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Assessment of the applicability of the competency-based approach in the cutting and sewing course at technical secondary schools in the EDUC-NC subdivision of Boma (DRC)

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ABSTRACT

Introduction: The Competence-Based Approach (CBA) aims to align learning with complex real-world situations and professional requirements. In the Dressmaking and Tailoring course, its effectiveness depends on teachers' ability to translate professional knowledge into learning situations, as well as on the availability of equipment and consumables. The study analyses the level of applicability of the CAC in technical secondary schools within the Boma sub-division of EDUC-NC.

Methods: A mixed-methods study with a quantitative focus was conducted during the 2025–2026 academic year involving 160 participants, comprising 40 teachers and 120 pupils, spread across 10 schools. Quantitative data were collected via questionnaires and analysed using descriptive statistics and chi-squared tests. The qualitative component was based on 15 sessions of direct observation in workshops, semi-structured interviews with supervisory staff and a literature review. The qualitative data were analysed thematically.

Results: Thirty-five per cent of teachers were qualified pattern-cutters without a teaching qualification, and 60.0 per cent reported a low or very low level of mastery of APC concepts. Half of the schools had dilapidated or inadequate workshops. Continuing professional development was significantly associated with the adoption of the APC ($\chi^2 = 16.0$; $p < 0.001$), workshop facilities with the frequency of practical work ($\chi^2 = 14.4$; $p < 0.001$), and academic level with the ability to design problem-based scenarios ($\chi^2 = 12.36$; $p < 0.001$) and supervisory monitoring with the level of implementation of the APC ($\chi^2 = 11.12$; $p < 0.001$). Observations revealed a blending of APC guidelines with traditional lecture-based or imitative teaching practices.

Conclusion: The data show that the applicability of the Competence-Based Approach is contingent upon the interplay between teaching qualifications, continuing professional development, institutional support and the physical conditions for learning. Strengthening teacher training and upgrading technical facilities appear to be priority areas for improvement in the context under study.

Keywords: Competence-Based Approach; technical education; cutting and sewing; didactic transposition; formative assessment; Boma.

1. Introduction

Curriculum reforms undertaken in many African education systems have gradually sought to move beyond teaching models centred on the transmission and reproduction of knowledge. The Competence-Based Approach (CBA) is part of this evolution, emphasising the mobilisation and combination of resources to tackle complex and contextualised situations (Jonnaert, 2002, 2009; Perrenoud, 1999; Roegiers, 2016). In technical and vocational education, this approach takes on particular significance, as the quality of training is also measured by the learner's ability to integrate knowledge, professional skills and decision-making in practice.

The Cutting and Sewing course provide a particularly relevant context for analysing this integration. Learning in this field combines technological and geometric knowledge, pattern-making procedures, cutting and assembly techniques, as well as aesthetic and professional considerations. From a vocational teaching perspective, competence is therefore not limited to the reproduction of a skill: it requires an understanding of the structure of the task and the ability to adapt one's actions to varying situations (Pastré, 2011).

In the Democratic Republic of the Congo, the curriculum reform is based in particular on Framework Law No. 14/004 of 11 February 2014 on National Education. The source thesis situates the study within the context of the Boma sub-division of EDUC-NC, where institutions offering the Cutting and Sewing course face disparities in equipment, a shortage of consumables and a need for continuing professional development for teachers. The central problem therefore lies in the gap between the curriculum requirements and the practices actually observed in classrooms and workshops.

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The overall objective of the study was to analyse the reality of teaching practices related to the implementation of the APC in technical education in Pattern-making and Dressmaking in Boma, in order to identify the factors associated with its operationalisation and to identify appropriate support strategies for contexts with limited resources. In particular, it focused on the extent to which teachers had taken ownership of the APC, the methods used to transpose it into teaching practice, the physical conditions of the workshops, and the role of pedagogical support.

The general hypothesis put forward in the thesis was that the implementation of the APC would remain primarily formal and hybrid, due to the combined effect of gaps in teaching training and the under-resourcing of workshops. The results

below are presented in accordance with the IMERAD structure and draw on the empirical data from the source document.

2. Methods

2.1. Study design and framework

The study adopted a sequential explanatory mixed-methods design, combining a predominantly quantitative phase with a qualitative phase intended to explain and contextualise the observed trends. It was conducted in technical secondary schools within the Boma sub-division of EDUC-NC, in Kongo-Central, during the 2025–2026 academic year.

2.2. Participants and Sampling

The validated sample comprised 160 participants: 40 teachers and 120 pupils, from 10 schools. Teachers of technology, fashion design, pattern-making and dressmaking were selected using purposive sampling. The pupils were enrolled on the dressmaking course and had taken part in practical workshop activities. The methodology document states that 165 questionnaires were initially administered and that 5 forms containing more than 20 per cent of omissions were excluded, resulting in a final sample of 160 respondents.

2.3. Data collection

Four instruments were used: two questionnaires tailored for teachers and pupils, a direct observation grid for the workshops, a semi-structured interview guide and a document analysis grid. The questionnaires covered socio-professional background, engagement with the APC, teaching practices, material conditions and assessment. Fifteen practical sessions were observed. The interviews involved headteachers, workshop leaders and educational inspectors. The document analysis focused on preparation sheets, planning books, marking schemes and practical assessments.

2.4. Data analysis

The quantitative data were coded and entered into SPSS and Excel. Univariate analysis was used to calculate frequencies and percentages. Bivariate analysis employed the chi-squared test to examine associations between variables, with a significance level of 5 per cent. Qualitative data from observations and interviews were analysed through thematic categorisation, in accordance with the approach outlined in the thesis.

2.5. Ethical considerations and limitations

Participants were informed of the academic purpose of the study, and the questionnaires were administered whilst ensuring anonymity. The limitations reported relate in particular to the cross-sectional nature of the study, the risk of social desirability bias in responses, the restriction to a single sub-division and to the Cutting and Sewing course, as well as the logistical and documentary difficulties encountered in the field. These limitations suggest that the results should be interpreted primarily within their local context.

3. Results

3.1. Characteristics and uptake of the APC

Indicator	Number of participants	Percentage
Teachers: A1-qualified in pedagogy/technology	12/40	30.0%
Teachers: graduates in educational sciences/pedagogy	8/40	20.0
Teachers: qualified without a teaching qualification	14/40	35.0
Very high level of APC uptake	5/40	12.5
Fairly high adoption of APC	11/40	27.5%
Low APC adoption	16/40	40.0%
Very low/non-existent APC ownership	8/40	20.0

Thus, only half of the teachers have a higher education qualification in pedagogy or a technical discipline, whilst 35.0 per cent are qualified pattern-cutters and designers without a teaching qualification. Furthermore, 60.0 per cent report a low or very low grasp of the fundamental concepts of APC. These figures suggest a lack of pedagogical preparation that is likely to affect the translation of curriculum requirements into practical learning situations.

3.2. Material and practical workshop conditions

Indicator	Number	Percentage
Schools with modern and functional equipment	1/10	10.0%
Schools with average facilities	4/10	40.0
Establishments with outdated or inadequate facilities	5/10	50.0%
Pupils with limited or insufficient access to consumables	89/120	74.2
Pupils who are fully independent	29/120	24.2
Partially independent pupils	68/120	56.7
Pupils who are not independent	23/120	19.2

Half of the schools have technical facilities that are considered outdated or inadequate. Among pupils, 74.2 per cent have limited or inadequate access to textile materials. Independence is mostly partial (56.7 per cent), whilst only a minority report being fully independent. The thesis links these material difficulties to a reduction in opportunities for hands-on practice and a tendency towards imitative or theoretical learning.

3.3. Statistical associations

Cross-tabulation	χ^2	ddl	p	Statistical interpretation
Continuing professional development × adoption of the APC	16.00	1	< 0.001	Significant association
Equipment × frequency of practical sessions	14.40	1	< 0.001	Significant association
Years of service × teaching method	7.80	1	< 0.001	Significant association

Training in assessment × use of assessment grids	14.84	1	< 0.001	Significant association
Consumables × pupils' autonomy	8.38	1	< 0.01	Significant association
Academic level × problem-based situations	12.36	1	< 0.001	Significant association
Inspectorate monitoring × application of the APC	11.12	1	< 0.001	Significant association

All associations reported in the thesis are statistically significant at the 5 per cent level. Continuing professional development is associated with the level of adoption of the APC; the condition of the workshops is associated with the frequency of practical work; academic level is associated with the design of problem-based scenarios; assessment training is associated with the use of criteria-based assessment grids; access to consumables is associated with pupils' autonomy; finally, supervisory monitoring is associated with the level of implementation of the APC.

3.4. Qualitative findings

The 15 direct observations revealed three main themes. Firstly, the traditional frontal demonstration remains common: in several workshops, the teacher draws the pattern on the blackboard and the pupils copy the model. Secondly, the limited availability of materials leads to machines having to be shared and to the use of paper or offcuts when there is not enough fabric. Thirdly, a pragmatic hybridisation is observed: the preparation sheets adopt the vocabulary and format of the APC, whilst actual practices often remain dominated by the imitation of gestures.

The interviews also highlighted three categories: the gap between requirements and available resources, the inadequacy of continuing vocational training, and the only partially satisfactory match between the graduate profile and the technological demands of the local market. A workshop manager summarises the material constraints as follows: 'We are required to train competent technicians in accordance with the APC, but our machines date back to the colonial era and we have no means of replacing the equipment.'

4. Discussion

4.1. Training and adoption of the APC

The results highlight a link between pedagogical qualifications, continuing professional development and the ability to implement certain elements of the APC. The fact that 60.0 per cent of teachers report a low or very low level of mastery of APC concepts is consistent with the difficulty observed in designing problem-based scenarios. The association between academic level and the design of problem-based scenarios ($\chi^2 = 12.36$; $p < 0.001$) indicates that, in this sample, these two variables are not independent. This observation is consistent with the importance attached by professional pedagogy to the conceptual understanding of the activity and to conceptualisation in action (Pastré, 2011).

Continuing professional development also appears to be associated with the adoption of the APC ($\chi^2 = 16.0$; $p < 0.001$). However, the qualitative data indicate that the seminars are perceived as sporadic and often theoretical. The result therefore suggests a distinction should be made between the mere existence of training and its suitability for professional needs: for Pattern-making and Dressmaking, training must include the creation of problem-based scenarios, the analysis of professional techniques and criteria-based assessment.

4.2. Material constraints and pedagogical adaptation

The relationship between equipment and the frequency of practical work ($\chi^2 = 14.4$; $p < 0.001$) is particularly significant in a course where professional competence requires regular practice. Half of the institutions studied have dilapidated workshops, and 74.2 per cent of students report limited or insufficient access to consumables. The problem is therefore not solely a matter of teaching methodology: the adaptation of teaching methods is also influenced by the physical environment.

Observations show that, when machinery is scarce or faulty and there is a shortage of fabrics, the teacher may be forced to replace hands-on practice with a group demonstration or a paper-based exercise. This situation gives concrete meaning to the concept of didactic transposition (Chevallard, 1991): the prescribed professional knowledge must be transformed into achievable school tasks, but the constraints of the workshop alter the conditions of this transformation.

4.3. Assessment and institutional support

Forty-five per cent of teachers rarely or never use criteria-based assessment grids. The association between specific training in assessment and the use of assessment grids ($\chi^2 =$

14.84; $p < 0.001$) suggests that assessment tools are an important element in the implementation of the APC. The assessment of professional competences does indeed require observable criteria and indicators, rather than an overall evaluation of the final product (Hadjji, 2012; Roegiers, 2016).

Inspectorate monitoring is also associated with the level of implementation of the APC ($\chi^2 = 11.12$; $p < 0.001$). Qualitative data indicate that local support can help teachers align their practices more closely with official guidelines. However, this finding should be understood as an association observed within the context of this study and not as evidence of a causal effect.

4.4. Integrated interpretation of the results

The convergence of quantitative and qualitative results leads us to characterise the implementation of the APC in Boma as a hybrid configuration: the guidelines are known and present in professional documents, but their translation into problem-based situations, regular practice and criterion-referenced assessment remains uneven. Three dimensions reinforce one another: teachers' pedagogical skills, the material resources available and institutional support. This interpretation is consistent with the approaches of Jonnaert (2002, 2009), Roegiers (2016), Pastré (2011) and Le Boterf (2015), who situate competence within an interplay between resources, context and action.

5. Conclusion

The aim of this study was to analyse the level of applicability of the Competence-Based Approach in the Dressmaking and Sewing course at technical secondary schools in the Boma sub-division of EDUC-NC. The mixed-methods survey of 160 participants, supplemented by 15 workshop observations and interviews with supervisory staff, shows that the Competence-Based Approach is indeed present in the curriculum guidelines and in certain teaching methods, but that its implementation remains partial and inconsistent.

The main findings relate to a lack of initial teaching qualifications amongst some teachers, a reported lack of mastery of APC concepts, the dilapidated state of technical facilities, a shortage of consumables, the persistence of lecture-based and imitative teaching practices, and the still irregular use of criteria-based assessment grids. The statistical correlations observed highlight the role of continuing professional development, material resources, the level of training, assessment tools and supervisory monitoring by education authorities.

In the context under study, improving the applicability of the APC cannot therefore be reduced to a mere modification of teaching guides. It requires coherence between the curriculum, teacher training, the physical environment, workshop practices and pedagogical support.

6. Practical implications

- Introduce regular, practical in-service training focused on the pedagogy of pattern-making and sewing, the design of problem-based scenarios and criteria-based assessment.
- Gradually refurbish the workshops and improve access to working machines, cutting tables, overlockers and measuring instruments.
- Facilitate pupils' access to textile consumables in order to increase opportunities for individual hands-on practice.
- Strengthen hands-on teaching support through observation visits, advice and professional co-development sessions.
- Align assessment tools with the principles of Competence-Based Assessment (CBA), prioritising observable criteria and indicators.

7. Limitations and prospects

The scope of the findings remains limited to the Boma sub-division of EDUC-NC and the Cutting and Sewing course. The cross-sectional design does not allow for an assessment of how practices have evolved over time. Self-reported data may also be affected by social desirability bias. Comparative studies between educational provinces and across different technical courses, as well as longitudinal research into the labour market integration of female graduates, would enable this investigation to be extended. These limitations are explicitly acknowledged in the original thesis.

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