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Competency-Based Education and Its Effect on Learning Outcomes at Secondary Level

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Abstract:
Competency-based education (CBE) has become one of the significant reform strategies in school education as it is one that focuses less on the amount of time students spend in the classroom and more on acquired command of specifically defined knowledge, skills and dispositions. This method is particularly relevant in the secondary school setting since teens have very diverse levels of readiness, speed, interests, and support requirements. Conventional systems based on age are normally progressive and have students promoted based on seat time regardless of the gaps in understanding. In comparison, CBE focuses on clear learning outcomes, paced learning, ongoing evaluation, learner agency, and immediate response. Recent studies demonstrate that CBE can be used to enhance academic performance, engagement, and equity when operated with rigorous assessment frameworks, educator proficiency, and institutional backing, but the research concerning the outcomes is not unanimous as many schools use only partial versions of the model and due to the lack of outcome studies (Evans et al., 2020; Sturgis, 2019; Patrick, 2021). The current paper focuses on the influence of competency-based education on the secondary level learning outcomes based on conceptual and literature-based research design. It addresses the theoretical foundation of CBE, evaluates key relevant empirical and policy literature, gives the objectives and hypotheses of the research, and demonstrates the analytical framework that relates CBE practices to student achievement, engagement, progression, and skill building. The paper contends that CBE has the potential to impact positively on the learning outcomes at the secondary level when competencies are clear, assessment is geared, support differentiated and equity is deliberately integrated in the school structures. Meanwhile, it can be less effective due to poor implementation, policy obstacles, and lack of teacher training. The conclusion of the study is that competency-based education is a bright way of enhancing the secondary schooling, but its applicability relies on the quality application and not on terminology itself.

Keywords: competency-based education, learning outcomes, secondary education, mastery learning, student achievement.

1. Introduction

Schools in the global community are being compelled to change and not only to increase access to education but also enhance the learning process of students. In secondary schools especially, there is the challenge of serving students with different backgrounds, learning rates, aspirations and level of the prior achievement. Students in the traditional systems tend to advance based on their age and grade level, and predetermined time of instruction. The assumption of this model is that all the students can learn in the same manner and within the same time. Consequently, there is a group of students who proceed without

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being well-versed in the basic concepts, and there are students who are not challenging enough (Patrick, 2021; Sturgis, 2019).

Competency-based education is an alternative in which teaching, assessment and progression are structured around the mastery of explicit competencies. This model is based on the fact that students move forward after proving and not simply taking the hours of instruction. The new K-12 definition of CBE has put the focus on the student empowerment, meaningful assessment, differentiated support, mastery-based progression, flexible pathways, embedded equity, and transparent expectations on learning (Sturgis, 2019). These characteristics have put CBE in particular relevance in secondary education where learning outcomes stakes are high in terms of tertiary education, employment and citizenship.

CBE has intellectual foundations, which are closely related to mastery learning. Bloom came up with a thesis that given enough time and support, feedback, and conditions of appropriate instruction, most learners could attain high levels of success instead of being grouped according to fixed assumptions of ability (Bloom, 1984; Guskey, 2010). This concept is the prime focus of CBE since it considers learning as a constant and time as variable. Nevertheless, the existing studies also indicate that the implementation is not simple. An academic investigation of studies on K-12 CBE discovered that the outcomes on academic achievement, motivation, and engagement were mixed, implying that the advantages of the model strongly rely on the extent to which the model is applied (Evans et al., 2020).

The paper discusses the implications of competency-based education on the learning outcomes at the secondary level. It seeks to combine theory, literature and a bit of implementation to describe the potential and the shortcomings of this method of education.

2. Research Objectives

- To examine the concept and major principles of competency-based education at the secondary level.
- To analyze the relationship between competency-based education and student academic achievement.
- To investigate the effect of competency-based education on student engagement, motivation, and progression.
- To identify the major implementation factors that influence the success of competency-based education in secondary schools.
- To suggest educational implications for improving learning outcomes through competency-based practices.

3. Research Hypotheses

H1: Competency-based education has a positive effect on academic achievement at the secondary level.

H2: Competency-based education significantly improves student engagement, motivation, and self-directed learning at the secondary level.

H3: The positive effect of competency-based education on learning outcomes depends on the quality of implementation, especially assessment alignment, teacher preparedness, and differentiated support.

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4. Literature Review

Competency based education has been characterized as system level reform which alters what students learn, how they learn, how they are assessed and how they are promoted. According to Evans et al. (2020), K-12 CBE is viewed as a strategy that is aimed at transforming the conventional notions of what, when, where, and how students learn and show their knowledge and skills. A systematic review of the literature published between 2000 and 2019 by them revealed that the literature has consistently identified such significant aspects of implementation as clear competencies, individualized learning, flexible learning pace, and mastery-oriented assessment. The review, however, also discovered that outcomes evidence is somewhat ambivalent as most studies do not consider mature CBE systems, but incomplete or emerging ones.

The definition of CBE within K-12 learning given by Sturgis (2019) is one of the most powerful field definitions. Based on this framework, successful CBE involves seven main components, such as day-to-day student empowerment, positive and meaningful assessment, differentiated support on time, mastery-based progression, learning through varied pathways, embedded equity, explicit, measurable, transferable expectations. This definition is valuable in that it transcends the limited concept about CBE being just flexible pacing, it introduces CBE as a more expansive change of school culture, pedagogy and structure. Patrick (2021) also states that competency-based systems are student-centered and personal, and learners need to be aware of what they are learning, how proficiency will be assessed, and what they can receive in support.

CBE theoretical basis has been associated with mastery learning. The work of Bloom stressed that such a great number of students can high-achieve in case of instruction accompanied by feedback, corrections, and enough time. According to a review by Guskey, the mastery learning gave contributions by Bloom as having rejected the notion that only a predefined percentage of learners can perform well in high levels under the normal classroom conditions (Guskey, 2010). This view is a tremendous proponent of CBE, in which promotion is not based on time but on competence.

At the conceptual level, competency is wider than the memorized knowledge. Vitillo et al. (2021) clarify that competence directs the attention on what the learners can do in real-life, and not what the learners know, and how competence reforms became popular due to the discontent with the traditional knowledge-based systems. Competencies are also commonly conceptualized as cross-disciplinary and transferable in the context of general education and particularly in the context of secondary education, comprising of knowledge, skills, application, and sometimes dispositions.

Implementation Research is both promising and challenging. Research related to student exposure to CBE points to the fact that such important dimensions as mastery-based progression, personalization, flexible assessment, and developing specific skills and dispositions (Ryan and Cox, 2017). Still other work indicates that one of the most intractable areas of implementation in secondary schools is the change to grading and assessment regardless of whether the school is dedicated to reform or not. Thus, the literature indicates that CBE can enhance the learning process, provided that the schools manage to align the curriculum, assessment, feedback, and support systems.

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5. Theoretical Framework

The theoretical foundations of this paper are the student-Centered Learning Theory and Mastery Learning Theory. Learning mastery presupposes that most of the students can attain the high standards of learning in case teaching is adapted to their needs, learners are provided with feedback and given some additional time and remedial assistance (Bloom, 1984; Guskey, 2010). This is supplemented by student-centered learning theory, as it focuses on the learner as an agent of learning, in the process of learning, and the relevance of learning to him (or her). CBE integrates these views by rendering learning objectives explicit, providing different avenues, and stipulating the demonstration of mastery to proceed.

Conceptual Model

Independent Variable: Competency-Based Education
Dependent Variable: Learning Outcomes at Secondary Level
Intervening Variables:

- Teacher preparedness
- Assessment quality
- Differentiated support
- School leadership and policy flexibility
- Equity-oriented practices

Expected Learning Outcomes:

- Higher academic achievement
- Greater engagement and motivation
- Better skill application
- Improved retention and progression
- Stronger self-directed learning habits

6. Research Methodology

This paper uses a **qualitative, conceptual, and literature-based research design**. It synthesizes peer-reviewed studies, policy reports, and theoretical writings on competency-based education, with a focus on secondary schooling. The method is appropriate because the aim is not to report original field data but to analyze the existing body of knowledge and derive an integrated explanation of how CBE affects learning outcomes.

6.1 Sources of Data

Data for the study were drawn from:

- peer-reviewed literature reviews and journal articles,
- institutional reports on K–12 competency-based education,
- theoretical works on mastery learning and competence, and
- implementation analyses related to secondary education.

6.2 Method of Analysis

The paper uses **descriptive and thematic analysis**. Major themes identified in the literature include:

1. definition and principles of CBE,
2. links between CBE and achievement,
3. student engagement and agency,
4. implementation barriers, and

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5. equity and support systems.

These themes were organized into analytical sections to assess the overall effect of CBE on secondary-level learning outcomes.

7. Core Features of Competency-Based Education at Secondary Level

At the secondary level, CBE usually has a range of practices that can be recognized. To begin with, learning expectations are clarified in terms of competency or proficiency goals so that students can know what being successful means. Second, assessment is made continuous and evidence-based, as opposed to relying significantly on single examinations. Third, differentiated assistance is provided to students who are yet to be proficient. Fourth, learners can develop at varying speeds, and schools tend to establish multiple avenues of showing knowledge. Lastly, equity should not be discussed as a luxury but a design principle of the system (Sturgis, 2019; Patrick, 2021).

The features are particularly important in secondary schools, whereby students are on the verge of entering higher education and employment and coming to identity, autonomy and responsibility. CBE will be able to create a more transparent and relevant learning process, connecting the classroom work with the perceived implementation of the skills. It also has the ability of minimizing the issue of students gathering grades/ credits without having to understand fundamental concepts. Nevertheless, it needs significant modifications in grading, scheduling, reporting, and the practice of teachers. The implementation research demonstrates that grading reform and assessment redesign are some of the most challenging aspects of the secondary-level adoption.

8. The Competency-Based Education and its Impact on Learning.

8.1 Academic Achievement

The central argument in competency-based education is that it enhances performance through the fact that students master something before proceeding. Mastery learning theory largely supports this logic. In his arguments, Bloom suggested that most students could achieve high standards when there were availability of feedback and correction and adequate learning time (Bloom, 1984). Practically, CBE tries to operationalize this principle with the help of recurrent demonstration, remedial enabling, and mastery cutoffs.

But the empirical image is more prudent. Evans et al. (2020) reported inconsistent findings on academic performance of K-12 CBE research. This does not imply that CBE is ineffective, on the contrary, it implies that the results are determined by the level of implementation maturity, coherence, and measurement quality. Schools where competencies are obvious, assessments are coordinated, and support is timely, academic gains are more likely to be pragmatic. In the schools where CBE is not deep or integrated, gains are not expected to be observed.

The assessments of student engagement and motivation will be conducted independently, without any correlation to any other assessments. The student engagement and student motivation assessments will be administered separately without reference to any other assessments.

CBE is aimed at making students more active learners. Students will be expected to be familiar with the targets, they will be able to track their progress, employ feedback and make decisions about the ways and exhibitions of learning. Such practices can boost the intrinsic motivation since learners view learning as an act of development and not as a form of obedience. Evans et al. (2020) literature review records

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inconclusive yet optimistic results concerning the areas of engagement and motivation. Patrick (2021) also reminds that students in competency-based learning environments must have the ability to answer questions such as what they are learning, how they will be evaluated, how to seek assistance and what follows.

8.3 Transferring and Skill Development.

Secondary education ought not only to justify subject knowledge, but also communication, problem solving, collaboration, and self-management. The focus on competence-based thinking is on application and transfer and not only memorization. According to Vitello et al. (2021), competence attracts the focus on what is possible among learners in a situation, thus making it quite applicable to modern secondary education. This emphasis can be more helpful in training students to future studies and employment needs than models based on content only.

8.4 Equity and Support

Equity is one of the best arguments in favor of CBE. Traditional pacing usually rewards those students that require more time and conceals those students who are making progress without mastery. CBE tries to counter this by instilling the differentiated support and not accepting failure as a natural by-product of schooling. Nevertheless, equity benefits do not come naturally. The plan of equity needs to be carefully built into curriculum, assessment, support frameworks, and school culture (Lopez et al., 2018; Sturgis, 2019).

9. Table 1. Comparison of Traditional Education and Competency-Based Education

Dimension	Traditional Education	Competency-Based Education
Basis of progression	Seat time and grade level	Demonstrated mastery
Pace of learning	Fixed	Flexible
Role of assessment	Mainly summative	Ongoing and evidence-based
Student role	Mostly passive recipient	Active, self-directed participant
Teacher role	Content deliverer	Facilitator, coach, assessor
Response to learning gaps	Often delayed	Timely, differentiated support
Focus of reporting	Marks and grades	Competencies and proficiency levels
Equity approach	Same pace for all	Support based on learner need

This comparison is derived from widely cited K–12 CBE definitions and implementation literature.

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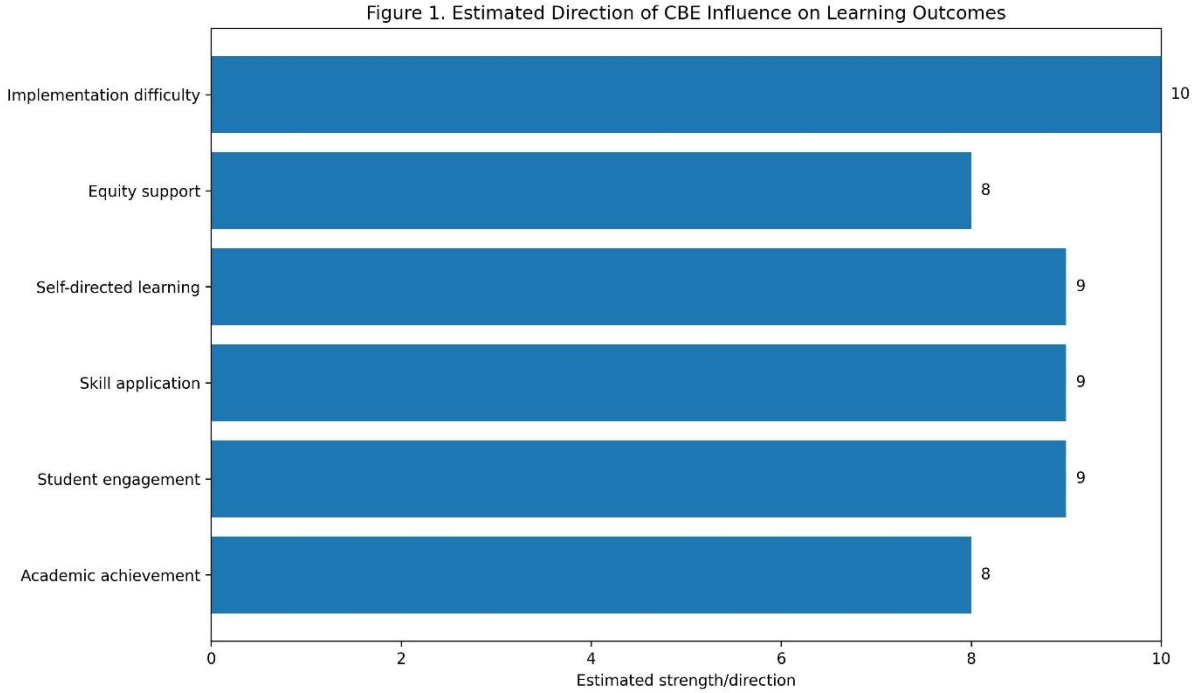
10. Table 2. Summary of Literature Findings on CBE and Learning Outcomes

Author(s)	Year	Focus	Key Finding
Bloom	1984	Mastery learning	Most students can achieve highly with time and support
Sturgis	2019	Updated CBE definition	Seven core elements define quality CBE
Evans, Landl, & Thompson	2020	Systematic review	Outcomes are promising but mixed
Patrick	2021	K–12 transformation	CBE centers student agency, mastery, and flexibility
Ryan & Cox	2017	Student exposure to CBE	Key dimensions include personalization and mastery progression
Vitello, Greatorex, & Shaw	2021	Meaning of competence	Competence emphasizes what learners can do

11. Figure 1. Estimated Direction of CBE Influence on Learning Outcomes



Interpretation:
The literature suggests a generally positive direction of influence for engagement, skill application, and self-directed learning, while also indicating high implementation difficulty. Academic gains are promising but less uniformly established because many studies report mixed results rather than consistently large effects.

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12. Discussion

It is depicted in the review that competency-based education has great potential of enhancing the learning outcomes at the secondary level though the association is conditional and not automatic. Mastery learning provides the most theoretical backing where the argument suggests that the learner differences must be perceived as differences mainly in time and support requirements, rather than as a pre-determined boundary to success. CBE gives this principle a school design interpretation by not allowing advancement without mastery and by rendering support more responsive.

There are three general conclusions drawn out of the literature. To begin with, CBE is not a new method of assessment, but a system-wide change in curriculum, pedagogy, feedback, reporting, and culture. Second, its probable advantages are enhanced transparency, increased student ownership, more meaningful learning trajectories and less under wraps failure. Third, the quality of implementation is conclusive. The schools that stick to the old system of grading, strict schedules, instruction based on one-size-fits-all and only change the results to competencies are unlikely to see significant changes.

CBE could be particularly helpful in secondary schools since learners at this stage require not only mastery in the academic field, but also transferable skills. Nevertheless, they also have their unique obstacles: specialization of the subjects, pressure of the exams, credit stipulations and unwillingness to change the grading. This is one of the reasons why evidence base is ambivalent. The resulting ambivalent results that Evans et al. (2020) found should not be seen as an indication of no value of CBE, but rather an indication of the need to conduct stronger implementation research.

13. Educational Implications

To ensure that competency-based education enhances learning at the secondary level, there are several conditions that should be put in place. Schools are supposed to specify competencies in quantifiable terms and match the instruction, evaluation, and reporting to the competencies. The teachers require professional training in formative assessment, feedback, proficiency calibration, and individual support. School leaders are supposed to restructure schedules, grading systems and reporting structures in such a way that they can support mastery as opposed to seat-time logic. Lastly, policymakers must eliminate obstacles that inhibit dynamic progress and must view equity as a key building block to designing systems.

14. Conclusion

Competency-based education is a significant change in time-based schooling to mastery-based learning. This change is particularly applicable at the secondary level, where students differ significantly in terms of speed, preparedness, motivation, and aspirations about the future. Literature analysis in this paper suggests that CBE can enhance learning outcomes by reducing the ambiguity of expectations, enhancing assessment, enhancing student agency, and offering differentiated support. It can also enhance fairness since the students will not proceed with learning gaps without being addressed.

Simultaneously, there are no reasons to make simplistic assertions that CBE always yields better results. The studies indicate mixed findings with the highest proportion indicating that quality of implementation differs with many schools adopting only part of the model. Thus, the impact of competency-based education on the learning outcomes in the secondary level must be viewed as positive but conditional. CBE, when enforced in a holistic and contemplative manner, will tend to enhance academic performance, learning interactions and skill transfer among students, as well as control of learning. Its effect is minimal

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when applied on a surface level. In general, competency-based education provides a powerful model on how secondary education could be redefined in more responsive, equitable, and result-oriented ways.

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