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Out-of-Field Teaching in Junior Secondary Schools: Unveiling Challenges and Professional Development Needs in Kenya

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Abstract*—This qualitative study investigated the challenges faced by junior secondary school (JSS) teachers in Kenya when teaching subjects outside their areas of specialization, particularly within the context of the Competency-Based Education (CBE). Guided by an interpretive approach and the Iceberg Model, the research employed one-on-one semi-structured interviews, lesson observations, and document analysis across three public JSS schools in Chonyi sub-county, Kilifi County. Nine participants, including three headteachers and six teachers, provided insights into the complexities encountered. Findings revealed three primary teaching challenges: limited subject expertise, absence of experienced teacher mentors, and inadequate pedagogical training for teaching outside specialization. Additionally, two main professional development needs were identified: insufficient professional development programs and a lack of coordination among educators. The study also uncovered deeper, underlying issues, such as decreased self-esteem and feelings of isolation, which significantly impacted teacher effectiveness and retention. Based on these insights, the study recommends that educational policymakers prioritize structured mentorship programs, content-specific professional development, and the promotion of collaborative learning communities to enhance instructional quality and support teacher development within the CBE framework.

Keywords*— Junior secondary school teachers; Competency-Based Curriculum; teaching challenges; professional development; mentorship

I. INTRODUCTION

This study investigated the experiences of educators teaching subjects outside their specialization during the ongoing implementation of the CBE in JSS. The transition to the CBE in Kenya has necessitated that teachers instruct in diverse subjects, that does not necessarily guarantee instructional effectiveness. Existing literature, such as a study by [23], supports the notion that teachers perform better when teaching within their fields of expertise, further highlighting the importance of specialized training and professional development programs in achieving educational goals.

Guided by an interpretive approach, this study employs qualitative methodologies that include one-on-one semi-structured interviews, lesson observation, and document analysis to explore these experiences in depth. The Iceberg Model serves as a framework to uncover both visible and hidden issues faced by educators, allowing for a comprehensive understanding of their experiences. This qualitative study was conducted in three public JSS in Chonyi sub-county, Kilifi County, engaging nine respondents, including three headteachers and six teachers teaching in JSS. Schools, teachers, headteachers, and school leaders were purposively sampled based on inclusion or exclusion criteria, given their direct involvement in the intricate processes within the JSS context. While [18] identifies efficiency in teaching and professional development as key pillars of effective education, this study suggests that teaching difficulties and inadequate professional development adversely affect teacher confidence and instructional practices.

To ensure the effectiveness of the ongoing transition to CBE, the study seeks to recommend restructuring of teacher education on sustainable pedagogy, professional development programs to include targeted training and support through the establishment of mentorship and peer learning groups. These interventions aim to enhance instructional quality, thereby improving educational outcomes and supporting teacher development within the context of the CBE.

II. LITERATURE REVIEW

This section deals with the factors associated with curriculum implementation by JSS educators in Kenya and the current curriculum change. Furthermore, it looks at the training and deployment of teachers and supervisors of curriculum implementation. Three entities are mandated to support schools in Kenya, with their roles described in TABLE I.

TABLE I. SUPPORT FOR CURRICULUM IMPLEMENTATION BY EDUCATION DEVELOPERS

Entity/Education Developers	Support provided for curriculum implementation
Ministry of Education (MoE)	Physical Resources: Structure that includes classrooms & Funds schooling processes
Kenya Institute of Curriculum Development (KICD)	Learning resources: Development of instructional materials and guide/syllabus. Curriculum design and reviews.
Teachers Service Commission (TSC)	Human resources: Employment and deployment of teachers. Promotion of teachers based on the career progression guidelines.

Based on the ongoing transition to the CBE, significant gaps have been highlighted in teacher training and deployment, which directly affect instructional quality and educational outcomes. This review therefore becomes crucial for the contribution towards the development of effective interventions that can support teaching and enhance the learning experience for students.

A. The Ministry of Education's Role in Curriculum Reform

The MoE is essential for the successful implementation of educational reforms in Kenya, particularly the CBE. The MoE is responsible for providing physical resources, funding, and oversight for schools, which are critical for supporting the transition to the CBE. It also oversees teacher education through teacher training colleges (TTCs) and universities, ensuring that teachers are adequately prepared. Effective teacher preparation is crucial for the success of the CBE, as the curriculum requires diverse subject knowledge from educators [23]. As schools adapt to the CBE framework, the MoE must ensure that teachers receive sufficient training and ongoing support, especially in the newly established Junior Secondary Schools (JSS). While the Teachers Service Commission is responsible for school leadership, the MoE must ensure that this leadership effectively implements CBE education at all levels. Without adequate support from the MoE, the implementation of the CBE is likely to falter. The gap in support may arise from insufficient training resources or inadequate oversight, which can compromise educational outcomes in JSS. This lack of support can hinder teachers' ability to meet the diverse demands of the curriculum, ultimately affecting student learning and achievement.

B. Curriculum Change and Implications in Kenya

The transition to the CBE represents a significant shift in Kenya's educational approach. The CBE emphasizes a learner-centered approach designed to equip students with practical skills necessary for the 21st century, moving away from the content-heavy model of the previous 8-4-4 system [14]. The phased-out 8-4-4 system comprised four years of secondary education, whereas the CBE splits the secondary level into Junior Secondary School (JSS) and Senior Secondary School (SSS), each lasting three years (see TABLE II). The headteacher and the principal are heads of institution (HOI) mandated to supervise curriculum Implementation in comprehensive school and SSS, respectively. The introduction of JSS, which consists of grades 7 to 9, creates new demands for teacher deployment and curriculum interpretation. Many teachers are now required to teach subjects for which they have not received specific training, leading to challenges in instructional effectiveness and content mastery based on the syllabus guide [14]. While the CBE aims to improve educational outcomes, the effectiveness of its implementation remains uncertain, particularly for teachers lacking specialized training in diverse subjects.

These reforms aim to improve educational outcomes and better the preparation of students for future challenges, although the effectiveness of implementation remains to be fully assessed. While the CBE presents advantages, many teachers are still trained under the 8-4-4 system, leading to challenges in adapting to the new curriculum and effectively delivering content in unfamiliar subjects.

C. Teacher Training, Recruitment, and Professional Development in Kenya

This section examines the structure and process of teacher training, placement in JSS, and the professional development strategy adopted, particularly for those teaching outside their areas of specialization.

1) Teacher Education

The current structure of teacher education in Kenya is inadequate for preparing educators to meet the demands of teaching in JSS level. Primary school teachers receive training through Teacher Training Colleges (TTCs), which emphasize a broad range of subjects, while secondary school teachers are trained in universities with a focus on subject specialization. The entry criteria for these programs are based on scores from the Kenya National Examination Council (KCSE) see TABLE III. Specifically, primary school teacher colleges require a minimum mean grade of C (plain), while secondary schools require a mean of C+ (plus) and a minimum score of C+ in two teaching subjects [21].

TABLE II. COMPARISON OF 8-4-4 CURRICULUM AND COMPETENCY-BASED EDUCATION (CBE 2-6-3-3)

Feature	8-4-4 Curriculum	Competency-Based Education (CBE)
Levels of Education	Primary (Class 1-8) + Secondary (Form 1-4) + University (4 years)	Pre-Primary (PP1-2) + Primary (Grade 1-6) + Junior Secondary (Grade 7-9) + Senior Secondary (Grade 10-12) + University (3 years)
Curriculum	Focuses on content, emphasis on schooling, rigid with limited flexibility.	Focus on competencies, emphasis on education, flexible with opportunities for specializations.
Unique Subjects to CBE	N/A	Pre-Technical Studies, Community service learning, creative arts and sports, ICT skills
Curriculum Implementation Oversight	In secondary school, programs are supervised by the Principal.	In a Comprehensive school (that consists of pre-primary, primary, and JSS), Programs are supervised by the Headteacher.
Assessment Policy	Centralized, the focus is on summative assessment and competition	Decentralized, a balance between formative and summative assessment
Mode of Delivery/Pedagogy	Traditional lecture-based	Active, learner-centered approaches
Teacher Education	Trained primarily under the 8-4-4 system	Trained primarily under the 8-4-4 system with no specific CBE specialization

According to [23] teachers perform better when teaching within their fields of expertise, therefore emphasizing the necessity of specialized training to achieve educational goals. The specialization currently done for trained Secondary School Teachers aims to increase the expertise and in-depth understanding of concepts that must translate to teaching practice. This discrepancy results in many primary-trained teachers being deemed ineligible to teach at JSS, which requires deeper subject knowledge. The Commission for University Education (CUE) and the Kenya National Qualifications Authority (KNQA) ensure quality in teacher training; however, the mismatch between training and JSS requirements exacerbates challenges in delivering quality education within the CBE framework. Unless teacher training programs are restructured to align with JSS requirements, the delivery of quality education will continue to be compromised. While secondary teachers can pursue a diploma in secondary education through TTCs, this option also comes with stringent entry criteria and specialization requirements, limiting accessibility and further contributing to the inadequacy of teacher preparation for JSS effectiveness.

1) Recruitment of Teachers

The teacher recruitment process in Kenya has recently faced sharp criticism, specifically regarding its capacity to respond to the needs of JSS education. This has been partly because JSS level is not classified with senior secondary where experienced teachers play supportive roles to new teachers.

TABLE III. EDUCATOR TRAINING REQUIREMENTS AND ENTRY BEHAVIORS

Educator's Level	Institution mandated for training	Entry Behavior	Qualification
Primary School Teacher	Teacher Training Colleges (TTCs)	Minimum grade is C (Plain)	Certificate in P1 or ECE Diploma ECE
Secondary School Teacher	Universities (Public and Private)	Minimum grade is C+ (Plus) Must have attained a minimum grade on the two teaching subjects selected for training	Bachelor's degree in education (teaching subjects)

TSC is responsible for hiring teachers in both primary and secondary schools, but many primary-trained teachers are not qualified to teach at JSS as described in the applicable criteria in TABLE III above.

Additionally, the hiring of JSS teachers depends on available budget funds from the government each financial year [22]. Since the recruitment process is based on budget constraints, it fails to meet the actual demand for adequately qualified teachers necessary for the successful implementation of the CBE.

The rapid rollout of the CBE has further increased due to a 100% transition policy from primary to secondary school, as stated in the Constitution of Kenya, which aims to ensure all children receive 12 years of basic education and universal access to education alignment [3]. The policy, therefore, demands that teachers be recruited to meet the transition requirements. However, the current hiring practices lead to staffing shortages and the assignment of teachers to subjects outside their expertise. Given the current budget limitations, it is likely that the TSC will continue to struggle to recruit enough qualified teachers for JSS. While the TSC aims to employ newly graduated teachers with Bachelor of Education, this selective recruitment does not address the immediate staffing needs, resulting in dissatisfaction among teachers and undermining instructional effectiveness.

2) Professional Development

Professional development initiatives for JSS teachers are currently inadequately structured to effectively address their specific needs. The TSC, in collaboration with the Ministry of Education, organizes professional development programs aimed at equipping teachers with the necessary skills for implementing the CBE. However, many workshops focus on procedural elements rather than developing subject-specific pedagogical content knowledge. Although JSS teachers participated in retooling workshops during the initial phases of CBE implementation, feedback indicates that the training lacked depth and relevance for those teaching unfamiliar subjects. A more targeted, content-specific, and sustained professional development approach is essential for effectively supporting teachers and enhancing instructional quality.

An overview of this literature review shows gaps in curriculum implementation that rise from factors related to suitable implementation of CBE, particularly JSS context. The factors that include teacher education, curriculum implementation strategies and supervision methods, professional development programs, and coordination among education entities can be related as illustrated in Fig. 1 for convenience in determining the gaps. The representation therefore is significant in analysis of critical gaps that arise from the stated factors.

In conclusion this literature review therefore shows that it is now evident that there are challenges for effective implementation and supervision of JSS education. This study, therefore, settled on finding the challenges and underlying issues that JSS teachers face while teaching subjects outside their specialization. The outcome will be vital to arrive at the recommendation to education policy developers and teachers and for effective implementation and supervision of CBE in JSS context.

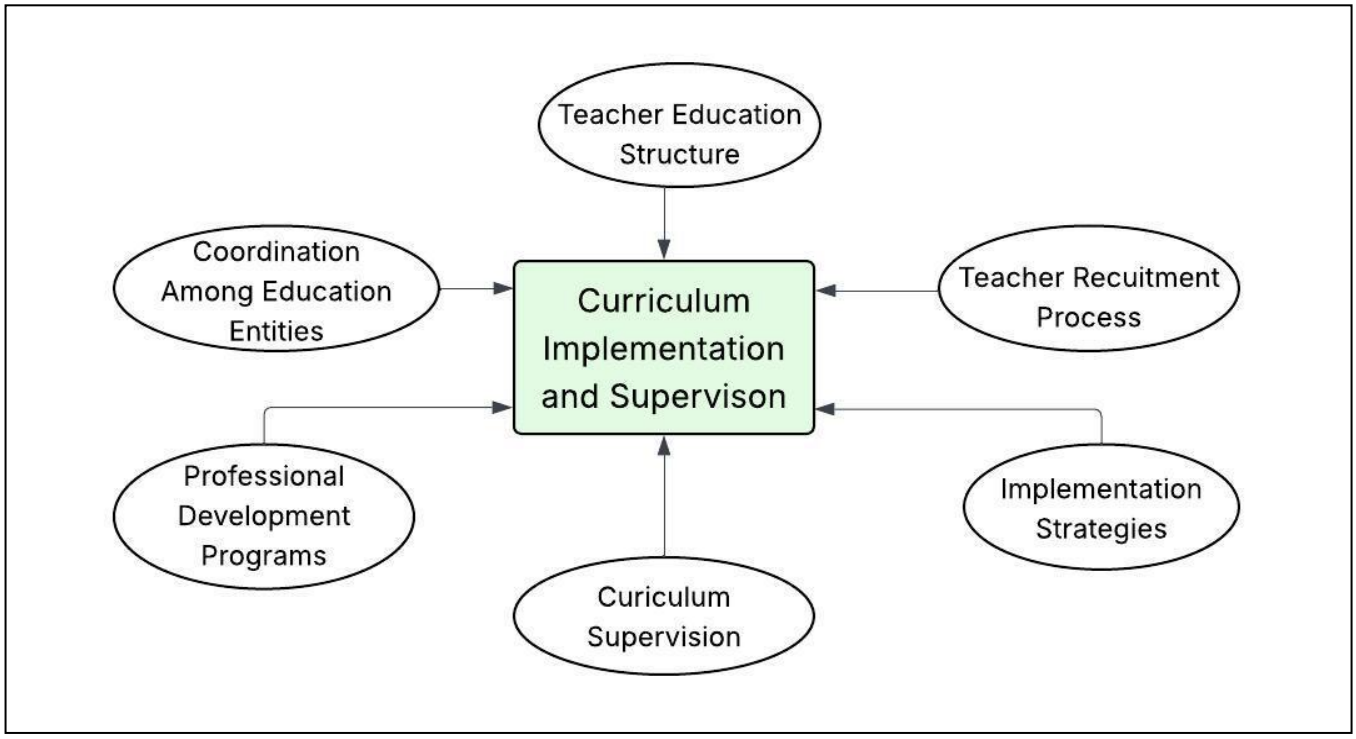

Fig. 1. *Factors that influence Curriculum Implementation and Supervision*

III. METHODOLOGY

The research methodology includes specific particulars on the research approach and design, the study location, ethical considerations, and limitations of the study.

A. Research Approach and Design

1) Research Approach

This research utilized a qualitative approach to gather varied opinions on the experiences notwithstanding the challenges faced by JSS teachers while teaching outside their areas of specialization. This method is particularly suited for the study as it facilitates the collection of diverse experiences, providing a rich and comprehensive understanding of the phenomenon.

2) Research Philosophy

Guided by interpretivism, this research acknowledges the existence of multiple subjective realities. According to [2], qualitative researchers explore phenomena in their authentic environments, interpreting the subjective meanings ascribed by participants. The Iceberg Model, Fig. 2, serves as a framework to uncover both visible and hidden issues

This philosophical stance emphasizes the importance of understanding both the visible challenges stemming from the structure of the JSS environment and teaching approach, and the deeper, underlying complexities faced by teachers that compromise teaching service delivery. The context, provided for crucial understanding of the complexities, underlying issues faced by teachers in the JSS setting that compromise the delivery of teaching services.

3) Research Strategy

To effectively answer the research question, a case study design was employed for involving three JSS. This strategy allows for an in-depth exploration of the challenges under investigation. As noted by [4], a case study enables researchers to immerse themselves in the context, uncovering hidden or unexpected patterns related to teachers' pedagogy. Therefore, the study settled on the JSS level only, and for the schools sampled, they were treated as separate cases. This design facilitated a comprehensive understanding of the intricacies involved in teaching outside areas of specialization.

4) Data Collection Methods

Data were collected through interviews, document analysis, and observation, following a consistent procedure for each case study. To ensure that no bias influenced the findings, secondary data sources were examined first. This included analyzing key records such as teacher qualification profiles and staff meeting minutes, ensuring the authenticity and reliability of the findings [19]. This preliminary data provided context and background information that informed the subsequent primary data collection. The primary data collection began with one-on-one semi-structured interviews (approximately lasting 40 minutes) and proceeded as described in Fig. 3 below.

This structured approach helped mitigate bias, as the insights gained from the headteacher informed the observations and provided a more comprehensive understanding of the teaching dynamics. Importantly, this data collection procedure was similarly applied in the other two schools, ensuring consistency across all sites. In summary, the order of data collection—beginning with secondary data, followed by the headteacher interview, teacher interviews, and concluding with classroom observations—ensured a well-rounded perspective while minimizing potential bias. The headteacher played a crucial role in providing administrative insights and contextualizing the challenges faced by teachers in the junior secondary school setting.

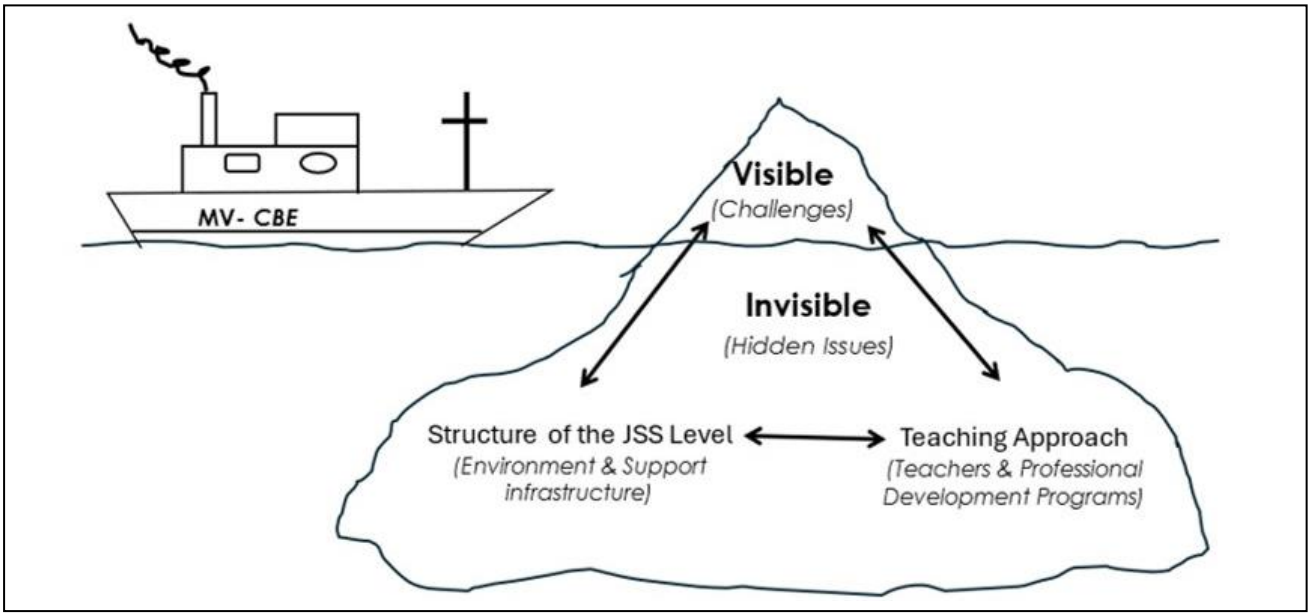

Fig. 2. *The Iceberg Model as applicable in this Study*

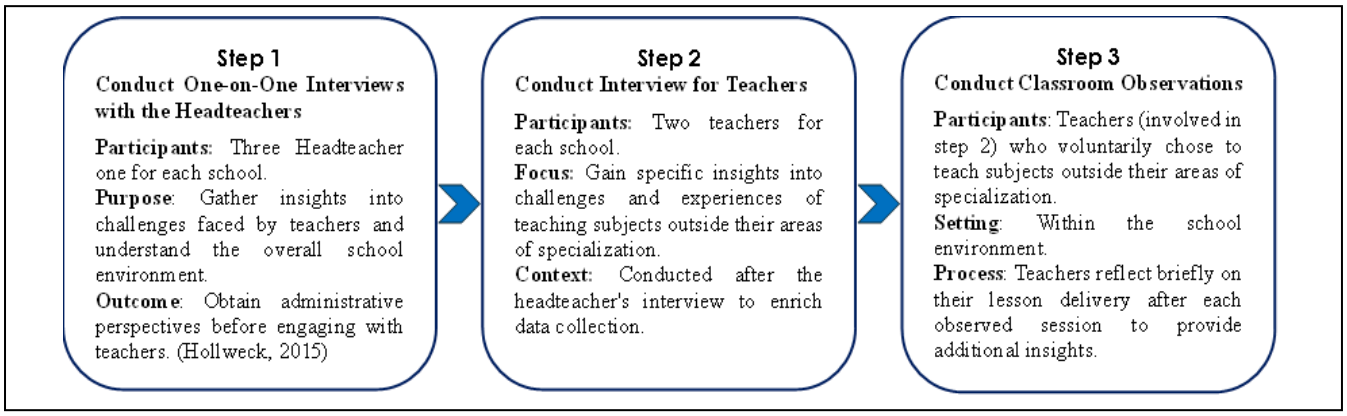

Fig. 3. *Steps involved in collection of primary data*

5) *Data Analysis*

Data were analyzed qualitatively through continuous transcription and integration of observations and document analyses. Transcriptions were coded using NVivo software, with themes emerging through an iterative process of comparison and refinement as illustrated in Fig. 4. The coding process identified recurring patterns in the data [7]. Document analysis and observations were integrated to cross-validate findings, enhancing reliability. This thematic analysis provided a thorough narrative, improving the validity, transferability, and dependability of the findings [12]. Triangulating data from multiple sources mitigated potential biases, ensuring robust and credible conclusions.

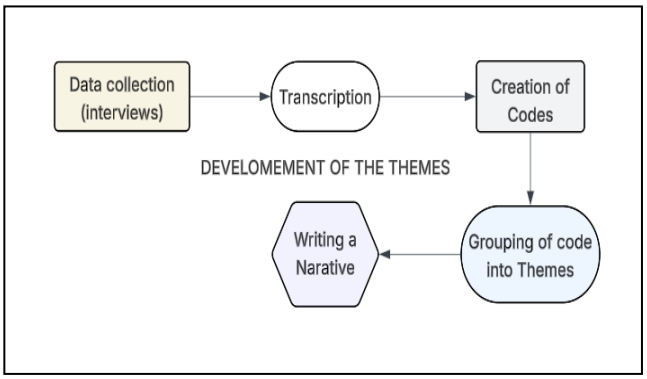

Fig. 4. *Cross-section of the Thematic Analysis process*

B. *Study Context and Participants*

Three mixed comprehensive day schools were selected from public junior schools, with pseudonyms, SCH. 1, SCH. 2, and SCH. 3, in the Chonyi sub-county, Kilifi County, Kenya. There are thirty-six (36) comprehensive day schools with JSS in the study area, but the three schools were purposively selected due to their rich data environments, and the prevalent issues of low educational levels and staffing shortages see TABLE IV. According to [25], staff shortfall impacts the availability of additional support for teachers and an ineffective student-teacher ratio.

For this study, nine participants were chosen from SCH. 1, SCH. 2, and SCH. 3. There was no inclusion criterion adopted for the headteachers because they were the heads of the schools selected. These headteachers, with pseudonyms HT 1, HT 2, and HT 3, were 2 males and 1 female for schools SCH. 1, SCH. 2, and SCH. 3, respectively. Similarly, for the JSS teachers, there was gender balance with 3 male and 3 female, see TABLE V. Meanwhile, teachers were assigned pseudonyms as follows: TR 01, TR 02, TR 03, TR 04, TR 05, and TR 06. The headteachers are mandated to oversee teachers and supervise CBE; therefore, it is necessary to understand their role in curriculum implementation. On the other hand, subjects outside their areas of specialization were crucial to finding out their challenges.

TABLE IV. JUNIOR SECONDARY SCHOOL ENROLMENT AND TEACHER STATISTICS

Junior Secondary	Enrolment	Number of teachers	Subject specializations/ Combination	Teacher-to-student ratio
SCH. 1	116	2	History/CRE Kiswahili/CRE	1:58
SCH. 2	158	2	History/CRE English/Literature	1:79
SCH. 3	124	2	History/CRE Geography/Math	1:62

TABLE V. PARTICIPANT DEMOGRAPHICS AND QUALIFICATIONS

Participant	Gender	Age Range	Highest Qualification	Teaching Experience	School	Subjects trained
HT 1	Male	50-60 yrs	Bachelor	31 yrs	SCH. 1	General
HT 2	Male	50-60 yrs	Certificate	35 yrs	SCH. 2	General
HT 3	Female	50-60 yrs	Diploma	34 yrs	SCH. 3	General
TR 01	Female	20-30 yrs	Bachelor	1 yr	SCH. 1	History/CRE
TR 02	Female	20-30 yrs	Bachelor	1 yr	SCH. 1	History/CRE
TR 03	Male	20-30 yrs	Bachelor	1 yr	SCH. 2	Geography/Math
TR 04	Male	20-30 yrs	Bachelor	1 yr	SCH. 2	English/ literature
TR 05	Male	20-30 yrs	Bachelor	1 yr	SCH. 3	History/CRE
TR 06	Female	20-30 yrs	Bachelor	1 yr	SCH. 3	Geography/Math

Purposive sampling was employed to ensure that participants with relevant experiences (teaching subjects outside their specialization and implementing the CBE were included in the study [7]. This method is effective in qualitative research, as it allows researchers to focus on individuals who can provide the most insightful information regarding the research question. This mix of participants is crucial for understanding the challenges faced with the implementation of the CBE. It is necessary to acknowledge that while purposive sampling enhances the relevance of the data collected, it may limit the generalizability of the findings to other contexts. However, the depth of understanding gained is invaluable for informing educational practices in similar settings.

C. *Ethical Considerations*

The researcher sought clearance from the Aga Khan University's Ethics Review Committee, ensuring adherence to ethical standards. Subsequently, clearance was obtained from the National Commission for Science, Technology, and Innovation (NACOSTI) in Kenya, reinforcing ethical compliance at the national level. Permission was also sought from the County Commissioner, who informed the County Director of Education, facilitating clearance to conduct the research in Kilifi schools. Consent was obtained from school headteachers, respecting local authority and institutional protocols. Finally, participants were asked for consent, ensuring voluntary participation and informed decision-making. Throughout the process, ethical considerations outlined by [1] and [20] were strictly observed, including ensuring participant safety, privacy during interviews, and respect for autonomy. To protect participants' identities, pseudonyms were used in all transcripts and reports.

IV. FINDINGS AND DISCUSSION

This section presents the findings of the study, focusing on the methodology described in section three above. A qualitative approach was employed, utilizing interviews, classroom observations, and document analysis across three JSS: SCH. 1, SCH. 2, and SCH. 3. The study aimed to identify key challenges experienced by teachers in JSS when teaching subjects outside their areas of specialization. Data was collected for nine participants (n=9), including three headteachers and six teachers, providing a comprehensive view of the challenges encountered in implementing CBE in their respective schools.

A. *Data Collection Instruments*

1) Document Analysis

Relevant documents, such as curriculum guides and teacher training records, were analyzed to understand the qualifications and subject allocations of the teachers. The objective of this analysis was specifically for the purpose of highlighting the discrepancies between teachers' trained subjects and their assigned or current teaching subjects.

2) Interview

The headteachers and two teachers from each school were interviewed separately. The interviews were structured to explore the challenges JSS teachers face when assigned to teach subjects outside their specialization. Each interview script was subjected to thematic analysis to identify recurring subthemes related to teaching difficulties and professional development needs. The semi-structured interview guide gathered insights and opinions that ranged from teaching planning, instructional practice, including classroom management, assessment, teaching efficiency, and professional development experiences.

TABLE VI. LESSON ASSESSMENT CRITERIA AND EVALUATION OUTCOMES

Lesson Assessment Area/Criteria	Core Section	Objective Score Criteria (Rated 1-5)	Outcome of Assessment
Learning Objectives	Clear, measurable objectives aligned with CBE goals	1 = unclear, 5 = very clear	Assess alignment with student understanding
Content Knowledge	Depth of subject matter knowledge demonstrated	1 = minimal, 5 = thorough	Evaluate the effectiveness of content delivery
Engagement Strategies	Use of interactive and student-centered methods	1 = low engagement, 5 = high engagement	Analyze student participation and interaction
Assessment Methods	Appropriateness of formative and summative assessments	1 = ineffective, 5 = highly effective	Determine if assessments measure learning outcomes
Adaptation to Student Needs	Ability to differentiate instruction based on student levels	1 = no adaptation, 5 = highly adaptive	Review responsiveness to diverse learning needs

3) Classroom Observations

Observations were conducted for the participants in each school and lasted for one lesson (usually 40 minutes) in each school to gain insights into the teaching practices and classroom dynamics. The participants were requested in advance to plan their lesson before the actual lesson observation. These observations allowed the researcher to witness firsthand the challenges teachers encountered in real-time, particularly in managing subjects for which they had limited training. During these observations, specific attention was given to lesson planning and the execution of lessons. The core components of lesson planning for CBE teachers were evaluated to assess the alignment between planned objectives and actual lesson delivery. TABLE VI above outlines the criteria used to evaluate lesson planning and delivery, focusing on key components essential for effective instruction under the CBE framework.

The objectives and scoring criteria allowed for a comprehensive analysis of the observed lessons, facilitating insights into the overall effectiveness of JSS teachers. It is expected that this analysis is essential for developing targeted professional development programs that address the specific needs of teachers, ultimately enhancing the quality of education within the CBE framework. After observation, the teachers shared their reflective remarks based on their opinion about the lesson, specifically to enable the researcher to gather additional opinions about the changes and underlying or hidden issues.

B. Teachers assigned to teach outside their subjects of specialization

The pervasive issue of Junior Secondary School teachers teaching subjects outside their specialization is a significant concern. For example, as indicated in the participants' teaching portfolio, TR 01, trained in History and CRE, was teaching Mathematics, Business Studies, and Integrated Science, illustrating the mismatch between training and teaching assignments, TABLE VII below. The challenges faced by Junior Secondary School (JSS) teachers are significantly exacerbated by their assignment to teach subjects outside their areas of specialization. Evidence from the participants' teaching portfolio illustrates that many teachers, such as TR 01, trained in History and CRE, are teaching subjects like Mathematics, Business Studies, and Integrated Science. Further, participant TR 03, trained in Geography and Mathematics, yet assigned to teach Mathematics, Life Skills, Physical Education, Pre-Technical Studies, and Kiswahili, see TABLE VII below.

The mismatch between teachers' training and their teaching assignments leads to significant challenges in delivering effective instruction, particularly under the demands of the CBE. The diversity in subject allocation, as seen in the assignments of TR 03, who is trained in Geography and Mathematics but teaches a wide range of subjects, exemplifies the pressures

teachers face. This finding was echoed in the insights from one TR 03, who said.

> *Excerpt 1* "It is challenging, challenging in such a way that some of these subjects I have never even stepped into a class, or I have never learned those subjects in any area before. I have just come to meet them recently, because of junior secondary." (TR 03, SCH. 2, 26/09/2023)

TABLE VII. PARTICIPANT QUALIFICATION AND SUBJECT ASSIGNMENT IN JUNIOR SECONDARY SCHOOLS

Participant	School	Subjects Trained	Subjects assigned to teach in JSS
HT 1	SCH. 1	General	N/A
HT 2	SCH. 2	General	N/A
HT 3	SCH. 3	General	N/A
TR 01	SCH. 1	History/CRE	Mathematics, pre-technical studies, CRE, integrated science.
TR 02	SCH. 1	History/CRE	English, Social studies, Agriculture, pre-technical studies
TR 03	SCH. 2	Geography/Mathematics	Mathematics, life skills, physical education, pre-technical studies, and Kiswahili
TR 04	SCH. 2	English/ literature	English, pre-technical studies, and integrated science
TR 05	SCH. 3	History/CRE	Mathematics, pre-technical studies, Kiswahili, CRE, life skills
TR 06	SCH. 3	Geography/Mathematics	Mathematics, creative arts & sports, integrated science, agriculture

Source: Teachers' Qualification profile, Staff meeting minutes

This situation reflects a broader systemic issue within the educational framework, where teachers are often unprepared for their assigned roles. Given these circumstances, without addressing the alignment between teacher training and subject assignments, the effectiveness of JSS education under the CBE framework is at risk. This finding aligns with research by [17] that emphasizes how assigning teachers to teach outside their areas of specialization compromises instructional quality and student outcomes. Without proper alignment between teacher training and subject assignments, educators often face challenges that hinder effective curriculum delivery and learner engagement. As highlighted by [11], Out-of-field teaching not only affects teaching quality but also undermines teacher morale and the overall effectiveness of educational reforms.

While headteachers do not teach at the JSS level due to administrative responsibilities, their own training (as products of TTCs) often lacks subject specialization and does not meet the criteria described in Table 2.3 (Section 2.3.1). This further complicates the support available to teachers facing these challenges. These findings highlight the complexities faced by JSS teachers under the CBE framework, emphasizing the need for a more coherent strategy in teacher deployment and training to enhance educational outcomes. Each step of the research process has contributed to a deeper understanding of these challenges, reinforcing the necessity for systemic change.

Analysis steps	Data Collection	Creation of Initial Codes	Collation of Codes with Supporting Data (Excerpts)	Group Codes into themes	Write the Narrative
Rationale for each step	Conduct interviews with teachers and headteachers. The reflection written by the observed teachers	Identify key phrases and concepts related to teaching challenges and professional development.	Gather specific excerpts from interviews that illustrate the identified codes.	Analyze the codes to form broader themes around teaching challenges and professional development needs based on insights.	Develop a comprehensive narrative that integrates findings and themes, highlighting the experiences of JSS teachers.

TABLE VIII. ANALYSIS STEPS APPLIED FOR DATA INTERPRETATION

C. Teaching Challenges

The teaching difficulties experienced by JSS teachers are substantial. Participants (head teachers and two JSS teachers from each school) were interviewed separately, and lesson reflections were gathered from teachers. Each interview script and reflection insights obtained were subjected to thematic analysis, to respond to the question 'what challenges do JSS teachers face when teaching subjects outside their specialization?' as shown TABLE VIII above.

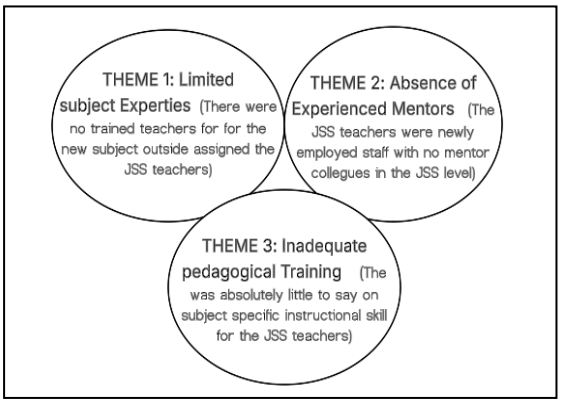

Fig. 5. *Emergent Subthemes Associated with Teaching Challenge/Difficult as Analysis from Interviews*

Fig. 5 illustrates the themes related to teaching difficulties that were generated from the analysis of the excerpts and reflection as described in the research process TABLE VIII above.

1) Limited Subject Expertise to Support Subjects

Teachers face significant challenges due to limited subject expertise when assigned to teach unfamiliar subjects. Evidence from the study indicates that, among other teachers, TR 02 struggles with subjects like pre-technical studies due to insufficient expertise in mathematics. TR 03 also experiences overwhelming challenges with completely new subjects.

This aligns with [16], who argue that effective teaching is heavily dependent on a teacher's deep content knowledge. The absence of this expertise leads to superficial content delivery and diminishes student understanding. Teachers like TR 06 expressed embarrassment (TABLE IX) when unable to answer student questions, which not only affects self-esteem but also contributes to decreased job satisfaction. Such experiences can lead teachers to question their career choices.

TABLE IX. INSIGHTS FROM PARTICIPANTS ON TEACHING CHALLENGES AND CONTENT MASTERY

Participant	Insight/Quote from Interviewee	Source of Data
TR 02	"Explaining some concepts becomes very difficult... I do not understand the concepts, and yet I have to teach. "	Interview
TR 02	I recognized that some of my content knowledge was strong, but I struggled with adapting to student needs.	Lesson Reflection
TR 03	"It becomes very challenging... some of these subjects I have never even stepped into a class. "	Interview
TR 06	"I sometimes feel embarrassed when a student asks me a question and I don't have the answer. "	Interview
HT 1	"Our teachers are being pushed to teach whatever subject is available, whether they understand it or not. The problem is not laziness—it's lack of training. They are learning with the learners, and unfortunately, the students are the ones who suffer."	Interview
TR 01	"I realized I rely too much on textbook definitions. I avoid questions from students, and that's not good teaching. It's survival."	Reflection
TR 04	"I was handed Pre-Technical Studies and told to figure it out. The first time I opened the textbook, I panicked. I had to call a friend from another school just to understand the topic. Even now, I mostly depend on YouTube."	Interview

HT 2	"The deployment policy assumes one teacher can teach anything. It doesn't work like that. Teaching without content mastery results in poor delivery and low morale. We are seeing it play out in JSS every day."	Interview

TABLE X. INSIGHTS ON THE NEED FOR MENTORSHIP AND SUPPORT IN TEACHING

Participant	Insight/Quote from Interviewee	Source of Data
TR 03	"I have to sit down and read because I don't have somebody to consult."	Interview
TR 06	"If we had teachers who had been teaching these subjects for a long time, they would have helped us understand."	Interview
TR 01	"There are times I avoid certain topics in integrated science because I don't know whom to turn to for help. Even the primary teachers say they've never taught this content before."	Interview
TR 04	I realized how much I need someone to consult for such practical topics."	Reflection
HT 2	"Our teachers are forced to learn as they teach. There's no one with enough experience in most subjects to support the others, and this affects lesson delivery."	Interview
HT 3	"I've noticed teachers leave some topics out, especially in creative arts and sports. If we had mentors, even just one per subject cluster, it would greatly help them."	Interview

The insights from school leaders further reinforce this issue, with HT 1 highlighting that teachers are often pushed into roles without adequate training, resulting in a cycle where both educators and students suffer. Without addressing these gaps in subject expertise, the effectiveness of instruction under the CBE is compromised. This situation emphasizes the need for targeted professional development and mentoring to support teachers in navigating unfamiliar subjects effectively.

2) Absence of Experienced Teachers (Mentors)

The lack of mentorship significantly hampers the effectiveness of JSS teachers. Many teachers reported feeling unsupported due to the absence of experienced mentors who could guide them through unfamiliar subjects. For instance, teachers at SCH. 1 specializing in History and CRE noted difficulties in consulting with colleagues about subjects like pre-technical studies.

Research by [13] supports these concerns, indicating that teachers without adequate mentorship face significant challenges in delivering effective education. The insights from teachers like TR 03 and TR 06 illustrate a common frustration (TABLE X): the lack of experienced colleagues to turn to for support. This absence not only affects their ability to teach unfamiliar subjects but also contributes to feelings of isolation and disconnection. School leaders also echoed this sentiment. HT 2 noted that teachers are often forced to learn as they teach, which can compromise lesson delivery. HT 3 observed that the lack of mentorship leads to gaps in the curriculum, with some topics being omitted entirely, particularly in creative arts and sports.

Establishing mentorship programs could enhance teaching and learning experiences by facilitating regular meetings, classroom observations, and collaborative planning sessions. Such initiatives foster a supportive environment conducive to professional growth. Without mentorship, teachers are likely to continue feeling isolated and unsupported in their roles, ultimately impacting student learning outcomes. Addressing this gap is crucial for improving instructional quality in JSS settings.

3) Inadequate Pedagogical Training for Teaching Outside Specialization

Inadequate pedagogical training is a significant barrier to effective teaching in unfamiliar subjects. While some teachers possess content knowledge, they often lack the pedagogical content knowledge (PCK) necessary for effective instruction. For instance, TR 01 expressed difficulty in delivering mathematics content despite her strong background in the subject.

These findings echo the concerns raised by [13], who indicates that teachers without adequate pedagogical training face challenges in delivering effective education. The insights from teachers like TR 02 and TR 01 illustrate a common frustration: the lack

of training to make lessons engaging, leading to shallow teaching practices TABLE XI.

Observations of lesson delivery further emphasize these issues, as summarized in TABLE XII. Each row corresponds to a lesson planning implementation criterion, while the columns display the scores for each teacher (TR 01 to TR 06) based on their observed performance. Scores are categorized as either "Met Expectations" (4-5) or "Did Not Meet Expectations" (1-3).

TABLE XI. INSIGHTS ON TEACHING EFFECTIVENESS AND CHALLENGES IN SUBJECT DELIVERY

Participant	Insight/Quote from Interviewee	Source of Data
TR 02	"I just teach them very shallow... Very little learning is taking place here."	Interview
TR 04	"In practice, there is a problem since here we are supposed to improvise a lot of apparatus."	Interview
TR 05	“I realized that even though I understood the concept, I could not guide learners well in the experiment because I lacked the training on how to organize practical sessions."	Reflection
TR 01	"I loved mathematics and scored well in it, but teaching it is a different story. I don’t know how to make it engaging for learners the way a trained math teacher would."	Reflection
HT 1	“They prepare lesson plans, but the delivery lacks structure because they were not trained in how to teach these new subjects."	Interview
HT 3	“Creative Arts is a real challenge. Most teachers here have never taught it before and were not trained for it, so they struggle to even structure a basic lesson.”	Interview

The overall results from the classroom observations indicate a mixed performance among JSS teachers regarding their lesson planning and delivery. While several criteria, such as Learning Objectives and Content Knowledge, met expectations (4-5), significant areas for improvement were identified in Engagement Strategies, Assessment Methods, and Adaptation to Student Needs. The total scores reveal that although the teachers are demonstrating adequate performance in certain aspects, the presence of "Did Not Meet" remarks in critical areas suggests that targeted professional development is necessary.

TABLE XII. LESSON ASSESSMENT SCORES AND OBSERVATIONS

Lesson Assessment Area/Criteria	TR 01	TR 02	TR 03	TR 04	TR 05	TR 06	Total Score	Remarks
Learning Objectives	4	3	5	3	4	2	21 out of 30	Met Expectations
Content Knowledge	3	4	5	2	3	4	21 out of 30	Met Expectations
Engagement Strategies	2	3	4	3	5	2	19 out of 30	Did Not Meet
Assessment Methods	3	2	4	3	4	3	19 out of 30	Did Not Meet
Adaptation to Student Needs	2	3	5	2	4	3	19 out of 30	Did Not Meet
Total Score	14	15	23	13	20	14	105 / 180	Did Not Meet

Percent (%)	56	60	92	52	80	56	58.33	
Subject Observed*	MAT	AGR	PTS	INS	KIS	CA		

** MAT=Mathematics, AGR=Agriculture, PTS= Pre-Technical Studies, INS= integrated Science, KIS=Kiswahili, CA=Creative arts and sports.*

Enhancing engagement techniques and assessment strategies, as well as improving adaptation to diverse student needs, will be essential for fostering a more effective learning environment. An effort that will amicably address these gaps will enable teachers to ultimately get support in delivering high-quality instruction aligned with the Competency-Based Curriculum framework. Without this targeted approach, teachers remain ill-equipped to tackle the instructional challenges they encounter in the classroom.

D. Professional Development Needs

The following 2 themes related to professional development were generated from the analysis of the excerpts from participants in interview transcripts.

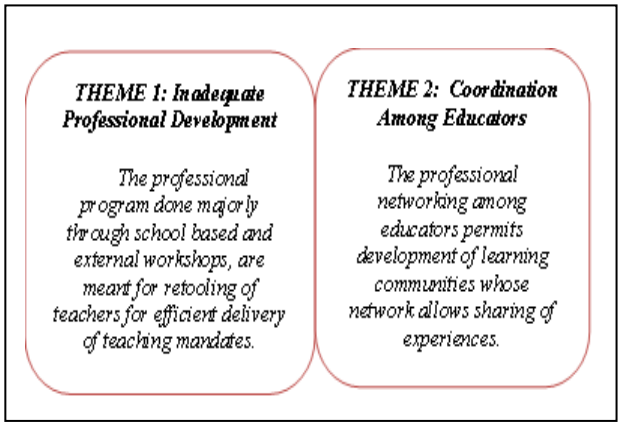

Fig. 6. *Emergent Subthemes Associated with Professional Development as Analysis from Interviews*

E. Professional development programs

Professional development programs for JSS teachers are inadequate in equipping them with the necessary skills to effectively teach unfamiliar subjects. The findings indicate that many teachers feel unprepared due to a lack of targeted training. For instance, TR 02 noted that the training did not cover the specific content of the subjects she was assigned to teach. Similarly, TR 02 expressed that the workshops primarily focused on procedural elements, such as lesson planning see TABLE XIII below. This lack of focus on content knowledge leads to teachers feeling underprepared, which ultimately affects their teaching effectiveness.

Many professional development initiatives are ineffective in supporting changes in teachers' practices and student learning. Research indicates that professional development programs often prioritize procedural knowledge over subject-specific content [26]. This is supported by teachers' sentiments, as captured in TABLE XIII, which highlights a common theme of dissatisfaction with the focus of the training. TR 03's statement, "We only revised the lesson plan format, which I already knew," exemplifies the issue of generic skills being emphasized rather than targeted content knowledge. This leads to teachers feeling ill-equipped to handle unfamiliar subjects [6]. The Learning Policy Institute defines effective teacher professional development as "structured professional learning that results in changes in teacher practices and improvements in student learning outcomes" [8]. The current programs do not meet this definition, indicating a need for more relevant and content-focused training. Without targeted professional development programs addressing specific content areas, teachers will likely continue to struggle with effective instruction. [5] highlight that teachers who do not engage in continuous learning and development may fall behind and feel less confident in their teaching abilities, underscoring the necessity for improved professional development initiatives.

1) Coordination Among Educators

Effective coordination among educators is essential for enhancing professional development and teaching effectiveness. The findings reveal that many teachers feel isolated, especially when lacking colleagues with expertise in their assigned subjects, as illustrated in TABLE XIV below. This isolation limits opportunities for collaboration and sharing best practices. Establishing structured systems for collaborations, such as regular meetings and peer learning groups, would allow teachers to discuss challenges and develop strategies together, fostering a supportive environment.

TABLE XIII. INSIGHTS ON INADEQUATE TRAINING AND PROFESSIONAL DEVELOPMENT

Participant	Insight/Quote from Interviewee	Source of Data
TR 02	"I have been trained, but not specifically on the content of subjects, not trained to teach."	Interview
TR 06	"The training... was specifically to do with how to prepare lesson plans... which left teachers underprepared."	Interview

TR 03	"I expected to be shown how to break down unfamiliar topics. Instead, we only revised the lesson plan format, which I already knew."	Interview
TR 05	"We were trained in CBE implementation, but nothing touched on how to handle subjects we never studied in college."	Interview

TABLE XIV. INSIGHTS ON THE NEED FOR COLLABORATION AND SUPPORT AMONG TEACHERS

Participant	Insight/Quote from Interviewee	Source of Data
TR 02	"Sometimes I feel like I'm the only one struggling. If we had sessions to talk as teachers, it would make a difference."	Interview
TR 06	"We rarely meet to share what is working in class. Everyone is doing trial and error on their own."	Interview
HT 1	"If we could create subject panels in our zone, teachers would support each other better and reduce the burden they feel."	Interview
TR 03	I feel I need help in coming up with examples for learners. If we had a subject group, it would be easier to plan for lessons.	Reflection

Improved coordination among educators is essential for enhancing professional growth and teaching effectiveness. The sentiments expressed by teachers, such as TR 02's feeling of isolation, highlight a critical gap in the current professional development landscape. TR 06's observation that "everyone is doing trial and error on their own" underscores the lack of structured opportunities for collaboration, which can hinder effective teaching practices. This isolation can lead to a fragmented approach to instruction, where teachers miss out on valuable insights and strategies that could enhance their effectiveness. Creating structured systems for collaboration, such as regular meetings and peer learning groups, would allow teachers to discuss challenges and develop strategies together. HT 1's suggestion to establish subject panels reflects an understanding of the potential benefits of collective support among educators. Research supports the idea that collaborative professional development leads to improved instructional practices and student learning outcomes [13]. Without implementing effective coordination mechanisms, the professional development needs of JSS teachers will remain unmet, undermining their effectiveness in the classroom. Addressing this issue is crucial for creating a more cohesive teaching community that can better serve the diverse needs of students, thereby enhancing overall educational outcomes.

F. Summary of the Key Themes

The study identified teaching difficulties and professional development needs as primary themes related to teaching. The five themes discussed in this study were categorized based on feedback from both teachers and school leaders. The results, as shown in TABLE XV below, reflect the frequency with which each theme was mentioned by participants, along with the total counts and corresponding percentages.

Generally, JSS teachers face significant challenges due to limited subject expertise, inadequate mentorship, and insufficient pedagogical training, which adversely affect educational quality.

TABLE XV. OVERVIEW OF TEACHING CHALLENGES AND PROFESSIONAL DEVELOPMENT NEEDS

Category	Themes Generated	Mentioned by JSS Teachers	Mentioned by SCH. Leaders	Total Mentioned	Percentage (%)
Teaching Difficulties	Limited Subject Expertise	6	2	8 out of 9	88.9
	Absence of Experienced Mentors	4	2	6 out of 9	66.7
	Inadequate Pedagogical Training for Teaching Outside Specialization	4	2	6 out of 9	66.7
Professional Development Needs	Inadequate professional development Programs	4	0	4 out of 9	44.4
	Coordination Among Educators	3	1	4 out of 9	44.4

The study identified Limited Subject Expertise as a prominent issue, mentioned by 88.9% of participants. Many teachers are required to instruct in subjects outside their training, which directly impacts their instructional effectiveness and student engagement [24]. Additionally, the Absence of Experienced Mentors was noted by 66.7% of respondents, highlighting the difficulties faced by educators transitioning from primary to secondary education, where teaching methods and content differ significantly. The lack of mentorship creates a vacuum for teachers, preventing them from navigating unfamiliar curricula effectively [15]. Furthermore, Inadequate Pedagogical Training for Teaching Outside Specialization was also emphasized (66.7%), as current training programs fail to prepare teachers for the complexities of the Competency-Based Curriculum, which requires a nuanced understanding of diverse pedagogical strategies [10].

Research highlights the importance of in-depth content knowledge and effective mentorship for teacher efficacy. Without these elements, educators are likely to deliver less engaging and effective lessons, further impacting student learning outcomes [9]. While themes such as Inadequate Professional Development Programs and Coordination Among Educators were mentioned less frequently (44.4%), their lower emphasis indicates that teachers prioritize subject knowledge and mentorship as more immediate barriers to effective teaching. Although some may argue that existing professional development programs could address these issues, the findings suggest that such programs often focus on procedural knowledge rather than targeted content-specific training, thus failing to meet the immediate needs of teachers. Addressing these identified challenges is crucial for creating a supportive environment that empowers teachers. By enhancing subject expertise, fostering mentorship, and improving pedagogical training, educational stakeholders can significantly improve the quality of education in junior secondary schools.

G. Relationship of the Processed Themes to the Iceberg Model

This study was anchored in the philosophy of interpretivism, particularly the Iceberg Model. The research adopts a cause-effect paradigm, reevaluating the methodology and findings, and then summarizing the challenges based on the generated themes and their implications. Concerning the Iceberg Model, the visible challenges faced by teachers are evident; the hidden issues that emerge from this study cannot be overlooked. TABLE XVI summarizes the challenges identified, represented as the "tip of the iceberg," while the deeper implications or hidden issues reflect the "submerged portion" that significantly affects teachers' experiences and effectiveness.

TABLE XVI. CHALLENGES AND IMPLICATIONS IN TEACHING OUTSIDE SPECIALIZATION, ICEBERG MODEL APPROACH

Themes Generated	Challenges /Visible Intricates (Tip of the Iceberg)	Implications/Hidden Issues (Submerged Portion of the Iceberg)
Limited Subject Expertise	Limited understanding of key concepts in the subject assigned to teach.	Decreased self-esteem and confidence in teaching abilities. Feelings of inadequacy and regret about career choice.
Absence of Experienced Mentors	Lack of mentorship from seasoned educators since the level is new in the curriculum	Increased isolation and lack of collaboration among teachers Reduced professional growth and development opportunities.
Inadequate Pedagogical Training for Non-Specialized Subjects	Insufficient training for teaching outside specialization.	Training programs fail to address teachers' actual content needs. Long-term impact on teacher retention and job satisfaction.
Insufficient Professional Development Programs	Lack of relevant professional development opportunities.	Frustration leading to superficial teaching methods Low student engagement and understanding due to ineffective lessons.
Lack of Coordination Among Educators	Limited collaboration among teachers.	Increased feelings of isolation. Missed opportunities for collective professional growth.

V. Conclusion

This study evaluated the challenges faced by junior secondary school teachers in instructing subjects outside their areas of specialization, employing interpretivism as its philosophical framework. Through qualitative methods, the research unearthed both the visible challenges and underlying issues that contribute to these difficulties. The findings addressed the problem statement as promised, revealing critical factors such as limited subject expertise, the absence of mentorship, inadequate pedagogical training, insufficient professional development opportunities, and a lack of collaboration among educators. Based on these insights, the study recommends that policy developers and educational stakeholders prioritize the implementation of supportive measures that promote fruitful adaptation for teachers. By fostering mentorship, enhancing training programs, and encouraging collaboration, the educational landscape can be improved, ultimately benefiting both teachers and students in their learning journeys.

A. Lessons Learned from the Study

This study found the following key takeaways.

1. Teachers need a strong grasp of the subjects they teach. Continuous professional development is essential to enhance their subject expertise.
2. Experienced mentors play a crucial role in supporting novice teachers, especially when adapting to new curricula. Establishing mentorship programs can foster collaboration and guidance.
3. Professional development programs must be designed to address the specific needs of teachers, particularly for those teaching outside their specialization.
4. Encouraging collaboration among educators can combat feelings of isolation and promote the sharing of resources and strategies, enhancing overall teaching effectiveness.
5. Policy developers must recognize and address the systemic challenges teachers face, ensuring that support structures are in place to facilitate effective teaching and learning.
6. The educational environment is dynamic; ongoing assessment and adaptation of teaching strategies and professional development programs are necessary to meet evolving educational needs.

B. Recommendations for Educational Policy Developers

The suggested recommendations for educational policy developers are aimed at enhancing the implementation of the curriculum and supporting teachers in junior secondary schools. These recommendations are categorized by the relevant entities involved in education, including the Ministry of Education, KICD, and TSC.

1) Ministry of Education (MoE)

- Establish structured mentorship programs connecting inexperienced teachers with experienced subject experts to enhance instructional quality.
- Allocate resources for instructional materials and digital content to support teachers in new learning areas.

2) Kenya Institute of Curriculum Development (KICD)

- Shift professional development initiatives from general training to content-specific pedagogical training, integrating subject content and teaching strategies tailored to the CBE.
- Ensure regular evaluation of these programs for effectiveness in addressing classroom needs.

3) Teachers Service Commission (TSC)

- Review teacher deployment criteria to align qualifications with subject assignments, considering micro-specialization training for primary-trained teachers transitioning to junior secondary school roles.
- Promote the creation of school-based professional learning communities (PLCs) to foster collaboration and knowledge-sharing among teachers.

VI. Limitations of the Study

The study was conducted with a limited number of participants, which may not fully represent the broader population of junior secondary school teachers. This could affect the generalizability of the findings. While qualitative methods provide in-depth insights, they are subjective and may introduce bias. The findings are based on personal experiences and perceptions, which may vary widely among different educators. The challenges identified may be unique to the specific educational context or region studied, limiting the applicability of the results to other settings or educational systems. The study was conducted within a specific timeframe, which may have limited the scope of data collection and analysis. Longer studies might yield more comprehensive insights. The study did not follow participants over time, which means it could not capture changes in challenges, or the effectiveness of interventions implemented.

VII. Future Study Focus

Future research should explore the long-term effects of teaching outside specialization on teacher retention and student outcomes. Additionally, studies could assess the effectiveness of different professional development models and mentorship programs in enhancing teachers' skills.

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