

*Full Length Research Paper*

# Effective competency-based assessment model for senior schools in Kenya

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The education systems globally are rapidly evolving due to their dynamic nature. This swift transformation necessitates a corresponding pace in assessment models, which should be realistic and effective for the targeted learners. Even before the COVID-19 pandemic, there were concerns about the reliability and validity of the assessment tools used in Kenyan post-primary schools. With the introduction of the Competency-Based Curriculum (CBC) in primary and junior schools, along with lessons learned during the COVID-19 pandemic, there is a pressing need to reassess and develop a realistic and effective model that matches current needs. Moreover, assessment models have always been subject to change. Thus, the time is ripe for a new, workable, and effective assessment model to be developed for use in Kenyan senior schools. This research adopted a literature review and document analysis methodology. The findings indicate that the majority (55%) of the relevant documents analyzed support an integrated model of competency-based assessment as the most realistic and effective approach for Kenyan senior schools. Additionally, the study found that the most suitable method for implementation is a collaborative approach involving all relevant stakeholders. This should be conducted at different intervals, with a cumulative score provided as evidence of the skills assessed. These findings aim to address the gap caused by the time span, the post-COVID-19 era, and the changing education system, which is increasingly geared toward employability.

**Key words:** Assessment, collaborative, senior school, constructivist, model.

## INTRODUCTION

Education is dynamic; consequently, assessment methods should evolve at the same rapid pace to match the changing educational landscape across different countries. Onyeka (2020), notes that academic assessment has been collaborative and evolving throughout history. Regardless of the country, schools should focus more on cultivating flexible skills rather than solely on static knowledge (Darra and Papanthymou, 2019) if they are to prepare graduates for the evolving workforce. The rapid changes in workforce demands call

for assessment models that are realistic and effective for the intended outcomes.

To assist post-primary schools in better implementing maker education, this study explored the core competencies of teachers who aim to engage in or improve their practice of maker education, investigating their perspectives on these competencies and determining their competency levels (Fan, 2022). It is common to observe secondary students with specific learning disabilities (SLD), who often demonstrate skill

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deficits and problem behaviors in general education classes. While teachers generally understand how to implement intensive intervention models, they may not know how to address skill deficits and off-task behaviors using a competency-based assessment approach, and they frequently encounter barriers to its implementation (Griffith et al., 2022).

This lack of preparedness was highlighted during the COVID-19 pandemic when many concerns regarding the reliability and validity of Kenyan secondary school assessment tools became apparent. With the introduction of the Competency-Based Curriculum (CBC) in primary schools, combined with the lessons learned from the pandemic, there is a significant gap in the development of a dependable assessment model for the forthcoming senior school students.

Therefore, it is essential to reconsider the most appropriate model that aligns with the inevitable changes in education systems in the post-COVID-19 era.

### Objective of the study

- 1) To develop a realistic and effective competency-based assessment model for use in Kenyan Senior Schools.
- 2) To develop realistic and effective implementation methods for competency-based assessment models in Kenyan Senior schools.

### Research question

- 1) Which competency-based assessment model is realistic and effective for use in Kenyan Senior Schools?
- 2) Which implementation method is realistic and effective for competency-based assessment in Kenyan Senior Schools?

### LITERATURE REVIEW

The implementation of the 2013 curriculum (K-13) has brought about changes in teaching paradigms, shifting towards constructivism, which encourages students to build their own knowledge through personal experiences. To develop personnel with the required competencies, experiments or hands-on activities should be made central to align with the curriculum's objectives and job market demands (Dewi, 2018). This approach has led to the development of a workable and effective assessment model in the medical field. Given the existing knowledge gap regarding the most suitable approach in education, it would be informative to apply the same approach to develop a realistic and effective assessment model for senior schools in Kenya.

Traditional nursing competency assessments typically use a process-focused approach determined by leaders, often employing a checklist methodology that does not

empower nurses to create their own learning experiences. This raises the question: how does the development of an evidence-informed policy for competency assessment, utilizing the Donna Wright Competency Model, improve guidance for nurse educators in comparison to current competency assessment practices in developing standard work and communication regarding competency assessment? (Gentry, 2022). This question sparked curiosity and was applied in the context of implementing a realistic and effective competency-based assessment in Kenyan senior schools. Since this approach proved beneficial in assessing the precision abilities of trainee nurses, the same concept was applied to develop and implement competency-based assessments in Kenyan senior schools.

Marcotte and Gruppen (2022) recommended further research on refining appropriate implementation strategies, validating the adoption of stakeholder involvement at relevant stages in the assessment process as a means of addressing the existing gap.

### METHODOLOGY

The document analysis research methodology was used. This literature review followed the steps outlined by Abyaa et al. (2019), inspired by the ordered steps of Kitchenham et al. (2009). The process focused on the following steps:

- 1) Identifying the need for a literature review
- 2) Identifying the research questions
- 3) Identifying research databases
- 4) Assigning inclusion and exclusion criteria as well as the process
- 5) Evaluation of the selected studies
- 6) Data extraction clarification from each study
- 7) Classification of data exported from the selected studies
- 8) Extraction and interpretation of the results.

### Research necessity

The research tries to expand the literature in respect of the research questions.

### Research strategy

The research process synchronized selected databases from the Rongo University library Myloft, including Scopus, Core, Grammarly, Mendeley, QuillBot, Publons, Lens.org, Dimensions, Google Scholar, ERIC, and Taylor and Francis eBooks. The time frame primarily covered publications from 2018 to 2023, though a few earlier excerpts were also included. The focus was to identify new trends in competency-based assessment to guide the selection of a realistic and effective model for senior schools in Kenya (Holmes et al., 2021).

### Criteria for inclusion

- 1) Documents focusing on competency-based assessments;
- 2) Theoretical and empirical works on competency-based assessment.
- 3) Observations and empirical works on a recommendation on

competency-based assessment.

### Exclusion criteria

- 1) Documents that were not written in English
- 2) Documents to which there was no full access
- 3) Documents that had not a competency-based assessment format
- 4) Documents that lacked detailed explanation and evaluation of the topic

### Paper selection process

Following the format of Katsaris and Vidakis (2021), 535 research articles and publications were gathered in the first stage. In the second stage, after removing duplicate articles, articles that were not accessible online, and those that could not be downloaded, 437 remained. In the third stage, the titles of articles written in English were reviewed to retain only the most relevant for this review, resulting in 202 articles. In the fourth stage, the abstracts of the selected articles were examined, and publications outside the research domain of this review were excluded, leaving 112 articles. Finally, 67 articles were studied in detail.

### Developing Competency based assessment model

Following Glaser's (1997) recommendation that academic assessment models should be collaborative and evolving over time, while also involving careful planning, design, implementation, and refinement, the following procedure was outlined and followed:

- 1) Clearly articulating the purpose of the assessment model
- 2) Appropriate method chosen and aligned with the objectives of the assessment
- 3) Outlining the learning outcomes to be assessed
- 4) Creating assessment tasks that align with the learning outcomes to be assessed
- 5) Piloting to make the tools valid and reliable
- 6) Providing feedback mechanism from all the relevant stakeholders
- 7) Further refining the model collaboratively

## RESULTS AND DISCUSSION

Several assessment tools are documented for use, which can be formal or informal, depending on the unit context and mode of assessment. McLoughlin and Rena (2008) classified competency-based assessment tools as either formal or informal. The recommended formal assessment tools are further categorized into norm-referenced tests and standardized tests, which can be reported using percentile ranks, standard scores, normal curve equivalents, stanines, and intelligence quotients. Informal assessments that can be used include interviews, curriculum-based measurements, checklists, rating scales, questionnaires, and portfolio assessments. Dew (2018) recommends a watertight assessment system, which can be designed in four forms:

- 1) Written assessment instruments
- 2) Simulation of basic skills of assessment instruments

- 3) Writing lessons
- 4) Performing of skills desired by employers.

Whatever the form, Bloom's (1968) hierarchy of cognitive domains should be considered to help classify learners based on their cognitive and skill abilities. The modern trend is to embrace a collaborative approach, where an assessor works with a learner to gather evidence of competence using the benchmarks provided by the unit standards that comprise national qualifications. During a school term, a learner will be required to complete tasks for assessment purposes, such as assignments, projects, tests, and experimental work. The sum of these assessments is analyzed to determine whether a learner is competent. In a competency-based training system, the unit of progression should be mastery of both knowledge and skills. According to Brouse (2020), the guiding principles should be:

- 1) The assessment process is to be part of the learning process, identifying gaps as learning opportunities to develop skills, not failures.
- 2) A collaborative process is to be negotiated with the learner and not a one-off event that is imposed.
- 3) In the setting of a training provider, learners should be given many opportunities to demonstrate skill, and the assessment process should allow for the capturing and recording of these demonstrations.
- 4) Flexible on mode of assessment and time of assessment.

Wright (2005) recommends that the assessment focus on identifying employer-desired competencies. The assessment should involve clear verification approaches guided by reflective practices, outcome measurements of daily work, and verification that develops critical thinking. With this in mind, the focus should be on employability skills or competencies, not just grades.

### Assessment matrices

Wright (2015) recommends a continuous model design in which learners are given as many opportunities as possible. Performance recording criteria should be provided for each opportunity. Table 1 provides a sample design of a teacher scorecard matrix.

It should be noted that the awarding of marks is not fixed and can be adjusted depending on the nature of the topic and the time span for teaching it, as prescribed in the syllabus. Table 2 provides an example of a scorecard for learners that take into account the learners' perspectives on the assessment process.

Wright (2015) recommends that the teacher should sign the learner's score sheet whenever a given milestone is satisfactorily learned or attained, although it is the learner's responsibility to notify the teacher. KNEC

**Table 1.** Score card matrix for teachers.

Topic	Attendance (10 marks)	Assignments (20 marks)	Experiments (20 marks)	Projects (20 marks)	Summative (30 marks)	Total (100)
Unit 1						
Unit 2						
Unit 3						
Unit 4						
Unit 5						
Unit 6						

**Table 2.** Score card for learners.

Classification	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Milestone	Date attained	Date attained	Date attained	Date attained	Date attained	Date attained
Attendance						
Assignments						
Experiments						
Project work						
Summative						
Completion						

(2022) further outlines tools that can be used in competency-based assessment (CBA), including tests, observation schedules, questions and answers, checklists, quizzes, rubrics, journals, portfolios, learner profiles, anecdotal records, oral or aural questions, questionnaires, and rating scales. The specific tools chosen should depend on the circumstances, as well as the preferences of the learners and teachers, and the established examination policy in the sector. The examination body in Kenya recommends that the instruments be tailored to suit three main forms:

1) Classroom assessment: This is a continuous assessment carried out at the entire basic level of education. The teacher develops the assessment tools (teacher-made tests).

2) School-based assessment: KNEC develops and uploads the tools for this assessment on the Council's website. The teacher downloads the tools from the website and administers them to the learners.

3) Summative assessment: This is normally a national assessment from KNEC and is done at the end of teaching and learning in senior schools.

KNEC notes that each assessment stage should be considered important and assigned a commensurate weighting. The weightings are then summed to provide each student with a final score and grade. Research findings from the studied documents further indicate that different authors recommended various models; however, when the ratings of their preferences were

analyzed, the results are presented in Table 3.

The findings in Table 3 show that the majority (55%) of the authors preferred an integrated model as realistic and effective. These findings align with Coon's (2005) recommendations that a variety of learning outcomes requires different assessment approaches. Both Clotilda (2021) and Gentry (2022) agree on the following features of a good competency-based assessment (CBA) tool or system:

- 1) Moving to a knowledge-based economy in education and training
- 2) Emphasis is on employable skills or competency - becoming progressively more crucial in training enhancement.
- 3) Acquisition of new and relevant life-long skills

**Table 3.** Analyzed assessment model preference.

Model type	Frequency	%
Single model	14	21
Double model	16	24
Integrated model	37	55
Total	67	100

**Table 4.** Analyzed preferred implementation format.

Category	Frequency	%
Teacher only	10	14.9
Student only	6	10.0
Teacher and student	24	35.8
All stakeholders	27	40.3
Total	67	100

4) As the economy moves up the value chain, workers or learners are expected to acquire new skills and knowledge to remain employable continually.

5) Human capital becomes the key competitive advantage in a knowledge-based economy.

6) Flexibility for change due to globalization and technology: workers or learners must be highly agile and be able to quickly acquire and apply new skills, knowledge and technologies to continuously create new value, products and services.

7) Systematic way of collecting information and documenting what the learner knows and can do before they learn, as they learn and transit from one level to another based on specified competencies and criteria.

8) Uses a wider variety of tools and gives learners, peers, teachers and parents' opportunities to track the learner's progress through real-time feedback mechanisms.

9) Collaborative – between the stakeholders and this gives a reliable structure and consistency.

10) The integrated CBA model approach improves the pedagogy of educators and the development of standardized assessment tools.

Research findings from the studied documents further noted that different authors recommend different formats of implementing the assessment model. When the ratings of their preferences were analyzed, the results are as presented in Table 4.

Table 4 shows that the majority of the documents analyzed favored an implementation format that involves all stakeholders. The key stakeholders with significant roles in the implementation model are teachers and learners, while other stakeholders, such as parents, are also essential but play minor roles in the process. The teacher, as a collaborative assessor, is crucial among all stakeholders due to their skilled professionalism. In cases where full stakeholder involvement is not preferred, the

second most popular option—engaging only teachers and students (35.8%)—can be adopted.

## Conclusion

The research findings show that the majority (55%) of the relevant documents analyzed support an integrated model of competency-based assessment as the most realistic and effective approach for Kenyan senior schools. Furthermore, the findings indicate that the most suitable method of implementation is a collaborative approach, involving all stakeholders (40.3%) at different times and playing various roles in the assessment model. The cumulative score serves as valid and reliable evidence of the skills assessed.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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