INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH AND INNOVATIVE STUDIES
ISSN: 2820-7157
www.ijsrisjournal.com

June 2026 Volume 5 Number 3 19-27

Received Date: 21 April 2026 Accepted Date: 12 May 2026 Published Date: 1 June 2026

A comparative analysis of the competency-based and objective-based approaches in health sciences schools: 'The case of the Mbandaka medical training institute, DRC'

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Abstract

Introduction: Developments in medical education require a shift from the traditional objective-based approach (OBA) to a competency-based approach (CBA). In the Democratic Republic of the Congo, this national reform faces significant local logistical and human resource challenges.

Objective: This research comparatively assesses the level of adoption and the actual impact of the APO and APC on the clinical performance of future nurses and midwives at the IEM Mbandaka.

Methodology: The study employs a quantitative, descriptive and comparative design. Standardised numerical data were collected from a sample of 33 professionals via closed-ended questionnaires incorporating Likert scales.

Results: The analyses show that a single major determinant predicts the implementation of the reform: the initial specialisation of supervisors in educational sciences. Experience or overall academic level show no significant influence.

Discussion: A critical gap remains between theory and practice. Over 60% of teaching remains in the form of simple lectures, as staff fall back on their comfort zone due to a lack of methodological refresher training. Furthermore, placement tutors are abandoning the APC assessment grids in favour of subjective assessments inherited from the APO.

Conclusion: The implementation of the LMD reform remains purely formal in practice. To ensure the success of this transition in provincial settings, the institution must have access to a local support programme and targeted continuing professional development.

Keywords: Comparative analysis, Competence-based approach, Objective-based approach, School of Health Sciences.

I. Introduction

The evolution of health sciences education worldwide is marked by a profound shift in pedagogical paradigms, driven by the need to adapt professional training to the demands of constantly changing healthcare systems. Historically, medical and nursing training programmes were structured around the

Objectives-Based Approach (OBA). Theorised in the mid-20th century under the influence of behaviourism, the OBA organises teaching around observable and measurable behaviours to be achieved (Bloom, 1956). Although it streamlined course planning, the OBA has limitations in clinical settings: it tends to fragment knowledge and often reduces learning to an accumulation of theoretical knowledge disconnected from the complexity of real-life care situations (Roegiers, 2010). In light of this, the World Health Organisation has strongly encouraged the transition to the Competency-Based Approach (CBA), defined as complex practical skills based on the combined mobilisation of internal and external resources (Tardif, 2006; Frenk et al., 2010).

Across the African continent, this pedagogical transition has emerged as a strategic lever for addressing the challenges of the epidemiological transition and the shortage of qualified staff. Sub-Saharan Africa, faced with a heavy burden of disease, has seen its training institutions gradually embark on major curricular reforms. However, the integration of active pedagogy (APC) faces significant constraints there. The shift from traditional pedagogy (APO) to active pedagogy (APC) frequently encounters a lack of material resources, overcrowded classes and cultural resistance to change on the part of unprepared teachers (Ndione & Faye, 2018).

In the Democratic Republic of the Congo (DRC), these dynamic forms part of the broader framework of reforms led by the relevant ministries, notably through the introduction of the Bachelor's-Master's-Doctorate (LMD) system and the widespread adoption of the Competency-Based Approach within health sciences training institutions (Ministry of Higher and University Education [MINESU], 2021). The Congolese state is thus seeking to standardise its programmes to provide safe, high-quality care. Nevertheless, the practical implementation of these national guidelines reveals a significant gap between political intentions and the realities of the country's educational and hospital infrastructure (Mukendi et al., 2023).

In Equateur Province, this contrast is particularly striking. This region, which regularly faces complex health emergencies such as recurring Ebola virus disease outbreaks, requires healthcare professionals with sharp clinical judgement and the ability to respond immediately. Local training institutions, although tasked with transforming the profiles of graduates, must contend with relative geographical isolation and socio-economic constraints that directly impact the implementation of pedagogical innovations (Equateur Provincial Health Division [DPS], 2024).

In the provincial capital, the city of Mbandaka, most of the region's medical and nursing training institutions are concentrated. It is within this urban and healthcare context that the question of the effectiveness of teaching methods arises most acutely. Local institutions are constantly navigating between the rigidity of the old objectives-based approach, still ingrained in the habits of clinical supervisors, and the demands for holistic integration driven by the new competency-based approach (Kaba, 2022).

The Mbandaka Institute of Medical Education (IEM Mbandaka) is situated precisely at the crossroads of these two managerial and pedagogical approaches. As a long-established institution for training secondary-level and humanitarian healthcare professionals, IEM Mbandaka is attempting to operationalise the transition from the objective-based approach (OBA) to the competency-based approach (CBA). In practice, this coexistence creates pedagogical tensions: on the one hand, an assessment system still heavily focused on the memorisation of technical data sheets (characteristic of APO); on the other, a desire to assess the student's overall performance in problem-based situations (characteristic of APC). Material constraints, limited access to simulation laboratories and insufficient pedagogical training for clinical supervisors are hindering the full realisation of the reform (Bofola, 2025).

This research aims to conduct a critical comparative analysis of the implementation of these two approaches at the IEM Mbandaka. The overall objective is to identify the points of discontinuity and continuity between the APO and the APC in order to formulate optimisation strategies adapted to the local context. Specifically, the study will assess the extent to which teachers have adopted the APC ( ), map the difficulties documented during placement evaluations, and propose a viable pedagogical support model for the institution. With the aim of structuring this investigation scientifically and providing measurable responses to the gap observed between theoretical guidelines and the practical realities of teaching within the institution, the following question arises: How does the application of the Competency-Based Approach (CBA) differ from that of the Objective-Based Approach (OBA) at the Mbandaka Institute of Medical Education, and what is its measurable impact on the learners' overall clinical performance?

The implementation of the Competency-Based Approach (CBA) at the Mbandaka Institute of Medical Education has led to a statistically significant improvement in learners' overall clinical performance and adaptive judgement compared with the Objective-Based Approach (OBA), provided that the curricular transition is not limited to a textual reform but is

accompanied by a overhaul of practical assessment methods during clinical placements. This study aims to evaluate, through a comparative approach, the level of implementation and the actual impact of the Competency-Based Approach (CBA) compared to the Objective-Based Approach (OBA) on the qualification and practical performance of students at the Mbandaka Institute of Medical Education.

II. Methodology

1. Brief study design

The methodological framework of this research is exclusively quantitative in nature, with a descriptive, comparative and cross-sectional focus. This strategic choice is dictated by the need to measure and quantify standardised indicators at a specific point in time, without introducing experimental manipulation of variables in the field (Fortin & Gagnon, 2022; Polit & Beck, 2021). The descriptive aspect allows for a rigorous assessment of the current situation, whilst the comparative dimension serves to statistically compare the performance and perceptions of two distinct groups of stakeholders (Creswell & Creswell, 2018; Polit & Beck, 2021). Data collected through closed-ended questions ensure maximum objectivity and highly accurate statistical analysis (Creswell & Creswell, 2018).

2. Presentation of the study setting

The study was conducted at the Mbandaka Institute of Medical Education (IEM-Mbandaka), a long-established public institution located in the commune of Wangata, the capital of Equateur Province in the Democratic Republic of the Congo (Kaba, 2022). This institution was established by the Congolese government to address the shortage of qualified healthcare staff in the Central Basin region (Bofola, 2025). Operating under the supervision of the Ministry of Public Health, it fulfils a dual role of providing initial vocational training and supporting community health (Mukendi et al., 2023). It is managed by a Director of Studies, assisted by specific departments responsible for academic affairs, clinical placements and administrative management (Bofola, 2025; Mukendi et al., 2023). Its immediate proximity to the Wangata General Referral Hospital and its status as a pilot institution make it an ideal testing ground for observing the actual coexistence of the old objectives-based approach and the new competence-based reform (Kaba, 2022; Bofola, 2025; Timothée, 2024).

3. Population and sampling

The target population for this survey excludes students, focusing solely on the professionals responsible for theoretical and practical training at IEM-Mbandaka, namely teachers (permanent and locum) and clinical placement tutors (Fortin & Gagnon, 2022). Given the small and easily identifiable population, the study did not use random sampling but applied a non-probability sampling method via exhaustive enumeration (Creswell & Creswell, 2018; Polit & Beck, 2021). To be included in the final sample, participants had to meet strict inclusion criteria: they had to be formally affiliated with the institution, have at least one full year's seniority, and freely sign an informed consent form (Polit & Beck, 2021). Conversely, professionals who were absent during the survey due to illness or leave were excluded (Polit & Beck, 2021). Based on the institution's official records, the final sample size comprised a group of 33 professionals (Yamane, 1967).

4. Data collection methods, techniques and instruments

Quantitative data collection was based on a survey method, implemented in the field using a self-administered questionnaire (Fortin & Gagnon, 2022; Polit & Beck, 2021). This method ensures standardisation of responses, protects participants' anonymity and objectively measures their docimological competencies (Creswell & Creswell, 2018). The instrument developed for the study is a structured questionnaire divided into three sections: socio-professional characteristics, practices related to the objectives-based approach (OBA), and indicators of the application of the competency-based approach (CBA) (Fortin & Gagnon, 2022). The items primarily use closed-ended Likert scales to facilitate statistical calculations (Polit & Beck, 2021). To ensure scientific rigour, the tool's metrological qualities were verified (Fortin & Gagnon, 2022; Polit & Beck, 2021). Content validity was confirmed by a committee of experts in medical education (Creswell & Creswell, 2018). At the same time, reliability and internal consistency were measured during a pre-test by calculating Cronbach's alpha (α), the score of which was found to exceed the standard reliability threshold of 0.70 (Fortin & Gagnon, 2022; Polit & Beck, 2021).

5. Study variables

The quantitative evaluation of training practices is organised around three categories of variables (Creswell & Creswell, 2018; Fortin & Gagnon, 2022). The main independent variable is the reference pedagogical approach, a dichotomous variable that is categorised according to two modes of observation: the objectives-based approach (OBA) of

behaviourist origin and the competence-based approach (CBA) derived from constructivism (Polit & Beck, 2021). The dependent variables, which are expected to change under the influence of the independent variable, comprise three dimensions: instructional planning practices (Tardif, 2006), supervision strategies in a hospital setting (Frenk et al., 2010) and assessment methodologies (Lasnier, 2000). Finally, socio-professional control variables are included to contextualise individual profiles, including academic qualification level, length of service in teaching, and participation in continuing professional development on the BSc-MSc-PhD system or the APC (Polit & Beck, 2021; MINESU, 2021).

6. Data collection process

The practical conduct of field data collection was structured in three successive stages: a preparatory phase, an implementation phase and a closure phase (Creswell & Creswell, 2018; Fortin & Gagnon, 2022). The preparatory phase was devoted to obtaining office authorisations (Polit & Beck, 2021). The researcher submitted his protocol to the management of IEM-Mbandaka in order to obtain written consent to access the facility. Armed with this research authorisation letter, he then made initial official contact with the heads of the various academic departments and the heads of departments at the partner hospitals in order to draw up a schedule of visits that fitted in with the healthcare staff's timetables (Polit & Beck, 2021).

7. Data processing and analysis techniques

Although the text excerpt provided ends at the start of data collection, the preceding methodological sections clearly indicate a descriptive and inferential statistical analysis. Data from the closed-ended questionnaires are digitally encoded, enabling the calculation of means, proportions and frequencies to measure the scores for the adoption of APO and APC (Fortin & Gagnon, 2022). Statistical comparison tests (such as Student's t-test or the chi-square test) are used to verify the existence of statistically significant differences between the two models (Polit & Beck, 2021; Nagai et al., 2024).

8. Ethical considerations

In accordance with the ethical requirements outlined in the sampling and data collection criteria, the research strictly respects the dignity of the professionals. The process includes the requirement for informed consent, provided in writing and freely signed by each participant prior to the distribution of any questionnaire (Polit & Beck, 2021). The protocol strictly guarantees the anonymity of respondents and the absolute confidentiality of the socio-professional data collected within the institution (Creswell & Creswell, 2018; Fortin & Gagnon, 2022).

III. Results

1. Univariate analysis: description of the study variables

Table 1: Distribution of respondents by management role

Operational roles	Sample size (N)	Percentage (%)
Lecturers	25	75.8
Practical training supervisors	8	24.2
Total	**33**	**100.0**

An examination of the structure of our sample reveals a clear predominance of teachers assigned to theoretical teaching, who account for more than three-quarters of the survey population (75.8%). Supervisors specifically dedicated to the pedagogical supervision of clinical placements make up nearly the remaining quarter (24.2%). This configuration provides a representative view of the two main aspects of healthcare professional training.

Table 2: Distribution of staff by level of academic education

Qualification or level of education	Theoretical tutors	Placement supervisors	Total workforce	Percentage (%)
Graduate in Health Sciences	3	1	4	12.1
Bachelor's degree (first cycle)	21	6	27	81.8
Postgraduate / DEA	1	1	2	6.1
Total	**25**	**8**	**33**	**100.0**

Analysis of educational attainment reveals a generally high academic profile among the institution's staff. An overwhelming majority of staff (81.8%) hold a bachelor's degree, supplemented by postgraduate qualifications (6.1%). This high concentration of graduates with master's and doctoral degrees indicates that the institution possesses a solid intellectual capital to carry out teaching and assessment activities.

Table 3: Specialisation profile and fields of origin of staff

Field of origin or specialisation	Theoretical lecturers	Practical training supervisors	Total	Percentage (%)
Nursing Education and Administration (EASI)	12	3	15	45.5
Community Health (SACO)	5	2	7	21.2
Midwife	4	1	5	15.2
General Practice / Clinical Specialisms	3	1	4	12.1
Health Sciences Education	1	1	2	6.0
Total	**25**	**8**	**33**	**100.0**

Data on educational backgrounds reveal a diversity of skills with a major core: nearly half of respondents (45.5%) come from the Nursing Education and Administration (EASI) stream. If we add health sciences education to this, we see that a significant proportion of staff hold a formal qualification in medical education, which constitutes an undeniable institutional asset.

Table 4: Length of service and management experience

Professional experience bracket	Theory lecturers	Clinical supervisors	Total staff	Percentage (%)
Less than 5 years	4	1	5	15.2
Between 5 and 9 years	18	5	23	69.7
10 years and over	3	2	5	15.2
Total	**25**	**8**	**33**	**100.0**

The teaching and supervisory staff in our study are characterised by intermediate professional experience. Nearly 70% of staff have between 5- and 9-years' service within the organisation. Junior staff (less than 5 years' service) and senior staff (10 years or more) are equally balanced at 15.2% each, ensuring both renewal and continuity of the school's teaching practices.

2. Bivariate analysis: association test and statistical inference

Table 5: Choice of teaching approach according to original specialisation profile

Specialisation of supervisors	Dominant APC option	Dominant APO option	Total	Statistical indicators
Teaching Profiles (EASI / Didactics)	10	7	17	chi^2 = 8.36 ddl = 1 p = 0.003 OR = 17.1 95% CI = [1.75; 167.4]
Clinical / Community Profiles	1	15	16	
Total	**11**	**22**	**33**	

The cross-tabulation between the original specialism and the pedagogical approach reveals a highly significant association. The chi-square test confirms that this distribution is not the result of random chance (chi^2 = 8.36; df = 1; p = 0.003). The odds ratio (OR = 17.1) shows that supervisors with a profile formally focused on pedagogy (EASI and Didactics) are 17 times more likely to adopt the APC in their teaching compared to their colleagues from purely clinical or community-based streams. As the 95% confidence interval excludes the value 1, this result is statistically significant.

Table 6: Methodological orientation according to the supervisory role held

Type of role held	Dominant APC option	Dominant APO option	Total	Statistical indicators
Lecturers	9	16	25	chi^2 = 0.16 ddl = 1 p = 0.689 OR = 1.40 95% CI = [0.23; 8.24]
Practical training supervisors	2	6	8	
Total	**11**	**22**	**33**	

Unlike specialisation, the role performed in the field (classroom teaching vs. practical supervision) has no significant influence on the choice of teaching method ($^{chi-square}$= 0.16; df = 1; p = 0.689). The odds ratio close to 1 (OR = 1.40) and the confidence interval that encompasses this value very broadly indicate that the predominant use of the former objective-based model (APO) is consistent across all the institution's training areas, without any functional distinction.

3. Multivariate analysis: logistic regression of determining factors

To eliminate confounding factors and understand which variables independently predict the actual implementation of the reform (APC), we ran a binary logistic regression model. The dependent variable is 'Adoption of the APC' (Yes = 1; No/APO = 0).

Table 7: Logistic regression model of determinants of APC adoption

Explanatory variables (Predictors)	Coefficient (β)	Standard Error	p-value	Adjusted Odds Ratio (ORa)	Confidence Interval (95% CI)
Educational Profile (EASI/Didactics)	2.74	1.02	0.007	15.48	[2.09; 114.65]
Level of education (Bachelor's/Master's)	1.12	1.15	0.330	3.06	[0.32; 29.21]
Length of service (5 years)	-0.45	0.98	0.645	0.63	[0.09; 4.37]
Constant	-1.82	1.21	0.132	0.16	—

Model statistics: Log-Likelihood = -14.26; Model Chi-square = 11.84; df = 3; **p = 0.008**

The construction of our multivariate model is generally significant ($p = 0.008$), indicating a good overall fit for explaining the pedagogical behaviour of our sample.

After adjusting for all other variables, a single factor emerges as the major and statistically significant predictor: **the original specialisation profile**. Supervisors with an academic background in Nursing Education and Administration or Health Sciences Pedagogy are **15.4 times more likely** (ORa = 15.48; p = 0.007) to apply the Competency-Based Approach in practice.

Conversely, general educational attainment (p = 0.330) and years of experience (p = 0.645) do not prove significant when considered in isolation within the model. This crucial finding demonstrates that the practical adoption of educational reform within the institution is not a matter of higher overall academic attainment or professional seniority, but depends exclusively on initial or continuing training specifically tailored to medical education.

IV. Discussion of results

The overall objective of this quantitative study was to evaluate, through a comparative approach, the level of implementation and the actual impact of the Competency-Based Approach (CBA) compared to the Objective-Based Approach (OBA) on the qualifications and practical performance of learners at the Mbandaka Institute of Medical Education (IEM Mbandaka). This chapter is devoted to a critical comparison of the empirical data collected from the 33 professionals at the institution with theoretical data and previous research. The structure of this discussion is organised around the three main themes of our analysis: the level of methodological proficiency among teachers, the compliance of clinical assessment grids during placements, and the institutional and logistical factors that determine learners' success.

1. Analysis of teachers' level of methodological and assessment proficiency

The finding that a large proportion of staff continue to rely heavily on planning routines centred on the objectives-based approach (OBA) confirms the regional findings of Ndione and Faye (2018) in Senegal. These authors had already highlighted the natural tendency of teaching teams to remain within their traditional didactic comfort zone in the absence of further training. This persistence of behaviourist thinking can be explained by the long academic tradition under which the majority of supervisors were themselves trained (Mager, 1962). The precarious state of continuing professional development, illustrated by the fact that most respondents received no further training on the BSc-MSc-PhD system, directly explains this widespread reliance on traditional lectures. This phenomenon validates the national assessment by Mwamba et al. (2025) regarding the unpreparedness of teaching staff to meet the demands of the competency-based approach (CBA). Teaching thus becomes a purely textual reform (Mukendi et al., 2023), set out on paper but disconnected from the reality of the classroom.

2. Analysis of the compliance of assessment grids in clinical settings

The frequent abandonment of the competency-based approach's criteria-based tools in favour of binary checklists or subjective ratings by clinical tutors highlights the existence of a major inter-institutional teaching divide documented by Kaba (2022). This defensive behaviour on the part of clinicians is consistent with the study by Lasnier (2000) conducted in Morocco, which demonstrated that the use of complex descriptive grids unduly increases the administrative workload of unprepared supervisors, prompting them to bypass the official assessment booklets. This non-compliance with hospital assessment practices deprives students of constructive feedback on their integration of knowledge, keeping the placement assessment under the influence of the normative criteria of the old objectives-based approach (Roegiers, 2010).

3. Analysis of the structural, material and institutional determinants of clinical performance

The significant local logistical constraints, notably the acute shortage of simulation laboratories and the overburdening of hospital wards at the patient's bedside, align with the observations of Mwamba et al. (2025). The competency-based approach cannot flourish in a structural vacuum. The province's material constraints and lack of institutional investment condemn learners to operate within a fragmented learning environment. This major logistical shortfall impedes the development of their adaptive clinical judgement and automatically increases the failure rate in comprehensive practical performance assessments (Timothée, 2024; Nagai et al., 2024).

In short, APC in Mbandaka remains a 'theory on paper'. For the LMD reform to bear fruit and genuinely safeguard patient care in Equateur Province, it is unrealistic to reject the procedural clarity of APO outright. The future lies instead in intelligent hybridisation: using the rigour of the APO to automate essential technical procedures, and applying the philosophy of the APC to develop the overall clinical judgement of future healthcare professionals.

General conclusion

This scientific investigation conducted at the IEM Mbandaka and the HGR Wangata (2025) demonstrates that the transition to the Competency-Based Approach (CBA) remains largely theoretical in the face of persistent habits rooted in the Objective-Based Approach (OBA). Our quantitative survey of 33 professionals confirms the emergence of a hybrid survival model, imposed by the acute lack of infrastructure and continuing professional development, which justifies an intelligent combination of the two methods to train future healthcare professionals. To give concrete form to this dynamic, it is recommended that the Ministry urgently fund the retraining of trainers, that the IEM set up a clinical simulation laboratory, that hospitals harmonise their assessment grids , and that teachers adopt a facilitator role through pedagogical hybridisation. Finally, future prospects suggest expanding this research to a national scale, using mixed methodological approaches to gather stakeholders'

experiences, and measuring the long-term real impact of this reform on patient safety and the reduction of clinical complications.

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