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COMPETENCE-ORIENTED ASSESSMENT IN GLOBALISING WORLD: ANALYSIS OF PAPER STANDARDS FOR NATIONAL EXAMINATIONS IN RWANDA

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Abstract:
Since 2016, a competence-based curriculum has been introduced in the Rwandan education system starting from nursery, primary, secondary and later in Teacher Training Colleges. Pedagogical guidelines were enacted, and orientations for assessment were put in place. However, research on competence assessment is still limited. The article at hand contributes, using a content analysis by a critical analysis of paper standards for general education national examinations in Rwanda, to the discourse of competence-oriented assessment. The results show that the framework sets the basics for transparency in assessment. However, it is limited to assessment of cognitive competences with more emphasis on lower-order thinking of the revised Bloom's taxonomy (Anderson & Krathwohl, 2001). Unfortunately, the framework seems to limit flexibility, fluidity, transferability, and complexity of competences in an interdisciplinary and transdisciplinary perspective. Furthermore, in addition to the imperative of quality continuous professional development of teachers as well as other educational stakeholders, alternativity in assessment beyond sole written modes should be reflected at different levels of education. Further conceptual, empirical and theoretical studies are recommended as far as competences-oriented assessment in the globalising world is concerned.

Keywords: competence-oriented assessment, globalising world, global learning, national examination

1. Introduction

The focus of this paper is on a critical analysis of standards for national examinations in Rwanda as set by the Ministry of Education via the National Examinations and School Inspection Authority (NESA) in Rwanda (NESA, 2022). The standards are set in line with the implementation of competence-based curriculum (CBC) since 2016 (MINEDUC/ REB,

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2015). The CBC was initiated in the framework of reframing education as a contribution to the post-genocide reconstruction and reconciliation processes in the dynamic and globalising world. In this regard, I start with a description of Rwandan education in a dynamic change, followed by a synopsis of the CBC framework.

In the aftermath of the 1994 genocide against Tutsi, a plethora of social, economic and technological initiatives were put in place in the process of reconstruction and reconciliation (Gatwa & Mbonyinkebe, 2023). In this journey, education seems to be considered a cornerstone (Niyibizi, 2022). Among others, the language of instruction changed from French to English, free-fee education was introduced up to secondary education along with curricular reforms. For instance, in 2015 the so-called knowledge-based curriculum was replaced by a competence-based curriculum. The purpose of the CBC is to equip students with the necessary skills to be successful in the dynamic world (MINEDUC/ REB, 2015).

The CBC provided two types of competences: basic and generic, as well as cross-cutting issues as aspects of quality teaching. First, literacy, numeracy, ICT, citizenship and national identity, entrepreneurship and business development, science and technology and communication in the official languages are indicated as basic competences. Second, generic competence of critical thinking, creativity and innovation, research and problem solving, communication, co-operation, interpersonal relations and life skills, lifelong learning are reflected, too. Generic competences are called so due to their transferability and applicability in the diversity of subjects and contexts. Third, a competence-based curriculum integrates issues considered important not only in the Rwandan context but also from global perspectives. They include genocide studies, environment and sustainability, comprehensive sexuality education, peace and values education, financial education, standardization culture, and inclusive education (MINEDUC/REB, 2015: 19-27). Moreover, a framework of competence-oriented education was enacted in 2021. This legal framework, knowledge, understanding, practice, knowledge application, generic cognitive skills, communication skills, digital literacy, numeracy, autonomy, and responsibility are indicated as broad competences to be developed (GoR, 2021:19).

Despite the legal and curricular framework of competence-oriented education, little is known from the scientific discourse about the extent to which competences are assessed both at school and in national examinations. If empirical research reveals that in-service teacher training is more content-based than competence-oriented (Ndihokubwayo, Habiyaremye & Rukundo, 2019:30; Otara, Uworwabayeho, Nzabalirwa, & Kayisenga, 2019), the model can likely be followed in the practice of assessment in schools. Consequently, there is a need for research on the competence-oriented assessment. For describing the orientation of the standards for assessment, it is worth having a look at the theoretical and empirical framework of competence-oriented assessment.

2. Literature Review: Theoretical and Empirical Frameworks of Competence Assessment

In the frameworks of assessment of learning outcomes, there is a plethora of taxonomies which likely guide assessment in the existing education discourse. As far as this study is concerned as well as the complexity of competence assessment, revised theoretical taxonomy of the revised Bloom's framework in cognitive domain (Anderson & Krathwohl, 2001), socio-affective domain, (Krathwohl, Bloom, Masia, 1973) and psychomotor (Dave, 1970) frameworks are referred to. As the world is becoming more globalized, global competences by Scheunpflug (2011) are reflected, too.

2.1 Taxonomy of Learning Outcomes: A Contribution to Competence Assessment

In the framework of competence-oriented education in which cognitive, psychomotor and socio-affective are interconnectedly reflected, Bloom's taxonomy seems to fit the analysis. First, the revised taxonomy of Bloom includes six levels of complexity of cognitive competences. They include remembering, understanding, applying, analysing, evaluating and creating (Anderson & Krathwohl, 2001). While remembering solely refers to the recalling of previously learned information without any change, understanding concerns the grasping of the meaning of the learning materials. Use the learnt material in a new situation, concerned with the third level of competence of applying, whereas analysing consists of separating material into component parts. As far as evaluating is concerned, it consists of making judgments about the value of ideas or materials, while creating involves building a structure or pattern from diverse elements (Anderson & Krathwohl, 2001). In addition to six levels of the taxonomy, Marzano & Kendall (2007: 62) added two further competences of metacognition, which include self-regulation and self-system, which encompass self-efficacy, emotional capacity, as well as motivation. In the context of complexity and dynamicity of the globalization where reflectivity, including self-reflectivity, autonomy, and flexibility are crucial (Scheunpflug, 2023), self-regulation seems to be important. Consequently, the added levels by Marzano & Kendall (2007) are necessarily important to be reflected in both competence development and assessment.

In the framework of the socio-affective domain, Krathwohl, Bloom, Masia (1973) offered a theoretical taxonomy of five emotional levels, i.e., feelings, values, appreciation, enthusiasm, motivations, and attitudes encompassing receiving, responding, valuing, organization and internalizing values. While, receiving phenomena regards awareness, willingness to hear and selective attention, responding is about active participation in responding to the phenomenon. At the subsequent level, valuing focuses on values attached to the object or phenomenon and organization involves organizing values into priorities by contrasting different values. Finally, the internalising values (characterisation) is concerned with having a value system that controls one's own behaviour.

As far as the psychomotor domain is concerned, Dave (1970) provides a seven-level taxonomy of psychomotor competences. (1) Perception (awareness) is about the ability to use sensory cues to guide motor activity, and (2) setting regards the readiness to act, i.e., mental, physical, and emotional sets. Concerning the level of (3) guided Response, the early stages in learning a complex skill that includes imitation and trial and error are reflected, and (4) mechanism (basic proficiency) is concerned with the intermediate stage in learning a complex skill. At the level of (5) complex overt response (Expert), the skillful performance of motor acts that involve complex movement patterns, and six at the level of adaptation, skills are well developed, and the individual can modify movement patterns to fit special requirements. Finally, (7) origination concerns the creation of new movement patterns to fit a particular situation or specific problem.

Despite the orientating role of taxonomies in monitoring teaching, learning and assessment, they are criticised to be unidimensional and behaviorist which does not capture the complexity of competences needed for becoming successful in the dynamically globalising world (Tutkun, GüzelKöroğlu & Ilhan, 2012: 23; Marzano & Kendall, 2007: 9). This implies that hierarchisation of competences does not reflect the complexity of the dynamic, interconnected and interdependent competences in 21st (UNESCO, 2021**).** Consequently, critical reference to the taxonomies remains imperative.

2.2 Framework of Global Competences

Due to the complexity and uncertainties of the dynamic world, a diversity of frameworks of global competences have been developed. Among others, Scheunpflug thinks that world society is characterised by issues to be reflected, their implications for teaching and learning, as well as required competences (2011, p. 35). This is summarized in the table below:

Table 1: Framework of Global Education

Global societies	**Challenges for teaching and learning**	**Competences**
Complexity	Dealing with knowledge	Literacy, knowledge of globalisation, local knowledge,
Contingency	Certnanity & uncertainty	Tolerance to ambiguity
Interconnectecness	Local, regional, global relationships & networks	Thinking and working in networks and virtual spaces
Otherness	Familiarity & strangeness	Intercultural competences

Source: Scheunpflug, 2011: 35.

The complexity of global societies requires reflecting a diversity of interconnected and interdependent competences necessary to deal with global challenges. In this orientation, Scheunpflug indicates the structures of the world society, teaching and learning related challenges and hence suggests possible competences. Unfortunately, assessment of global competences in the Programme for International Students Assessment (PISA) is criticized for its limitedness to cognitive dimensions. The argument is that global competences are multidimensional and require the multiperspectivity of the diverse

cultures, yet are missing in the PISA assessment of global competences (Conolly, Lehtomäki & Scheunpflug, 2019). Authors argue that different- neoliberal, global consciousness, critical and advocacy approaches are important in shaping theoretical framework of assessing global competences. Consequently, the question of examining the extent to which national assessment frameworks reflects competences important in the context of the dynamicity and complexity of changing world remains less explored.

3. Methods

The study seeks to answer the question: what types and levels of competences are presumed to be assessed in the paper standards for general education national examinations in Rwanda? As a contribution to this gap, a qualitative document analysis is carried out to explore the framework in which the set standards reflect competence-oriented assessment. The study analyses the level of competences to be assessed in terms of questions and related marks over a hundred in each subject offered at primary, secondary and professional education. For each subject, related competences are outlined, and the percentage of questions and related marks is indicated according to different levels of their complexity (NESA, 2022).

4. Results and Discussion

The results of the analysis of the standards guiding the national examinations are first presented (4.1). Second, findings are discussed (4.2) in light of the existing theoretical and empirical discourse (see 2).

4.1 Framework of Competence-Based Assessment: Results

The NESA paper standards published in 2022, focus on examinable subjects at the end of primary, secondary education and Teacher Training Colleges. Examinable subjects include languages (French, English, Kiswahili and Kinyarwanda as well as communication skills), maths and sciences (biology, chemistry, science and elementary technology, computer sciences as well as physics). Social and human sciences, i.e., social studies, creative arts, history and citizenship, entrepreneurship and economics and professional courses in teacher training (psychology, methodology and didactics) are also integrated in nationally examinable subjects in Rwanda (NESA, 2022: 2-3). At each subject, broad and key subject competences are outlined, and they are followed by paper specification and marks distribution as well as a table of specifications.

For instance, the primary six English leaving exam focuses on subject broad competences of **c**ommunicate information, ideas and feelings appropriately and effectively in a range of different social settings and cultural contexts; listen attentively and read fluently both for information and for pleasure; demonstrate an adequate command of vocabulary and language patterns in simple texts to enable them to learn and communicate in English in different situations and listen to and understand English

as it is spoken around them in authentic situations. Moreover, subject key competences include, among others, the use of language learnt in the context of leisure and sports, making future plans, weather, behaviour, rules and laws, family relationships, books, composition writing and examinations, animals, environment, maintaining harmony in the family and the solar system. Concerning the paper specifications and marks allocation, duration of the exam, sections and related marks are specified without forgetting the guidelines for the types of questions to ask in each section. For instance, in English, the exam should be composed of three sections: section A focuses on reading comprehension and vocabulary (30% of marks); section B on language use (50%) and section C on essay/composition (20%) (pp.5-7). The following tables (1 and 2) illustrate examples of English in primary education as well as in computer sciences in secondary education.

Table 2: Table of Specification in English (Primary Education)

SN	Learning units	Periods	Categories of the Cognitive Processes/Domain						Number of paper items
			Remembering	Understanding	Applying	Analysing	Evaluating	Creating	
1	Family Relationship and harmony	56	1						1
2	Talking about past events and future plans	84	1		1				2
3	Geography and environment protection	280	1	1	1	1	1	1	6
4	Health, hygiene, leisure and sports	56					1		1
5	Rights, responsibilities, rules and Laws	56	1						1
6	Jobs, crafts and traditional agriculture in Rwanda	84		1		1			2
7	Reading, writing and study skills	112	1	1	1				3
8	My friends and I	28						1	1
9	Our district	28	1						1
10	Measurement	28		1					1
11	Transport	28			1				1
	Total		**6**	**4**	**4**	**2**	**2**	**2**	**20**
	Percentage of item distribution per cognitive domain		**30%**	**20%**	**20%**	**10%**	**10%**	**10%**	**100%**

Source: NESA, 2022: 7.

Table 3: Table of Specification in Computer Sciences in Secondary Education

SN	Learning units	Periods	Categories of the Cognitive Processes/Domain						Number of paper items
			Remembering	Understanding	Applying	Analysing	Evaluating	Creating	
1	Computer system and maintenance	102	1	1				1	3
2	Data structure and algorithms	54			1				1
3	Programming	368	3	2	2	1	1	1	10
4	Operating System	56			1				1
5	Networking	66	1	1					2
6	Database	72				1	1		2
7	Computer graphics and multimedia	38	1						1
	Total	**756**	**6**	**4**	**4**	**2**	**2**	**2**	**20**
	Percentage of item distribution per cognitive domain		**30%**	**20%**	**20%**	**10%**	**10%**	**10%**	**100%**

Source: NESA (2022: 77)

As indicated in the example of specification tables (2 & 3), each learning unit is indicated with the number of items to be included in the national examination. This followed from left to right by the corresponding number of periods. Afterwards, the framework is inspired by the revised six levels of Bloom's Taxonomy (Kendall & Marzano, 2017). This framework assumes that cognitive competences range from lower to higher levels: remembering, understanding, applying, analysing, evaluating and creating (NESA, 2022). Respectively, NESA allocated questions and related marks accordingly. In this framework, it is allocated as follows: 30%, 20%, 20%, 10%, 10% and 10% respectively at each level. For instance, 30% of questions and related marks are to be at the level of remembering, while only 10% is dedicated to the highest level of creating (NESA, 2022). This implies that 70% of questions and related marks are to be allocated to the lower levels of thinking of remembering, understanding and applying. However, less than a third (30%) is dedicated to questions and related marks, which are allocated to higher order thinking of analysing, evaluating and creating.

This principle is applied to all primary and secondary school examinable subjects, excluding general studies and communication Skills offered in the senior six. In the subject of general studies and communication skills, questions and related marks are allocated as follows: 15%, 15%, 15%, 15%, 30% and 10% from remembering to creating (see table 4).

Table 4: Table of Specifications in the Course of General Studies and Communication Skills

SN	Learning units	Periods	Categories of the Cognitive Processes/Domain						Number of paper items
			Remembering	Understanding	Applying	Analysing	Evaluating	Creating	
1	Living in society	104	1		1	1	1		4
2	Sustainable development	101	1	1			2		4
3	Science	20			1				1
4	Culture	99		1		1		1	3
	Total	**324**	**2**	**2**	**2**	**2**	**3**	**1**	**12**
	Percentage of item distribution per cognitive domain		**30%**	**20%**	**20%**	**10%**	**10%**	**10%**	**100%**

Source: NESA (2022: 94)

In contrast to the general principle, as previously mentioned, 45% of questions and marks are allocated to the lower level of thinking. More than half (55%) is allocated to higher-order thinking (NESA, 2022: 92-94) in the subject of general studies and communication skills.

Despite the absence of underlying guidance about the choice of the number of items at each level of the taxonomy, it is visible that the more periods the subject has, the higher the number of items. In a nutshell, the national examination at primary and secondary education in the Rwandan context is guided by the revised Bloom's Taxonomy of educational objectives in the framework of cognitive competences as proposed by Anderson & Krathwohl (2001). The framework suggests that 70% of items should be at a lower level of thinking of remembering, understanding and applying, as compared to the remaining 30% to be dedicated to higher order thinking of analysing, evaluating and creating. This is applied to all examinable subjects with the exception of general studies and communication skills, where more than half of the items (55%) are suggested to be focused on items related to higher-order thinking. In the following part, these insights are theoretically contextualized and discussed in light of theoretical and empirical discourse on competence assessment in the globalizing world.

4.2 Critical Insights about the Framework for Competence-Based Assessment in National Examination: A discussion

Reflecting the results of the critical analysis of the standards guiding the elaboration and administration of setting items in national examinations in light of existing discourse, two major dimensions are summarily discussed. They include, first, the framework assessment as a starting point for a transparent assessment, and second, risk for mechanization and homogenisation of competence assessment. Their theoretical and contextual interpretations of results are discussed.

4.2.1 Framework of Competence Assessment: A Starting Point

On the basis of the guidelines as proposed by NESA (2022), the framework constitutes the orienting and guiding principle to harmonise assessment. It serves as a basis for taxonomizing of competences. This could contribute to the harmonisation of assessment, likely to enhance transparency. Following the fact that assessment influences teaching and learning strategy (Reeves, 2006; Biggs, 2001), it likely contributes to serving as a role model for teachers and students during teaching and learning practices. There is a likelihood that it may influence initiatives i.e., teacher training, kinds of support for students at different levels before sitting for national examinations. The set standards would likely contribute to the comparability of students' performances in different schools across the country. However, during the application of the same principle, there is a risk of mechanisation and homogenisation of competence assessment.

4.2.2 Risks of Mechanisation and Homogenisation of Competences Assessment

As indicated earlier, the world is becoming more complex with a number of uncertainties requiring a limited unilateral principle of teaching, learning and assessment (Scheunpflug, 2022; 2021). Complexity and uncertainties require flexibility and openness, which, in return, need creative and dynamic pedagogies (UNESCO, 2021). Consequently, following the same principle, previously indicated, to almost all subjects, risks to

homogenisation and mechanisation of assessment, which seems to be unfit to the nature of subjects as well as required competences in the 21st Century (Scheunpflug, 2011). Similarisation and equalisation of types of question items and related marks seem to limit the nature of subjects and related competences. Despite the cross-cutting generic competences (MINEDUC/ REB, 2015), subject-related competences can differ from one subject to another. For instance, competences to be developed in Mathematics are not quite similar to those of English. Consequently, diversity of assessment standards remains imperative.

4.2.3 Mono-modality and Unidirectionality in Assessment: Limitedness for Comprehensive and Inclusive Assessment of Competences in the Globalizing World

Reflecting the complexity and multidimensionality of competences, there seems to be a lack of important dimensions, including but not limited to personal, metacognitive and interpersonal competences. Though they are included in the competence-based curriculum (MINEDUC/REB, 2019; 2015) as well as competences in the dynamic and globalising world (Scheunpflug, 2011), they seem not to be reflected in the national examination. While self-regulations, social competences (Krogull, Scheunpflug & Rwambonera, 2014). i.e., cooperation, collaboration, self-regulation, autonomy, responsibility and working with others, self-responsibility, autonomy, self-reflexivity and self-reflectivity, communication, as well as intercultural competences are important in the perspectives of global citizenship education (Conolly, Lehtomäki & Scheunpflug, 2019; Scheunpflug, 2011), they are hardly reflected in the standards of assessment in national examinations as set by NESA. This shows that meta-cognitive and self-systems like self-regulation (Marzano & Kendall, 2007) are far from being reflected.

The digitalizing and globalising dynamic world require competences that go beyond a single subject and unilateral approaches. Accordingly, interdisciplinary and transdisciplinary approaches are important in teaching and assessing competences for success in the 21st century (UNESCO, 2021; Scheunpflug, 2021). Moreover, interconnectedness and interdependencies should be reflected not only in pedagogy but also in assessment policies and practices (UNESCO, 2021:60-61). This implies that mono-subject assessment is likely to hinder the development of the necessary competences of the 21st Century.

5. Recommendations

Reflecting the results of the critical analysis of paper standards for general education national examinations in Rwanda in light of existing literature on competence-oriented assessment, the study ignites further outlook for research, as well as policy and practice.

5.1 Implications for Research

As far as research is concerned, conceptual research needs to be carried out as far as assessment of students' competences beyond solely and cognitively oriented

standardised assessment. How could interpersonal and personal competences be assessed? Which contexts and modes can be adopted? Moreover, empirical research shows that teachers' subjective theories are important in education (Niyibizi, 2024; Fives & Buehl, 2016; Fives, Lacatena & Gerard, 2015). Accordingly, empirical research about teachers' and other stakeholders' beliefs about competence-based assessment could be interesting. For instance, what are education stakeholders' and teachers' understanding and subjective theories about competence-based assessment? More than that, the quality of management of transition is a necessity. Consequently, the question: How do teachers, school leaders and policy makers manage the transition from knowledge-based and competence-based assessment? should be explored. Research should go on as far as constructive alignment (Kandlbinder, 2014; Biggs & Tang, 2014), especially answering the following questions: How are competences reflected in the lessons prepared by teachers? What does teaching look like from the perspective competence-oriented education? How do teachers report their own teaching perspectives and practices in line with competence-based orientation?

The study at hand explored the overview of the framework of assessment as national curricular orientation. To deepen the discourse of competence-oriented assessment, research on types and levels of competences by analyzing examination papers in different subjects should be done both school-based and national examinations. The exploration should be furthered in regard to forms of assessment and related competences in teacher education before and during national examinations. In addition to researching how student teachers are assessed, it could be interesting to do empirical studies on how they learn to assess especially in the framework of competence-oriented education.

5.2 Implications for Policy and Practice

Based on the results of the present study and their theoretical contextualisation, the study recommends alternative assessment modes as well as continuous professional development for teachers and other educational stakeholders on competence-oriented education.

5.2.1 Alternative Comprehensive and Inclusive Competence Assessment

Based on the complexity and plurality of interconnected competences for 21st century, the policy document setting standards of assessing competences in national examinations necessitates a revisit. Assessment of competences other than cognitive should be reflected. Social, personal and meta-cognitive competences should be included in the assessment policy framework. The policy should allow flexibility and diversity of assessment modes instead of solely focusing on written. This can require partial decentralisation of assessment, whereby oral, project-based, portfolio, arts-based, and paper-based modes could be implemented as an alternative to competence assessment in either school-based or national examinations. In reflecting alternative modes of assessment, interdisciplinarity and transdisciplinarity are set as a theoretical and

practical framework for setting assessment likely to contribute to the development of necessary competences in the dynamic and globalising world. Though competences are conceptualised in the competence-based curriculum as a fourfold of interconnectedness of knowledge, skills, values and attitudes (MINEDUC/REB, 2015), the cognitive dimension is solely reflected principally at the lower order of thinking. Unfortunately, values, skills and attitudes which reflect personal and social competences are visibly absent in political standards of assessment in national examinations as far as general education is concerned. This needs a special attention in curricula, policies and examination practices without forgetting the mobilization of different resources (i.e., human, material, technical, financial).

5.2.2 Competence-based Education: Necessity of Continuous Professional Development

Moreover, there is an urgent need for continuous teacher training on the assessment framework, including competences other than cognitive ones. This should go hand in hand with intensive teacher training on competence-based teaching across the country. For instance, research indicates that cognitive activation by complex tasks is a sine qua non condition to drive competence-based education (Niyibizi, 2021 & Gahutu, 2021). Accordingly, this should be prioritised in both the initial and continuous teacher training (op. cit). More than that, in line with constructive alignment (Biggs & Tang, 2014; Biggs, 1996), intensive teacher training on elaboration, contextualisation, activation, revision, and re-elaboration of tasks in the existing curricula is recommended, too.

6. Conclusion

The critical analysis of the standards of national examinations in the context of Rwanda reveals two major insights. First, the framework of assessment is inspired by the theoretically revised Bloom's taxonomy (Anderson & Krathwohl, 2001) of remembering, understanding, applying, analyzing, evaluating and creating. However, around two-thirds (70%) of the items and related marks are to be focused on the first three lower levels of thinking. As this is homogenized to almost all examinable subjects, there is a risk of mechanization of assessment, which is a challenge for developing the necessary competences for the 21st century. The study recommends an alternative, comprehensive and inclusive assessment which would go beyond traditionally written exams. Moreover, the necessity of continuous professional development of teachers, school inspectors, school administrators, as well as other educational stakeholders, not only on competence-based assessment but also competence-oriented preparation and teaching, remains imperative.

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Conflict of Interest Statement

The author declares no conflicts of interest.

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