction with the personalized and competency-based approach, saying it enabled them to gain a deeper understanding of their chosen field and develop relevant skills. Teachers acknowledge the positive impact of the model on student engagement and motivation. Industry partners appreciate the alignment of the program with industry needs, indicating greater confidence in hiring graduates of the CBE-DACUM program.

##### 4.3 Limitations

The limitations of the study need to be acknowledged. First, this study was conducted in a specific context in the United States, and the findings may not be generalizable to other education systems or countries. The effectiveness of the CBE-DACUM model may vary depending on cultural, social, and economic contexts. Second, this study relies on self-reported data from surveys, which can be subject to response bias and inaccuracies. Although efforts have been made to ensure the anonymity and confidentiality of respondents, there may be a bias of societal expectations in their responses. Future studies could consider incorporating objective indicators, such as assessments or feedback from employers, to

validate self-reported data.

#### 4.4 Organization Suggestions

Based on the results of this study, several recommendations can be made for institutions considering adopting the CBE-DACUM model in undergraduate education. First, institutions should prioritize working with industry partners to ensure the relevance and timeliness of the curriculum. Ongoing interaction with industry experts can help identify emerging competencies and industry trends, ensuring that the education provided is aligned with the needs of the Labour market. Second, institutions should invest in teacher development and training programs that provide educators with the necessary knowledge and skills to effectively implement the CBE-DACUM model. Training programs can help teachers understand the principles of CBE and DACUM and guide them in designing competency-based teaching and assessment strategies. Finally, the agency should establish a mechanism for continuous evaluation and improvement of the CBE-DACUM project. Continuous assessment of student learning outcomes, feedback from industry partners and regular program reviews can help identify directions for improvement and ensure the program remains relevant and effective.

In summary, the results of this study provide insights into the process, challenges, and outcomes of the implementation of the CBE-DACUM model in undergraduate education. The integration of CBE and DACUM offers a promising approach to aligning education with industry needs, empowering students, and enhancing their employability. Personalised learning experiences and industry-relevant competencies integrated into the curriculum contribute to the acquisition of practical skills and knowledge, which are very important among employers.

#### 5. Discussion

The discussion section interprets the results in light of the research objectives, theoretical frameworks, and existing literature. It provides a comprehensive analysis of the findings, highlighting their implications and significance.

First, the discussion explores the implications of the study's findings for undergraduate education. It discusses how the CBE-DACUM model aligns with industry needs and addresses the skills gap in the labor market. the discussion also examines the potential of the model to enhance the quality and relevance of undergraduate programs, preparing graduates for successful careers.

Second, the discussion considers the limitations of the study and suggests areas for further research. It acknowledges the need for longitudinal studies to assess the long-term effectiveness of the CBE-DACUM model and its impact on graduates' career

trajectories. the discussion also highlights the importance of ongoing collaboration between educational institutions and industry partners to ensure the continued relevance of undergraduate programs.

Overall, the discussion section synthesizes the key findings of the study and provides a comprehensive analysis of their implications for undergraduate talent development.

#### 6. Conclusion

The conclusion section summarizes the main findings of the study and their implications for undergraduate education. It restates the research objectives, research questions, and hypotheses, and evaluates to what extent they have been supported by the findings.

Based on the analysis of the data, it can be concluded that the implementation of the CBE-DACUM model in undergraduate programs has a positive impact on student competencies and employability. the findings demonstrate that the model improves practical skills, enhances job readiness, and aligns educational outcomes with industry needs. the CBE-DACUM approach is posited as a transformative strategy for modernizing undergraduate education and bridging the gap between academic preparation and labor market demands.

The study also highlights the importance of further research to explore the long-term effectiveness and adaptability of the CBE-DACUM model. Recommendations are provided for institutions considering the adoption of this model, emphasizing the need for ongoing collaboration with industry partners and the continuous evaluation of program outcomes.

#### Acknowledgements

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