



THE INFLUENCE OF TEACHER RELATED FACTORS ON THE IMPLEMENTATION OF THE COMPETENCY-BASED CURRICULUM IN RWANDA. A CASE STUDY OF PUBLIC PRIMARY SCHOOLS IN KICUKIRO DISTRICT

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ABSTRACT

Five years ago, Rwanda shifted from a knowledge-based to competence-based curriculum. The main purpose was to enable school graduates to cope with job-related demands and enable them to become problem solvers. Teachers are likely to face challenges when implementing a new curriculum especially in relation to the content and subject demarcations, the underlying assumptions, goals, teaching approaches and assessment methods. In this regard, this study investigated the teachers' related factors influencing successful implementation of the competency based curriculum in Rwanda a case study of public primary schools in Kicukiro District. The three specific objectives of the study were on: pedagogical content knowledge, technological skills, and perceptions' influence implementation of competency based curriculum. The study findings are of significance to the Ministry of Education, school administrators, teachers and the community as it shows the areas that may hinder effective implementation of competency based curriculum in Rwanda. The study adopted a descriptive survey design targeting all the 65 public primary schools in Kicukiro District. From each school the head teacher, one teacher and the director of studies were targeted, hence the target population was 195 respondents. Stratified random sampling was used to select a sample of 132 respondents using Slovin's formula. A questionnaire, an interview schedule, document analysis guide and an observation checklist was used as tools for data collection. Data collected from the field was both quantitative and qualitative in nature. Quantitative data was analyzed using descriptive statistics such as frequency counts and percentages while qualitative data was analyzed thematically in line with research objectives. The results of the analysis was presented using frequency tables, bar graphs and pie charts. Data were analyzed both quantitatively and qualitatively. The study findings showed that there exists a strong, significant and positive correlation between Teachers pedagogical content and implementation of competency based curriculum in Rwanda, as shown by correlation factor, $r=0.833$, $PV=0.000 < 0.05$. From correlation findings there exists a strong positive and significant correlation between Teachers technology skills and implementation of competency based curriculum in Rwanda as indicated by a correlation factors, $r=0.845$ with $PV=0.000 < 0.01$. This demonstrated that Teachers technology skills contribute to implementation of competency based curriculum in Rwanda. The correlation findings also indicated that there exist a strong, significant and positive correlation between Teachers perceptions and implementation of competency based curriculum in Rwanda as indicated by a correlation factors, $r=0.845$ with $PV=0.000 < 0.05$. It is evident that holding Teachers pedagogical content, Teachers technology skills, Teachers perceptions to a

constant zero, Implementation of competency based curriculum in Rwanda would be at 0.463. In addition, any unit increase on Teachers pedagogical content would increase Implementation of competency based curriculum in Rwanda by a factor of 0.174. Any unit increase in Teachers technology skills would increase Implementation of competency based curriculum in Rwanda by a factor of 0.192. Lastly any unit in Teachers perceptions would increase in Implementation of competency based curriculum in Rwanda by a factor of 0.167. It was concluded that teacher related factors influence implementation of competency-based curriculum.

Keywords: Teachers' pedagogical content knowledge, Teachers' technological skills, Teachers' perceptions, CBC Implementation, Competency-based curriculum, Public primary schools, Kicukiro District

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INTRODUCTION

Curriculum is the medium through which nations around the world empower the general public with the values, knowledge, skills and attitudes that are necessary for them to be economically and socially engaged, in order to attain national and personal development (Kabita & Ji, (2017). The term curriculum refers to all the learning that is designed and directed by schools, whether such learning takes place at individual or group situations, and whether outside or inside the school (Kelly, 1983). This definition implies that a curriculum encompasses learning programs such as the subjects offered, intramural and interscholastic programs, career guidance among others (Azuka & Kurumeh, 2015). The development and implementation of a curriculum entails planning of learning programs with the aim of deriving change in learners as well as assessing how much of the desired change has been achieved.

Educational plan improvement is generally required by the longing to react to change, and as such any quality educational program advancement is a constant and on-going interaction. A decent educational plan needs to line up with worldwide patterns of fast development of information, widening data and correspondence advancements, and the resultant consistent change in the abilities

required by students to fit in the gig market (Stabback, 2016). Right now, the world is encountering a shift to capability based schooling (Gardner, 2017). In the United States of America (USA), the ability based schooling development has been around starting around 1980. The beginning of ability based schooling, in any case, can be followed to the thoughts of instructive change connected to plans of action indicating results in goals, thinking back to the 1920s (Williamson, 2000). Right now in the USA, schools execute a capability based training framework by which students continue to higher instructive levels whenever they have dominated going before ideas and abilities regardless of time, spot or speed. The functioning meaning of capability based instruction framework in the USA is directed by five standards of educational program plan: i) students' progress to a more significant level once they ace current abilities and ideas; ii) the abilities include clear, quantifiable, and adaptable learning targets that enable students; iii) there is a significant appraisal process that furnishes students with positive learning experience; iv) students are given separated and opportune help, which is in accordance with individual adapting needs; and v) the results of the learning system places accentuation on capabilities like information creation and application, and improvement of basic abilities and manners (Sturgis, 2016). There is a

considerable distinction between customary frameworks of training and ability based instruction, since in conventional frameworks students are relied upon to invest a given measure of energy on specific curricular subjects and progress to more elevated levels at foreordained stretches, regardless of whether they have not dominated the abilities and ideas.

Finland's schooling framework is profoundly regarded as among the best all over the planet, with Finnish schools consistently arising top in assessments controlled by the Program for International Student Assessment (PISA), which routinely evaluates training frameworks in the Organization for Economic Co-activity and Development (OECD) nations. Finland's schooling framework is viewed as a model of greatness by defenders of ability based training in Europe (Bristow and Patrick, 2014). The accomplishment of the Finnish instruction framework is credited to changes started in the country since 1970s. The changes saw the limitation of the public educational program of Finland, which was before then exceptionally concentrated (Darling-Hammond and McCloskey, 2008). Finnish instructors were then enabled with abilities in brain science, curricular hypothesis, and examination abilities, to a level where they currently are responsible for planning their own educational programs directed by the public guidelines. School overseers and educators in the nation accept the accountability of characterizing the general objectives of training for their schools, the appraisal cycle for students in their schools, just as self-evaluation of school improvement objectives (Sahlberg, 2012). The general public has a solid trust that the instructors and executives will work really hard satisfying these obligations. One of the fundamental purposes behind the accomplishment of Finland's schooling framework is that the state puts intensely in educator preparing. Educators are looked over among the best 10% of secondary school graduates and prepared let loose by the public authority to

bosses' certification level (Bristow and Patrick, 2014).

In Kenya, a significant educational program change was knowledgeable about 1985, when the 8-4-4 arrangement of instruction was acquainted as a reaction with suggestions by the Presidential Working Party on the Establishment of the Second University in Kenya (Republic of Kenya, 1981). The 8-4-4 framework was for the most part directed by a way of thinking of independence. From that point forward, different developmental and summative audits and team reports brought about surveys of the public educational program in 1992, 1995 and 2002 (Republic of Kenya, 2017). The summit of this educational plan survey process was the reception by the Kenya Institute of Curriculum Development (KICD) of an ability based educational plan approach in the changes. Ability was conceptualized by KICD as students' ability for satisfactory use of learning assets and results (perspectives, information, abilities, and qualities) in a characterized setting, either in school, individual, work, or expert turn of events (Republic of Kenya, 2017). In the Kenyan setting, capability based schooling is considered as one where accentuation is put on what a student is relied upon to do instead of what the student is relied upon to know. Competency based educational plan is subsequently student focused, with a ton of accentuation on the changing necessities of students, teachers, and the general public overall. The ramifications of this is that the educational plan agrees students a chance for securing and use of information, abilities, mentalities and qualities to everyday critical thinking while at the same time setting accentuation on 21st century abilities (Republic of Kenya, 2017).

In 2015, Rwanda presented a skill based educational program (CBC) from an information based educational program (Ndihokubwayo and Habiyaemye, 2018). By changing the educational program, Rwanda moved from information and abilities procurement figuring out how to decisive

reasoning, creation and development, examination and critical thinking, correspondence, participation, relational fundamental abilities and long lasting learning skills (Ngendahayo and Askill-williams, 2016). These capabilities were presented along with cross-cutting issues including annihilation studies, climate and maintainability, sex, sexuality, comprehensive, harmony and values, monetary and normalization culture training (REB, 2015). The CBC is valued to draw in a unique discovering that is in accordance with the future business needs of Rwanda and the worldwide economy (REB, 2015). Further, the CBC is valued to assist graduates with defeating difficulties looked at the work market, and for advancing guidelines in capabilities required at the worldwide level (REB, 2015). The presentation of the CBC was relied upon to put more accentuation on the requirements of understudies (Mbarushimana and Kuboja, 2016), subsequently it was imagined as a methodology for addressing the goals of Rwanda and its populace to fulfill their necessities through further developed instruction framework (Singer et al., 2014).

Following five years that the Government of Rwanda selected to execute the CBC in all instructive framework, less is had some significant awareness of the advancement of its execution. It is vital to assess the current circumstance.

Problem Statement

Teaching using competency-based approaches of teaching and learning might help learners acquire competences such as historical skills, historical terminology and concepts (Mazabow, 2003). Although policy documents, teachers and other education stakeholders in the country claim that the Rwanda education system is now competency-

based there is no evidence from research which indicates the extent of the implementation of this new teaching, learning and assessment approach to support those statements.

Teachers, as the key agents of successful curriculum implementation, are likely to be faced with challenges when implementing a new curriculum, such as the competency based curriculum being implemented in Rwanda. Unless the challenges are identified early enough during the piloting stage, the problems can be carried forward to a national level when the new programme is being implemented on full scale. The study therefore sought to investigate factors influencing the implementation of competency based curriculum in Rwanda focusing on public primary schools in Kicukiro District.

Objectives of the study

- To establish the influence of teachers' pedagogical content knowledge on the implementation of competency-based curriculum in public primary schools in Kicukiro District.
- To assess the influence of teachers' technological skills on the implementation of competency-based curriculum in public primary schools in Kicukiro District.
- To establish the influence of teachers' perceptions on the implementation of competency-based curriculum in public primary schools in Kicukiro District.

The conceptual framework below, which depicted the relationship between the dependent and independent variables, guided this study.

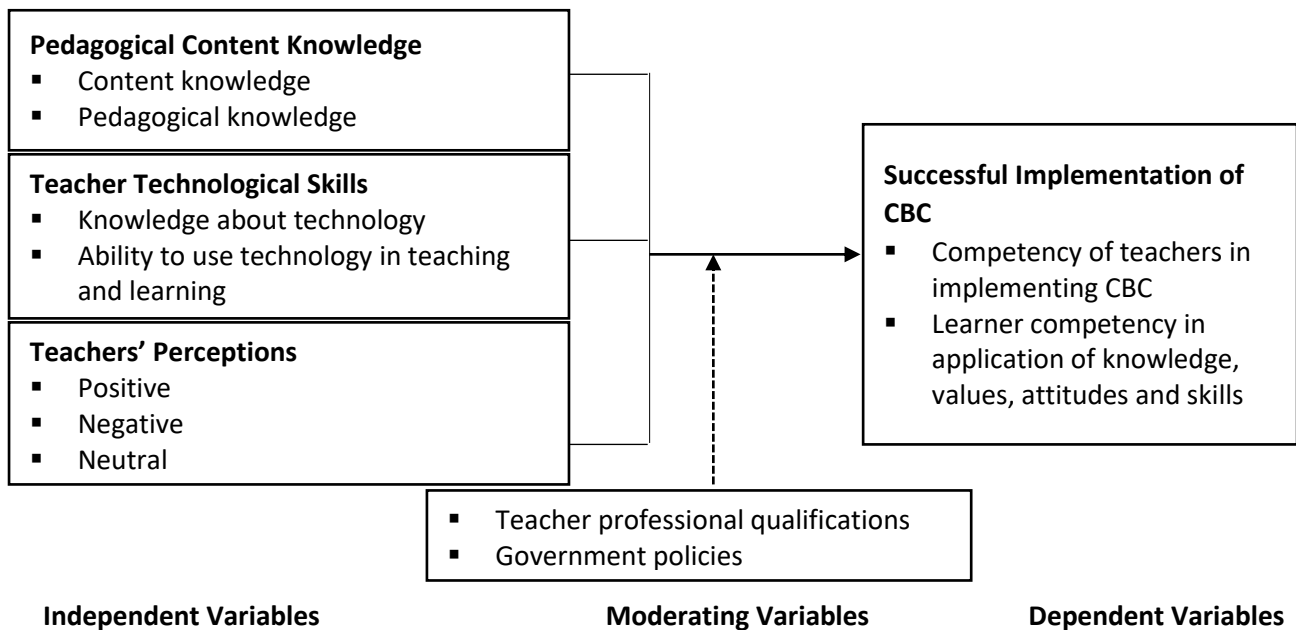


Figure 1: Conceptual framework

METHODOLOGY

This study adopted the concurrent triangulation design with a phenomenology qualitative design and descriptive quantitative research design. It fundamentally offers a structure that would be useful in finding solutions to an examination issue in a precise and methodical manner. The participants were administered both instruments concurrently for numerical and qualitative facts. It involved simultaneous data collection but separate collection and scrutiny of numerical and qualitative data was done to enable the researcher understand the problem well. Clear overview was utilized on the grounds that it is proposed to give factual data about parts of control to the scientist. A descriptive survey design was adopted in this study because it is suitable in the primary data collection about the teachers' professional qualifications, teachers' pedagogical knowledge, teacher technological knowledge and teachers' attitudes.

This study targeted 65 primary schools where 195 respondents were targeted who included 65 head teachers, 65 teachers and 65 director of studies in public primary schools in Kicukiro District (Kicukiro District, 2020).

A sample of 132 respondents was determined from a target population of 180 using Slovin's formula (1967) also cited by Bryman (2011). In his formula, the sample size was determined from the target population.

$$n = \frac{N}{1 + N(e)^2}$$

Where n = the sample size.

e = probability of error, i.e., the desired precision, 0.05 for 95% confidence

$$n = \frac{195}{1 + 195(0.05)^2} = 132$$

The sample was obtained through stratified random sampling method using the traders, manufacturing, hairstyling and dress making as study stratus. The area of operation is classified as study stratus. Stratified random sampling was preferred since it enabled fair coverage of the huge study area and gave diverse information during data collection. The technique is suitable because the residents are exposed to similar socio-legal dynamics and therefore, anyone can be selected to respond to the questionnaire (Creswell, 2014).

The specialist utilized questionnaire for essential information assortment. The polls are favored on the grounds that they are direct and less tedious for both the scientist and the members (Orodho, 2015). Ideally, a research instrument is everything used to gather information (Sekaran & Bougie, 2011). The study used both questionnaire and interview guide to collect primary data. Questionnaires are a type of tools for collecting data where the objective is to look for differences, that is, variability in responses among the subjects (Kothari & Garg, 2014).

The questionnaires had a 5-point Likert scale statements. In each of the questionnaires, section one contained questions on demographic information. From section two to section four, questions followed the order of study objectives. Both nominal and ordinal measurements of data was employed. The nominal was qualitative for instance gender and age. In ordinal scale, the order of values were looked at and the 5-point Likert type was given values for computation quantitatively.

Face to face information helped in confirming data collected from both the questionnaires and helped the researcher to observe both verbal and non-verbal communication from the participants. Section one of these schedules requested the participants to give their demographic information. From section two to section four, questions followed the order of study objectives. The data was analyzed thematically to go along through the research objectives and questions to supplement the information that was obtained from the questionnaires.

The researcher engaged skills of experts and lecturers to look at the instruments and give feedback to ensure validity. The content validity was examined to ensure that data collected were not biased. The experts scrutinized the questionnaire contents and advised on the corrections and the way forward. The instruments was found valid enough for data collection exercise before going to the field.

Reliability was used to emphasize on the level to which empirical indicators was stable and consistent. A test-retest method was employed giving two weeks between the tests and using the same participants. This method was preferred since it gave the researcher time to study the responses before administering the test second time. The two weeks period also ensured that reliable responses as the participants are given time between the tests. Cronbach's Coefficient Alpha was used to establish the reliability of the tools. If Alpha value of 0.7 and above was achieved, the tools was judged reliable and significantly acceptable. Also, during the piloting, the content reliability of research instruments was established to ensure that the tools are measuring what they are supposed to measure hence increasing the level of consistency (Mugenda & Mugenda, 2012).

The Statistical Package for Social Sciences (SPSS) version 21 was used in the analysis. After data collection, the data was organized and edited to remove any inconsistencies, repetitions nor errors that made analysis difficult. The cleaned data collected was analyzed using both quantitative and qualitative methods. The quantitative data was thus enabling the responses to be grouped into various categories. Qualitative data was based on meaning expressed through words. It involved the collection of non-standardized data that require classification and are analyzed through use of conceptualization. Conceptual content analysis involved development of data categories, allocating units of data and recognizing relationships within and between categories of data to produce well-grounded conclusions. The data was analyzed in the most logical and meaningful way and relevant comments made appropriately. Descriptive statistics such as mean, standard deviation and frequency distribution was used to analyze the data. Frequency tables was used to present the data collected for ease of understanding and analysis.

RESULTS

Teachers' pedagogical content knowledge on the implementation of competency-based curriculum

The first objective was to establish the influence of teachers' pedagogical content knowledge on the implementation of competency-based curriculum in public primary schools in Kicukiro District. The public primary schools teacher's knowledge base that was of interest in this study was content knowledge and pedagogical knowledge. In this study, pedagogical knowledge was viewed as the

public primary schools teachers' knowledge of numerous teaching methods and strategies that influence the implementation of the CBC. Using a 5 point Likert-type scale, where (5- Strongly agree, 4- Agree, 3-Neutral, 2-Disagree, 1- Strongly Disagree) public primary schools teachers were requested to rate their levels of agreement on statements on pedagogical knowledge. Table 1 shows summary of the public primary schools teachers' responses on the level of content knowledge.

Table 1: Teachers' opinions on their levels of pedagogical knowledge

Statements on Teachers pedagogical knowledge	1	2	3	4	5	Mean	Std. Dev.
I can use a wide range of teaching approaches in a classroom: collaborative learning, lecture method, class discussions, modeling	1 (0.9%)	14 (13.0%)	6 (5.6%)	31 (28.7%)	56 (51.9%)	4.18	1.075
Inquiry-guided instruction, experiential learning, problem-based learning	2 (1.9%)	6 (5.6%)	2 (1.9%)	31 (28.7%)	67 (62.0%)	4.44	.920
I know how to select effective teaching/learning approaches to guide pupils thinking and learning	0 (0.0%)	3 (2.8%)	18 (16.7%)	29 (26.9%)	58 (53.7%)	4.31	.850
I can adapt my teaching style to different pupils	0 (0.0%)	1 (0.9%)	3 (2.8%)	35 (32.4%)	69 (63.9%)	4.59	.597

Source: Primary Data, 2021

Results in Table 1 showed that majority of the public primary school teachers, (51.9%) strongly agreed that they can use a wide range of teaching approaches in a classroom: collaborative learning, lecture method, class discussions, modeling. This finding was important in that CBC focus is on acquisition of competencies (learning) as opposed to schooling (MINEDUC, 2017). In addition (62.0%) strongly agreed that Inquiry-guided instruction, experiential learning, and problem-based learning. Another 53.7 percent strongly agreed to the statement that they know how to select effective teaching/learning approaches to guide pupils thinking and learning. In the same breadth (63.9%) indicated that they strongly agreed that can adapt

my teaching style to different pupils. This has positive impact on implementation of CBC where teachers are supposed to treat each learner as an individual and to use differentiated learning. Equally, majority of the teachers (80.71%) very strongly and strongly agreed that they could use a variety of teaching methods and approaches to implement CBC curriculum. In CBC designs, teachers are expected to vary teaching and learning methods to effectively implement the new curriculum (MINEDUC, 2017).

The researcher requested the teachers to rate the extent to which they felt pedagogical knowledge influenced implementation of CBC. Their responses are contained in Table 2.

Table 2: Teachers' opinions on influence of pedagogical knowledge on learner engagement

Rating	Great extent	Some extent	Small extent	Total
Frequency	91	13	4	108
Percent	80.8	7.0	2.2	100

Table 2 showed that almost all (90.8%) of the public primary schools in Kicukiro District agreed that the teachers' pedagogical knowledge influence implementation of the CBC curriculum. This means that how teachers teach influence how pupils learn, therefore acquisition of the CBC competencies. Most of the head teachers agreed that pedagogical content knowledge of teachers influence implementation of CBC. To facilitate acquisition of such knowledge, many of the interviewed head teachers, attested that they had carried out training workshops in their own schools to sensitize their staffs on CBC after themselves were trained on by the MINEDUC staff. They trained teachers in areas such as schemes of work, lesson planning, assessment and application of the core competencies. A survey by HEC (2018) revealed that most (80.8%) of the head teachers were able to mentor and support their teachers in CBC implementation

According to Etkina (2005), content knowledge is knowledge of the discipline itself, and includes such things as procedural methods; content that students should learn and teacher-preparation documents. Content knowledge is a unique field that includes substantive and syntactic components. The substantive covers the knowledge of rules, facts, principles, concepts and theories in a specific field while the syntactic component compasses knowledge of the process through which knowledge is generated in the field (Tamir, 1988). Pedagogical knowledge represents a "generic why and how to" of teaching. Pedagogical knowledge

enables teachers to practice teaching effectively during implementation of CBC. It plays an important role in making the instructional practice more understandable to the pupils. Faisal (2016) argues that it is the knowledge of strategies and ways that a teacher requires to deliver and more importantly to transform subject matters to learners consistent with their interests and potential. Pedagogical knowledge includes teaching methods, classroom management, presentation, and practice techniques

Teachers' technological skills on the implementation of competency-based curriculum

The second objective was to assess the influence of teachers' technological skills on the implementation of competency-based curriculum in public primary schools in Kicukiro District. Use of technology in class makes learning interesting and engaging to learners. It creates many amazing opportunities for schools and teachers to benefit from integrating some forms of technology in the classroom and to make teaching and learning more effective. One of the competencies that learners are required to acquire in the CBC curriculum is digital literacy. For teachers to impart the skill in the learners, they must themselves possess the technological skills. The researcher first established whether lower primary school teachers' had adequate exposure to ICT tools required to implement CBC. They rated the extent of exposure using a 3-point scale: 3 = great extent; 2 = some extent; and 1 = small extent. The findings are summarized in Table 3.

Table 3: Teachers' exposure to ICT

Rating	Great extent	Some extent	Small extent	Total
Frequency	56	37	15	108
Percent	51.8	34.2	13.9	100

Table 3 showed that majority (61.3%) of public primary schools in Kicukiro District had been

exposed to ICT tools to a great extent. Only 8 percent of the teachers felt that exposure was not

adequate enough to allow effective implementation of CBC. This means that due to inadequate exposure to ICT tools, some teachers handling lower classes at implementation of competency-based curriculum in public primary schools in Kicukiro District may not effectively integrate digital literacy in their teaching subjects. The findings are in line with the report released by the Ministry of Education [MINEDUC] (2018) which pointed out that majority of the teachers (70%) had not been adequately exposed to ICT tools such as computers, mobile phones, laptops and tablets.

The second dimension on influence of ICT on implementation of CBC consisted of items regarding teachers' perceptions on the ICT skills they felt they possess for classroom practice. In the Basic Education Curriculum Framework (MINEDUC, 2017), one of the objectives is that pupils in the Early Years of Learning (Pre- school: PP1 - PP2 and Grade 1 – 3) should “Apply digital literacy skills for learning and enjoyment” p.29. Teachers are expected to integrate digital literacy across all subjects. Teachers rated the skills using a Likert scale ranging from 5 = strongly agree to 1 = strongly disagree. The results were summarized in Table 4.

Table 4: Teachers perceived ICT skills

Statements on Teachers' technological skills	1	2	3	4	5	Mean	Std. Dev
I feel well prepared to manage the challenges that the integration of ICT brings in the teaching of the CBC competencies in the classroom	1 (0.9%)	5 (4.6%)	4 (3.7%)	30 (27.8%)	68 (63.0%)	4.47	.848
I think I have the pedagogical knowledge required to use ICT-based instructional-learning activities in my class	4 (3.7%)	6 (5.6%)	1 (0.9%)	35 (32.4%)	62 (57.4%)	4.34	1.015
I believe I have the technical knowledge to use ICT in my class	0 (0.0%)	4 (3.7%)	15 (13.9%)	30 (27.8%)	59 (54.6%)	4.33	.853
I can use educational software regarding my subjects available at my school	0 (0.0%)	2 (1.9%)	10 (9.3%)	37 (34.3%)	59 (54.6%)	4.42	.738
I use ICT in class work with my pupils	0 (0.0%)	3 (2.8%)	4 (3.7%)	39 (36.1%)	62 (57.4%)	4.48	.703
I make use of a projector to present my lessons in class	1 (0.9%)	6 (5.6%)	4 (3.7%)	34 (31.5%)	63 (58.3%)	4.40	.876

Source: Primary Data, 2021

As reported in Table 4, a large majority of public primary schools teachers in Kicukiro District were positive towards their pedagogical knowledge of ICT skills with as they feel well prepared to manage the challenges that the integration of ICT brings in the teaching of the CBC competencies in the classroom (M = 4.47; SD = 0.848) and on pedagogical knowledge required to use ICT-based instructional-learning activities in their class (M = 4.34; SD =1.015). On the other hand, having the technical knowledge and skills required to use ICT in my class (M = 4.33; SD =0.853). Overall, values of responses

regarding their faith and confidence, in both technological and pedagogical knowledge needed to effectively use educational software to integrate ICT into their instructional practices were neutral (M = 4.42; SD = 0.738). This shows that although a good number of teachers are confident about the ICT skills they possess and can use them to deliver lessons in the classrooms, a good number is still not confident. This can negatively influence implementation of the CBC. These findings echo the results in a report by MINEDUC (2018) that indicated that 61.0 percent of the public primary

schools teachers in Kicukiro District had not been in serviced or trained on ICT use, therefore, they were not confident in digital literacy implementation.

The results in Table 4 indicated that majority of public primary schools teachers in Kicukiro District in the sample were not using ICT to prepare and support their formal teacher-centered instruction (M = 4.48; S.D = 0.703). Almost no (M =4.40; SD =0.876) teachers were using projectors in their classrooms. This is understandable given that a projector could be a gadget most rural primary schools cannot afford to buy. The means of the other two statements related to the integration of ICT in teaching were below the midpoint of 3.00 (range from 2.14 to 2.33). These findings clearly point that public primary schools teachers in Kicukiro District are yet to fully embrace use of digital literacy in teaching and learning. Failure to integrate ICT in teaching and learning negatively influences implementation of CBC, which is a digitally based curriculum.

These findings reiterate existing literature findings regarding the low rate of adopting ICT in the schools as a learning tool to support students' active learning through their engagement in properly designed ICT-based activities, in both classroom practice and beyond the classroom boundaries (Wikan & Molster, 2011). A similar argument was advanced by Higgins and Moseley

(2011) pointed out that when teachers lack ICT knowledge, it hinders digital implementation. Harrison, Hennessy and Wamakote (2010) in their study confirmed that the main hindrance in ICT implementation was low levels of teachers' knowledge and skills. Makunja (2016) too found that, teachers had not fully embraced ICT in schools due to insufficient in-service training. Some teachers had not attended any in-service training or workshops on ICT. This means that lack of training opportunities contribute to low ICT skills among teachers. In-service training is important for equipping teachers with knowledge, skills and creating a positive attitude among the teachers for effective implementation of CBC.

Teachers' perceptions on the implementation of competency-based curriculum

The third objective was to establish the influence of teachers' perceptions on the implementation of competency-based curriculum in public primary schools in Kicukiro District. This section focuses on public primary schools teachers in Kicukiro District teachers' attitudes and perceptions on the implementation of CBC. Teachers were given statements to indicate their views using an agreement Likert scale of 5 points: 5 = strongly agree; 4 = agree; 3 = moderately agree; 2 = disagree; and 1 = strongly disagree. A summary of the responses is captured in Table 5.

Table 5: Teachers perception on implementation of CBC

Statements on Teachers perception	1	2	3	4	5	Mean	Std. Dev
I enjoy preparing pupils portfolios	5 (4.6%)	7 (6.5%)	0 (0.0%)	31 (28.7%)	65 (60.2%)	4.33	1.085
Activities are engaging during CBC implementation	1 (0.9%)	1 (0.9%)	5 (4.6%)	43 (39.8%)	58 (53.7%)	4.44	.715
CBC content is adequate	2 (1.9%)	2 (1.9%)	9 (8.3%)	30 (27.8%)	65 (60.2%)	4.43	.867
Use of digital literacy is interesting	0 (0.0%)	2 (1.9%)	6 (5.6%)	32 (29.6%)	68 (63.0%)	4.54	.689
Assessment methods are child friendly	1 (0.9%)	5 (4.6%)	4 (3.7%)	33 (30.6%)	65 (60.2%)	4.44	.846

Source: Primary Data, 2021

Table 5 indicated that majority (60.2%) of the teachers strongly agreed and (28.7%) agreed that they enjoy preparing pupils portfolios. Another 53.7 percent lauded that Activities are engaging and interesting during CBC implementation. On whether CBC for having adequate content is adequate for the learners unlike the former 7-6-2 curriculum that was said to be burdening to learners 60.2% of the respondents strongly agreed. This shows that most teachers handling lower primary classes had positive perceptions towards CBC implementation. These findings are in agreement with those of Gruber (2018) who opined that one of the strongest outcomes of CBC was increased learner engagement, and that CBC accommodated a variety of learning styles making learning a truly individualized experience. However, a substantial percentage of teachers (39.88%) felt that CBC is time consuming in terms of in lesson preparations and scheming. Another study conducted by Musya (2016) on teachers' perceptions toward competency based education revealed that 33.3% of the facilitators, had not fully comprehended the concept of competency based education, and could not use the learning and teaching methods recommended for CBE. This showed that some teachers were not enthusiastic about implementation of CBE.

Rogers (2003), states that many researchers consider perception as a critical factor influencing attitude and adaptation of an innovation. If perception of an innovation varies on individual basis, they may be considered as contributing factors to an individual's attitudes towards any programme being implemented. Teachers' personal beliefs about CBC, their experiences with implementation of CBC and perceptions about using innovations in the CBC, such as new and creative ideas and practices for integrating technology, pertinent and contemporary issues, values, and community service in the CBC competencies into the classroom practices may influence the way they implement the new curriculum.

Correlation Analysis

The study conducted a Pearson product moment correlation analysis to determine the correlation between the factors influencing implementation of competency based curriculum in Rwanda. A case study of public primary schools in Kicukiro District. Basically, it looked at factors in terms of Teachers pedagogical content, Teachers technology skills and Teachers perceptions. The outcomes are presented in Table6.

Table 6: Correlation analysis

	CBC implementation	Teachers pedagogical content	Teachers technology skills	Teachers perceptions
CBC implementation (r) (p) Sig. (2 tailed)	1.000			
Teachers pedagogical content (r) (p) (2 tailed)	0.833** 0.0000	1.000		
Teachers technology skills (r) (p) Sig. (2 tailed)	0.843 0.023	0.796* 0.0000	1.000	
Teachers perceptions (r) (p) Sig. (2 tailed)	0.987 0.043	0.655 0.013	0.216* 0.000	1.000

** - Correlation is significant at the 0.01 (2 tailed)

* - Correlation is significant at the 0.05 (2 tailed)

The results in Table 6 indicated that, there exists a strong, significant and positive correlation between Teachers pedagogical content and implementation of competency based curriculum in Rwanda, as shown by correlation factor, $r=0.833$, $PV=0.000 < 0.05$. From correlation findings there exists a strong positive and significant correlation between Teachers technology skills and implementation of competency based curriculum in Rwanda as indicated by a correlation factors, $r=0.845$ with $PV=0.000 < 0.01$. This demonstrated that Teachers technology skills contributes to implementation of competency based curriculum in Rwanda. The

correlation findings also indicated that there exist a strong, significant and positive correlation between Teachers perceptions and implementation of competency based curriculum in Rwanda as indicated by a correlation factors, $r=0.845$ with $PV=0.000 < 0.05$.

Multiple Regression Analysis

Multiple regression analysis was done with the aim of investigating the factors influencing the implementation of competency based curriculum in Rwanda. A case study of public primary schools in Kicukiro District. The findings are presented in Table 7, 8 and 9.

Table 7: Combined Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.865 ^a	.749	.739	.15097

a. Predictors: (Constant), Teachers pedagogical content, Teachers technology skills, Teachers perceptions

From the results in Table 7 the determinant was 0.739 at 0.05 significant levels. It therefore implies that 73.9% of the disparities in the dependent variable implementation of competency based

curriculum in Rwanda are elucidated by the independent variables (Teachers pedagogical content, Teachers technology skills, Teachers perceptions).

Table 8: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.137 ^a	3	1.784	78.284	.000 ^b
	Residual	2.393	105	.017		
	Total	9.531	108			

a. Dependent Variable: Implementation of competency based curriculum in Rwanda

b. Predictors: (Constant), Teachers pedagogical content, Teachers technology skills, Teachers perceptions

Results on Analysis of Variance found out that $F=78.284$ and $P=0.0000$. This indicates an affirmative positive significant relationship between Teachers

pedagogical content, Teachers technology skills, Teachers perceptions and implementation of competency based curriculum in Rwanda.

Table 1: Coefficient results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.463	.231		1.973	.106
	Teachers pedagogical content,	.174	.009	.444	1.815	.009
	Teachers technology skills	.192	.050	1.231	3.616	.036
	Teachers perceptions	.16.7	.017	1.075	3.159	.025

The model can be represented as: $Y = 0.463 + 0.174 X_1 + 0.192 X_2 + 0.167 X_3$

It is evident that holding Teachers pedagogical content, Teachers technology skills, Teachers perceptions to a constant zero, Implementation of competency based curriculum in Rwanda would be at 0.463. In addition, any unit increase on Teachers pedagogical content would increase Implementation of competency based curriculum in Rwanda by a factor of 0.174. Any unit increase in Teachers technology skills would increase Implementation of competency based curriculum in Rwanda by a factor of 0.192. Lastly any unit in Teachers perceptions would increase in Implementation of competency based curriculum in Rwanda by a factor of 0.167.

CONCLUSION AND RECOMMENDATIONS

From the findings of the study, it was concluded that teacher related factors influence implementation of competency-based curriculum. Teachers had sufficient educational levels and vast experience in teaching. Most of the public primary schools teachers in Kicukiro District were prepared to implement CBC in terms of content knowledge and pedagogical knowledge. In addition, teachers held positive perceptions towards implementation of CBC. However, teachers were inadequate in technological knowledge and skills. This is a great area of concern because teachers are expected to integrate ICT across all subjects in the CBC. Teacher related factors such as professional and academic qualifications, experience, pedagogical content knowledge, technological skills and teacher perceptions are requisite for effective implementation of CBC.

From the study findings, the following recommendations were made:

- Young energetic teachers who are newly recruited should be encouraged to teach at

public primary schools teachers in Kicukiro District. Studies show that teachers are most innovative in the first two years of employment.

- Since Subject content knowledge involves mainly what the teachers teach and what the learners learn, it is crucial that teachers be fully trained and in-serviced to effectively engage with the learners during the delivery of classroom instructions. Therefore, the Ministry of Education should come up with a schedule of in-service training programmes to ensure continuous professional development of teachers. Competency-based curriculum is a new concept in Rwanda and teachers need re-skilling for flexibility in adapting the new teaching methodologies and structure of the content.
- The Ministry of Education should organize campaigns to sensitize parents and other schools stakeholders on their roles in ensuring proper and successful implementation of CBC.
- The government through ministry of education should ensure that the education officers are frequently reviewing and monitoring progress of CBC in all schools.
- The government through the ministry of education should ensure that all schools have adequate infrastructures, that is employ more teachers, provide adequate teaching and learning materials, support schools in construction of more classrooms, laboratories; among others.
- Teachers should be fully prepared for the implementation of competency based curriculum through in-service training, seminars and workshops.

Suggestion for further research

A similar study should be conducted in other parts of the country to find out whether the same findings would be obtained.

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