




Teacher Preparedness and Implementation of the National Pre-Tertiary Education Curriculum Framework in Ghana

Simon Ntumi


Department of Educational Foundations

University of Education, Winneba, Ghana

 <https://orcid.org/0000-0001-7874-4454>

Sheilla Agbenyo

Bia Lamplighter College of Education, Sefwi Debsio, Ghana

 <https://orcid.org/0000-0003-0307-7348>


Alex Tetteh

Department of Educational Foundations

University of Education, Winneba, Ghana

Clarke Ebow Yalley

University of Education, Winneba, Ghana


 <https://orcid.org/0000-0002-6462-1194>

Abraham Yeboah

Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development, Mampong, Ghana

Daniel Gyapong Nimo, PhD

Berekum College of Education, Berekum, Ghana

 <https://orcid.org/0000-0001-8704-5153>

Contact: sntumi@uew.edu.gh

Abstract

Curriculum reform is a significant approach to prepare schools to be effective in meeting contemporary societal needs and imperatives. Several countries around the world, therefore, engage in curriculum reform to

Acknowledgment: The authors would like to thank their anonymous reviewers for their academic stimulation and constructive criticism throughout the development of the paper. We are grateful to our colleague lecturers for their input to fine-tune the paper.

Conflict of Interest: We confirm that there are no known conflicts of interest associated with this publication, and there has been no significant financial support for this work that could have influenced its outcome.

Funding: No funding was received for this study.

Authors contributions: Simon Ntumi conceived the study and performed the analysis. Sheilla Agbenyo wrote the introduction. Alex Tetteh dealt with the methodology. Clarke Ebow Yalley discussed the paper by placing it through an empirical lens. Abraham Yeboah reviewed the literature. Daniel Gyapong Nimo, PhD, wrote the conclusions and recommendations. All authors reviewed multiple drafts and proposed additions, modifications, and changes. All read and approved the final manuscript.

enable schools to prepare children with the knowledge, skills, and competencies needed in the present and future society, but implementing change following a curriculum reform is often complex. In our study, we sought to understand how teachers respond to curriculum implementation following the introduction of the national pre-tertiary education curriculum framework (NPECF) in Ghana. We employed a concurrent, nested, mixed-design strategy (embedded design) using a sample of 352 randomly selected basic school teachers from six regions in Ghana. Data from surveys and interviews reveal that teachers consider the NPECF as relevant for Ghanaian educational fortunes; however, a myriad of classroom challenges come with the implementation process. We concluded that these challenges could affect the realization of the relevance of the NPECF if schools and teachers are not well resourced. We call the attention of duty bearers to the need to provide the necessary resources for the seamless implementation of the NPECF in Ghana. For policy adjustment, we recommended and proposed improvisation as an approach for teachers to utilize and exert autonomy and independence in the design and delivery of classroom instruction to sustain the NPECF in primary schools. Again, our study calls for coordination and collaboration among parents, civic society, and individuals across political divides to remain united to provide a solid foundation for education in Ghana.

Keywords: *pre-tertiary curriculum, educational reform, teacher practices*

Date Submitted: March 14, 2022 | **Date Published:** June 27, 2023

Recommended Citation

Ntumi, S., Agbenyo, S., Tetteh, A., Ebow Yalley, C., Yeboah, A. & Gyapong Nimo D., (2023). Teacher preparedness and implementation of the national pre-tertiary education curriculum framework in Ghana. *Journal of Educational Research and Practice*, 13, 251–269. <https://doi.org/10.5590/JERAP.2023.13.1.18>

Introduction

Curriculum as a concept is broadly conceived as a whole model document that includes the organization of the educational environment. This could include decisions taken by teachers regarding the learning process, or the opinions of society, families, and external authorities (McLachlan et al., 2018). The meaning of curriculum further expands to establish how knowledge is perceived in society and the types of knowledge that are most preferred for society (Pieters et al., 2019; Gouëdard et al., 2020). In the context of reforms, curriculum reform can be seen as a process that aims to change the objectives of learning and the way learning takes place (Gouëdard et al., 2020). Priestley and Biesta (2013) also argued that the implementation of change depends on the goal and intention that informed the change.

Many researchers have asserted that the policy design of such curriculum addresses the central considerations of what is to be learned, how it is to be learned, and why it is to be learned. It also concentrates on how the success of this learning is evaluated and what resources are required for the attainment of the outlined objectives (Stabback, 2016). Within the context of the Ghanaian educational system, a curriculum is seen as a set of guidelines and frameworks that moderate students should learn and what should be taught through the education system (National Council for Curriculum and Assessment [NaCCA], 2019). The curriculum at different levels in Ghana has a common practice where materials or documents used for teaching and learning, such as textbooks or instructional materials, are structured to meet the country's educational goals. These practices include issues that would have an obvious impact on how the curriculum is designed and realized, such as the teaching methodology to be adopted, allocation of learning hours, class size, instructional objectives, assessment and feedback, and examination practices (Vera Cruz et al., 2018).

Education is a vital component of any nation's development, and the quality of education is heavily dependent on the preparedness of its teachers. In Ghana, the National Pre-Tertiary Education Curriculum Framework (NPECF) has been introduced as a means to improve the quality of education in the country. However, the successful implementation of this framework hinges on the preparedness of teachers. As stated by Oduro et al.

(2019), the success of any educational reform program is largely dependent on the level of teacher preparedness, as teachers are the primary implementers of any educational policy or program. Teacher preparedness is, therefore, critical to the successful implementation of the NPECF in Ghana. Therefore, it is essential that teachers are adequately equipped with the knowledge, skills, and resources to effectively deliver the curriculum. Our report will examine the concept of teacher preparedness and its significance in the successful implementation of the NPECF in Ghana.

In practical ways, a myriad of components need to be considered in the process of curriculum design, all of which will be consequential for the successful implementation of curriculum (Burns et al., 2016). If the design itself is not informed by a sophisticated understanding of crucial components concerning learning and teaching, like effective pedagogical methodology, it cannot be successfully implemented (van den Akker, 2016; Gouëdard et al., 2020). Curriculum reforms are demanding in terms of implementation and so require considerable measures (OECD, 2020; Fullan, 2015). Since curriculum requires changes in many aspects that might challenge the existing beliefs and subjective realities deeply embedded in individual and organizational contexts, careful steps and measures need to be put in place (Fullan, 2015). Factors such as high cost, uncertainty of outcomes, and risk aversion of stakeholders have been shown to create additional obstacles to initiating and implementing curriculum change (Fullan, 2015). In addition, curriculum reforms may require high investments in training and capacity building for the teacher workforce and schools to take up the new curriculum and develop new approaches to teaching and learning and new material resources. Given the resistance and demands that are often associated with educational change, individuals and institutions may be more inclined to maintain existing practices than experience change (OECD, 2020; Fullan, 2015).

Effective policy design implies developing a curriculum that aims to reach clear objectives in accordance with a robust theory of change, to realize an educational vision (Gouëdard et al., 2020). This may imply that the policy considers the existing capacity, develops ways to adjust it in the medium term, and considers the available resources and contextual factors that will influence the implementation. In multifaceted educational environments, the stakeholders' agency plays a pivotal role in the implementation process. Ideally, the vision guiding the curriculum has been co-constructed with stakeholders, building public support and aligning interests (Gouëdard et al., 2020; Burns et al., 2016). The involvement of stakeholders at different stages of the curriculum elaboration depends on the resources available and is fostered by the transparency of the accountability relationships, the diffusion and use of data, and the existence of feedback loops to adjust and monitor its development (Gouëdard et al., 2020).

As societies develop, better and more advanced learning techniques and curriculum frameworks emanate to guide the process of learning (Baah-Duodu et al., 2020; NaCCA, 2019). Essentially, this suggests that without early and sufficient adaptation, generations lose valuable skills that would mold them to become better citizens. Ghana, having spotted an impending clash between the old and new in-demand skills in industry, embarked on the establishment of a new curriculum that will dominate the school's learning systems. Behind the national curriculum embodied in the policy framework is a viewpoint of learning and teaching that responds to the opportunities and challenges confronting Ghana currently and in the future. Fundamentally, the policy framework requires the harmonious development of the mental, physical, and spiritual capabilities of learners who undergo studies based on the national curriculum. In this way, Ghana's educational system will demonstrate the creation of holistic and well-balanced individuals with the requisite knowledge, skills, values, and aptitudes for self-actualization and for the socioeconomic and political transformation of the nation and beyond (NaCCA, 2019).

Fundamentally, the review of the curriculum is to respond to a national priority of shifting the structure and content of the education system from merely passing examinations to building character, nurturing values, and raising literate, confident, and engaged citizens who can think critically. Additionally, as an outcome, the goal of the review is to raise the quality of education at the pre-tertiary level, with emphasis on science and

mathematics as fundamental building blocks for success in either tertiary education or early entry into the workplace. The review of the curriculum is to address the inherent challenges in the existing curriculum and ensure that the content of the national curriculum can be internationally benchmarked (Apau, 2021; NaCCA, 2019). In Ghana, the NPECF is proposed to provide core competencies and standards that learners are to know, understand, and demonstrate as they progress through the curriculum from one content standard to the other, and from one phase to the next (Ameyaw et al., 2019). However, from the media and other general members of the Ghanaian populace, it appears that there has been public outcry with respect to the actual practices of the curriculum in classrooms at the basic school level, where teachers appear to be battling with their preparedness and implementation process (Morrish & Neesam, 2021).

As several education systems around the globe have begun curriculum reforms, transitioning, for instance, from a knowledge-based to a competency-based curriculum, we sought to provide policy advice and direction that will facilitate curriculum implementation in Ghana and beyond. Specifically, to expand the conversation surrounding the NPECF and its implementation process in Ghana, we attempted to explore basic schoolteachers' perceptions about the policy since its implementation, tried to gain insight into some lived experiences of teachers since the implementation of the policy, and, finally, to open up some suggested ways for sustaining the policy in Ghana.

Literature Review

Global Curriculum Changes and Practices

Clearly, it must be asserted that modern societies are facing new challenges—environmental, economic, health-related, or societal (Organisation for Economic Co-operation and Development [OECD], 2018). The recent conversation on climate change and the depletion of resources questions consumption habits; the development of artificial intelligence and new technologies challenges the traditional conception of work; and ongoing globalization entails migration, urbanization, and increasing diversity shaping countries and economies (OECD, 2018). In this regard, if children in school are introduced to learning activities or curricula that were taught many years back, it is likely that they will not be exposed and be prepared properly for a more uncertain future characterized by an ever-changing environment in the world (OECD, 2018).

In line with these universal trends and also to respond to the ever-changing environment in the world, curriculum change and practices seem to be a global phenomenon. Most countries across the globe have increasingly considered reviewing the curriculum as a way to equip children with the knowledge, skills, and competencies needed for tomorrow. To be specific, most OECD countries, such as Estonia, Finland, Japan, Norway, and Wales (United Kingdom), have engaged in curriculum reform in recent years. More than 40 countries are participating in the OECD-led Education 2030 project, an effort that explores the skills and competencies that are needed for children to thrive in the 21st century (OECD, 2018).

Curriculum change and its practices are mostly driven by the visions and aims of a particular nation. The vision of a country is usually documented in a curriculum statement or an official document that depicts the desired results of an educational system or the knowledge and skills students should possess (Gervedink-Nijhuis et al., 2013). Curriculum change and practices provide the guidelines for reform as well as for curriculum materials, such as textbooks or syllabi. A clearly defined vision, agreed upon by multiple stakeholders, is pivotal to ensuring a shared understanding of the policy objectives. Different interpretations of the curriculum vision would be translated into different education philosophies, pedagogical choices, and, eventually, teaching materials. The absence of consensus on these underlying values concerning education would make systematic improvement of curriculum difficult (Benavot & Romero-Celis, 2019). For instance, in the Japanese curriculum reform of the early 2000s, different interpretations and understanding of the vision

of the reform hindered the implementation efforts. In contrast, in Finland, a general bottom-up approach to deciding on the vision of their curriculum reforms has helped to form consensus and reduce the gap between different understandings of the reform goals.

In all these complexities of changing or modifying a curriculum, one striking major issue many countries encounter when trying to reform curricula concerns the implementation of the reform. Curriculum implementation corresponds to the means to accomplish the desired objectives, and, for the new curriculum to bear fruit, it needs to be translated into classroom practices (Fullan, 2015). Re-echoing traditions and debates in curriculum changes, curriculum reform has previously been seen from a “top-down” perspective, where the “success” of the implementation was measured by the “fidelity” and “adherence” to the reformed curriculum by implementers, such as teachers (Castro & Tumibay, 2021; Wedell & Grassick, 2017). Nevertheless, this approach does not fit the trend of autonomy-centered curriculum enactment, where the central role of teachers in the process, both as enactors and mediators of the policy, makes obsolete the concept of fidelity itself (Snyder, 1992; Braun, 2017).

The Ghanaian Context

In Ghana, the intention of the government is to prioritize the fundamental building blocks for success at the basic school level, which is in line with the global thinking regarding quality education, socioeconomic development, the skills requirement, and the focus of the Africa Union (NaCCA, 2019). Clearly, Ghana’s entrepreneurial sector is a key target for development, while the government is simultaneously embarking on the most comprehensive industrial transformation programs in the country. In essence, this requires policies necessary to promote better cognitive skills development for all, addressing the fact that scientific literacy and entrepreneurial knowledge and skills development are in urgent need of attention in Ghana.

The curriculum framework for pre-tertiary education provision in Ghana and the curriculum that it has guided to be developed are critical in defining the future prospects of Ghana’s young people. Through the education that Ghana’s young people receive, the Ministry of Education expects that they will be nurtured into honest, creative, and responsible citizens, making a meaningful contribution to society (NaCCA, 2019). It is expected that learners from the pre-tertiary education system will be fluent in **R**eading, **wR**iting, **aR**ithmetic, and **cR**eativity, in addition to being developed into lifelong learners, who are digitally fluent. The learning outcomes of students in schools across Ghana must be improved because appropriate policy measures, including the use of a standards-based curriculum in the schools, have been implemented and they are working.

Therefore, this requires that teachers’ approach to teaching and learning needs to change, and the intended outcomes must contribute to the achievement of national development priorities and global sustainable development goals (NaCCA, 2019; Darvas & Balwanz, 2019). The development of this framework through extensive national consultation with stakeholders will inform the production of the national curriculum. This is an essential step in ensuring that all learners in our schools receive high-quality education aimed at ensuring that each learner reaches their full potential. In the new Ghanaian curriculum framework, it is asserted that teachers will be expected to use every relevant subject to develop pupils’ mathematical and scientific literacy. Confidence in numeracy and other scientific skills is a precondition of success across the national curriculum, as is literacy in language—particularly the playground language in the early years and the English language in later years. The current national curriculum seeks to outline the core standards that schools and teachers can use to develop the foundational knowledge and skills in their learners. It is expected that students, through the overall education they receive, will be nurtured into honest, creative, and responsible citizens (Vavrus & Bartlett, 2013; NaCCA, 2019). In response to all these, the Ministry of Education (2019) replaced the previously known syllabus as curriculum, explaining that the NPECF for

Ghana's primary schools is standards based, putting learning at the center of every classroom and guaranteeing that every student obtains a quality education.

Theoretical Model

Our study was nested into the teacher professional development model, which focuses on the preparation and continuous improvement of teachers to effectively implement curriculum frameworks. According to this model, teacher preparedness is influenced by several factors, including pre-service training, in-service training, experience, and access to resources and support. Pre-service training refers to the education and training that teachers receive prior to entering the classroom, such as formal education programs and teacher certification. In-service training, on the other hand, refers to ongoing professional development opportunities that teachers participate in throughout their careers (Kankam et al., 2019).

In addition to training, teacher preparedness is also influenced by experience and access to resources and support. Experienced teachers are more likely to have developed effective teaching strategies and have a deeper understanding of the curriculum framework. Access to resources and support, such as textbooks, technology, and professional networks, can also enhance teacher preparedness. The successful implementation of the NPECF in Ghana requires a comprehensive approach to teacher professional development. This includes providing pre-service and in-service training opportunities that are aligned with the curriculum framework as well as ensuring that teachers have access to resources and support to effectively implement the framework in their classrooms (Akyeampong, 2017; Kankam et al., 2019). In the case of Ghana, this would involve understanding the political context surrounding the development and implementation of the NPECF, as well as the cultural and socioeconomic factors that may impact the ability of teachers to effectively implement the framework. For example, cultural norms around education and teaching may impact the effectiveness of certain teaching strategies, while socioeconomic factors, such as poverty, may limit access to resources and support for teachers.

Methodological Approach

Our study used the concurrent mixed-method design approach. This approach provides detailed and comprehensive data to understand phenomena in all their complexity (Teddlie & Tashakkori, 2019). The concurrent mixed-method approach allowed data from independent qualitative and quantitative research focused on similar questions to be nested and analyzed for rich conclusions (Zhang & Creswell, 2013). In our research, qualitative data from in-depth interviews complemented quantitative data. The respondents in our study were 352 basic school teachers selected across six regions in the southern part of Ghana. The researchers used a multistage sampling procedure to arrive at the sampling size. The data was obtained using a questionnaire and semistructured interview guides. The questionnaire was validated using rigorous psychometric processes (confirmatory factor analysis) with a reliability coefficient of .883, Cohen's Kappa Validity Index of .823, and content validity index of .872.

Of the total sample of 352 teachers, 15 of them participated in semistructured interviews. The interviews complemented the questionnaire to allow for triangulation and enabled the researchers to provide nuanced analysis of teacher perspectives of curriculum change. Interviews were transcribed for subsequent analysis following Saldaña's (2016) two cycles of coding. First-cycle coding enabled the identification of salient issues relating to teacher perspectives of change, and second-cycle codes enhanced the clustering of codes into categories. Given the iterative nature of qualitative analysis, the researchers familiarized themselves with each transcript and moved between first- and second-cycle coding to develop themes reflective of the data without discounting its inherent subtleties. Our researchers coded each transcript individually and then cross-coded them to ensure consistency in the data analysis process. To analyze the quantitative data, we employed SPSS

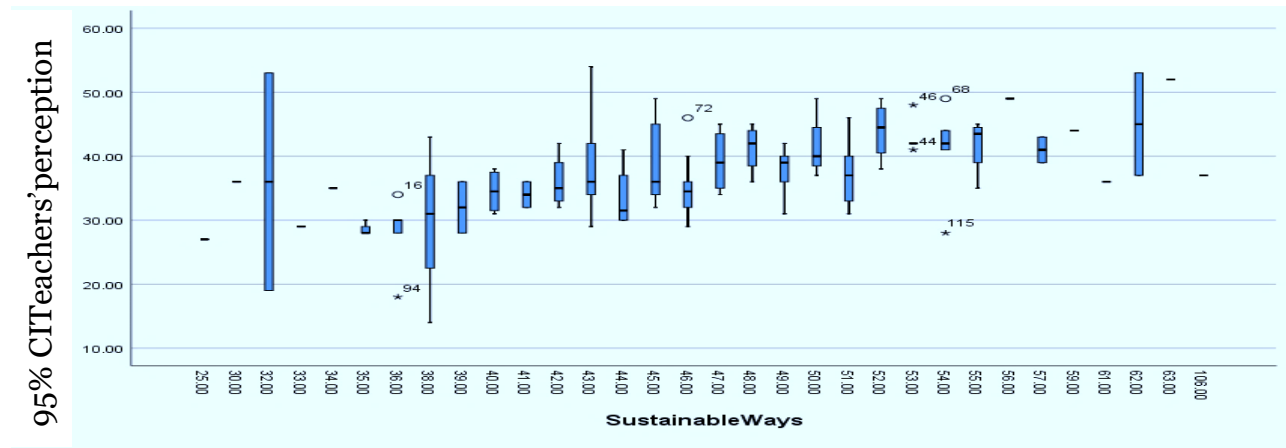
software. Statistical assumptions were checked to arrive at a suitable and appropriate statistical analysis. Descriptive statistics (means [M] and standard deviations [SD]) and a one-sample *t*-test were employed with *p* values set at a .05 level of confidence. We presented the quantitative and qualitative findings separately, and integrated and explained both sets of findings in the Discussion section.

Results

The accrued findings from the study are presented based on the thematic areas that guided that study. Each of the areas was presented from a quantitative and qualitative lens. In clear terms, the study focused on the general impression of teachers about the NPECF. After the general impression was gained, we looked at some of the lived experiences and practices of teachers on the NPECF since its implementation. For policy reform or sustainability purposes, we gathered information on the suggested ways for sustaining the NPECF at the basic school level. To employ the specified and appropriate statistical tools, the data was tested with assumptions and declared normal. In this regard, means plot and two different homoscedasticity graphs were used for the normality tests.

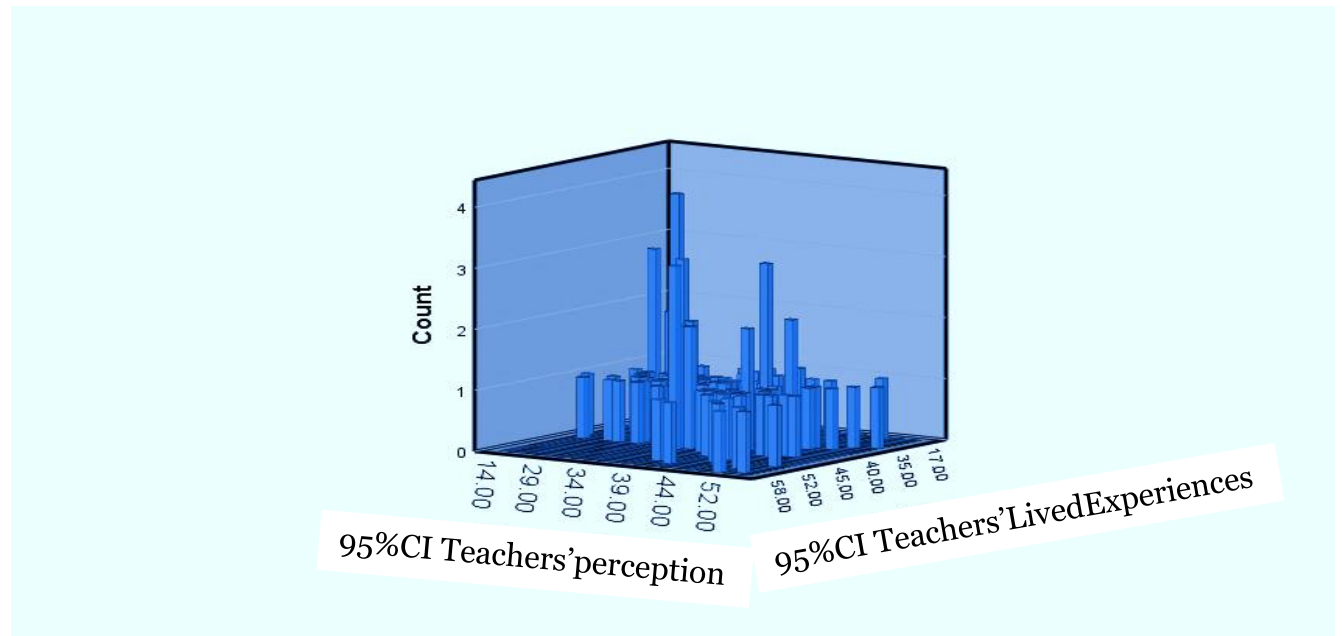
Normality Tests (Data Normality) for the Quantitative Data

Figure 1: Means Plot Test of Normality and Linearity



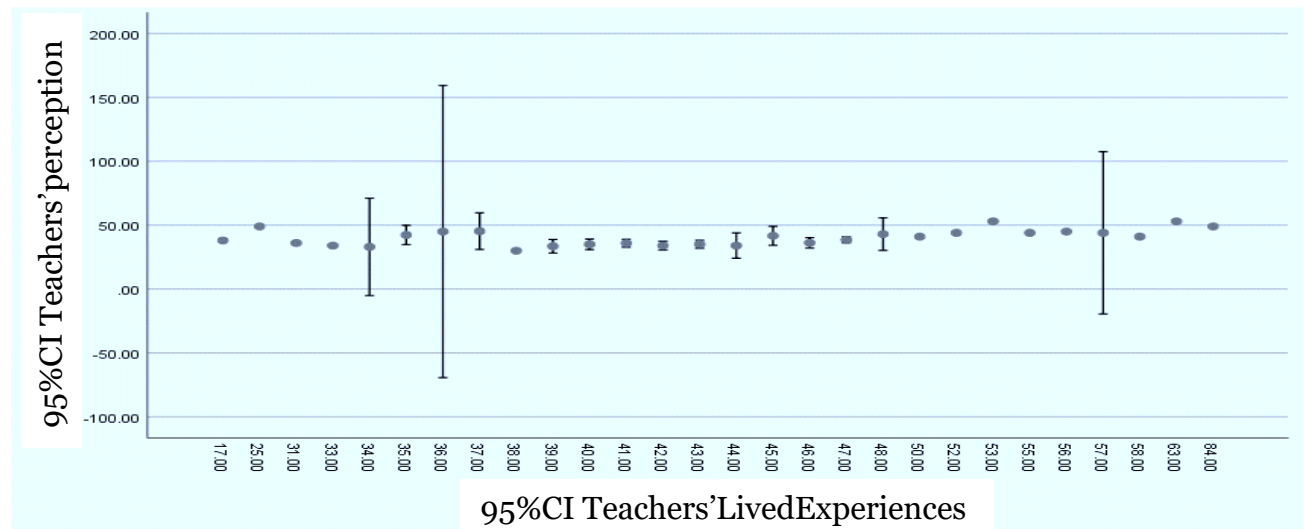
The histogram plot of standardized predicted values versus standardized residuals showed that the data met the assumptions of normality of variance and linearity and the residuals were approximately normally distributed. Most of the bars are divided equally, which confirms that the data was assumed normal and, as such, the employed statistical tools are justifiable.

Figure 2: Assumption of Homoscedasticity Normality



From Figure 2, the close clustering of the bars shows that the data was assumed normal.

Figure 3: Homoscedasticity Normality Assumption



Similarly, Figure 3 depicts the homoscedasticity normality assumption that shows that most of the bars are divided equally, which confirms that the data was assumed normal.

Quantitative Analysis

Table 1: Teachers' Perception About the NPECF

Sn	Statements	Mean (M)	SD	Cal. t value	df	p value
#1	I believe that the NPECF will produce the best standard of education in Ghana if well implemented	3.84	.681	9.82	1	.003**
#2	I am convinced that the NPECF reinforces the best teaching and educational practices already found in classrooms and make them the norm	3.90	.451	14.88	1	.000**
#3	I believe the NPECF will help all students learn more by engaging in higher proficiency	3.86	.765	11.92	1	.001**
#4	I am convinced that the NPECF for Ghana's primary schools is standard based, placing learning at the heart of every classroom and ensuring that every learner receives quality education	3.72	.327	14.29	1	.002**
#5	I believe that educational reforms and the NPECF implementation initiative is to develop human resources	3.69	.425	12.93	1	.000**

Sn* = Serial number; Observations = 352, $CI_{95\%}(p^{**} < .05)$, = 3.732 > TV (2.50), $SD = .564$, $n = 352$.

Table 1 presents the results of the teachers' perception of the NPECF in basic schools in Ghana. In gathering and measuring teachers' perceptions, it was found that most of the teachers believe that the NPECF will produce the best standard of education in Ghana [$t(df = 1) = 9.82$, $M = 3.84$, $SD = .681$, $p = .003^{**}$, $n = 352$, $CI_{95\%}$]. It was again found that most of the teachers are convinced that the NPECF reinforces the best teaching and educational practices already found in classrooms and makes them the norm [$t(df = 1)$, 14.88, $M = 3.90$, $SD = .451$, $p = .000^{**}$, $n = 352$, $CI_{95\%}$]. Sequel to the above, most of the teachers perceive and believe that the NPECF will help students learn and acquire higher proficiency to meet the demands of the world [$t(df = 1) = 11.92$, $M = 3.86$, $SD = .765$, $p = .001^{**}$, $n = 352$, $CI_{95\%}$]. Evidentially, it was found that most of the teachers are convinced that the NPECF for Ghana's primary schools is standards based, placing learning at the heart of every classroom and ensuring that every learner receives quality education [$t(df = 1) = 14.29$, $M = 3.72$, $SD = .327$, $p = .002^{**}$, $n = 352$, $CI_{95\%}$]. Finally, it was asserted by most of the teachers that they believe that educational reforms and the NPECF implementation initiative are to develop human resources [$t(df = 1) = 12.93$, $M = 3.69$, $SD = .425$, $p = .000^{**}$, $n = 352$, $CI_{95\%}$].

Table 2: Teachers' Lived Experiences of the NPECF Since Its Implementation

Sn	Statements	Mean (M)	SD	Cal. T value	df	p value
#1	It is challenging to prepare lesson plans in the NPECF due to lack of guided materials	3.91	.713	12.83	1	.002**
#2	Delay and underfunding are some of the challenges to implementing the policy	3.86	.765	13.02	1	.002**
#3	The NPECF considers the Ghanaian context	3.73	.576	10.23	1	.000**
#4	The NPECF considers the availability of Internet connectivity and the information and communications technology background of teachers	1.72	.923	11.02	1	.000**
#5	Teachers did not receive enough training to fully implement the pre-tertiary education curriculum framework	3.85	.536	12.53	1	.000**
#6	There is little resource allocation for implementation of educational reforms and NPECF	3.63	.751	10.83	1	.000**
#7	Teachers are not abreast with the NPECF even as they are already implementing them in the classroom	3.60	.686	14.82	1	.002**
#8	Inadequate teaching and learning materials pose serious treat in the implementation of the NPECF	3.57	.622	17.22	1	.001**

Sn*=Serial number, Sample (Observations) = 352, CI_{95%} (p**<.05), Grand mean = 3.484>TV (2.50), SD = .696, n = 352

Results in Table 2 show the challenges of primary school teachers in the implementation of the NPECF in Ghana. From the data, the results show that, generally, the NPECF is hit by some lived challenges in the classrooms. Clearly, it was found that most teachers are challenged in preparing lesson plans in the NPECF due to a lack of guided materials. The results are best explained by these statistical values [$t(df = 1) = 12.83$, $M = 3.91$, $SD = .713$, $p = .002^{**}$, $n = 352$, CI_{95%}]. In other related results, it was found delays of textbooks and underfunding were challenges of implementing the NPECF $t(df = 1)$, 13.02, $M = 3.86$, $SD = .765$, $p = .002^{**}$, $n = 352$, CI_{95%}]. Akin to the above, it was found that the framers of NPECF took into consideration the Ghanaian contextual issues and geographical setting [$t(df = 1)$, 10.23, $M = 3.73$, $SD = .576$, $p = .000^{**}$, $n = 352$, CI_{95%}]. On the flip side, it was found that the NPECF did not consider the availability of Internet connectivity and the information and communications technology background of teachers [$t(df = 1) = 11.02$, $M = 1.72$, $SD = .923$, $p = .000^{*}$, $n = 352$, CI_{95%}]. Similarly, it was evident that most of the classroom teachers did not receive enough training to fully implement the pre-tertiary education curriculum framework [$t(df = 1) = 12.53$, $M = 3.85$, $SD = .536$, $p = .000^{**}$, $n = 352$, CI_{95%}].

To expound more, it was established that few resources are allocated for effective implementation of educational reforms and NPECF, and this affects the classroom practices of teachers [$t(df = 1) = 10.83$, $M = 3.63$, $SD = .751$, $p = .000^{**}$, $n = 352$, CI_{95%}]. Another related lived experience of teachers in the classrooms is that most of the teachers are not really abreast with the NPECF even as they are already implementing the program in the classroom [$t(df = 1) = 14.82$, $M = 3.60$, $SD = .686$, $p = .002^{*}$, $n = 352$, CI_{95%}]. Finally, it was

found that inadequate teaching and learning materials pose a serious threat to implementing the NPECF [$t(df = 1) = 17.22, M = 3.57, SD = .622, p = .001^*, n = 352, CI_{95\%}$].

Table 3: Suggested Ways for Sustaining the NPECF in Basic Schools in Ghana

Sn	Statements	Mean (M)	SD	Cal. t value	df	p value
#1	There should be continuous workshops through the cluster-based workshops and the district teacher support team where head teachers act as resource personnel	3.69	.704	15.31	1	.000**
#2	Facilitators should be given funds for logistics, refreshment, and payment per diem for participating in the training	3.87	.176	12.03	1	.003**
#3	There should be diversification of the curricula and research activities to make them more relevant and community based	3.94	.726	14.12	1	.000**
#4	Government needs to open up community participation for alternative funding source for sustaining the program	3.87	.235	11.02	1	.006**
#5	All teachers must be encouraged to attend seminars on the new curricula as it serves as in-service training for the teachers	3.91	.604	11.23	1	.002**
#6	There should be conscious effort in successive governments to synchronize any reform based on the prioritized needs and aspiration of the nation	3.76	.136	13.03	1	.003**

Sn* = Serial number, Sample (Observations) = 352, CI_{95%} ($p^{**} < .05$) Grand mean = 3.84 > TV (2.50), SD = .430, n = 352

Table 3 indicates results on the suggested ways for sustaining the NPECF in schools. The results give evidence to believe that to sustain the NPECF in Ghanaian schools, there should be continuous workshops through the cluster-based workshops and the district teacher support team where head teachers act as resource personnel [$t(df = 1) = 15.31, M = 3.69, SD = .704, p = .000^{**}, n = 352, CI_{95\%}$]. Parallel to the above, it was found that to sustain the framework, facilitators and teachers should be given funds for logistics, refreshment, and per diem payment for participating in any training on NPECF [$t(df = 1), 12.03, M = 3.87, SD = .176, p = .003^{**}, n = 352, CI_{95\%}$].

Relatedly, another sustaining measure that was profoundly agreed upon by the teachers is that there should be diversification of the curricula and research activities to make them more relevant and community based [$t(df = 1), 14.12, M = 3.94, SD = .726, p = .000^{**}, n = 352, CI_{95\%}$]. Consequent to the above, the government needs to open up to community participation for an alternative funding source to sustain the program [$t(df = 1) = 11.02, M = 3.87, SD = .235, p = .006^{**}, n = 352, CI_{95\%}$]. Again, all teachers must be encouraged to attend seminars on the new curricula as it serves as in-service training for the teachers [$t(df = 1) = 11.23, M = 3.91, SD = .604, p = .006^{**}, n = 352, CI_{95\%}$]. Finally, to sustain the interest of teachers, it was emphasized that conscious effort by successive governments is needed to synchronize any reform based on the prioritized needs and aspirations of the nation [$t(df = 1) = 13.03, M = 3.76, SD = .136, p = .003^{**}, n = 352, CI_{95\%}$].

Qualitative Analysis

To complement the quantitative data, our study gathered the views of basic school teachers about their preparedness and implementation of NPECF. The obtained views were themed to reflect the objectives of our study.

Theme 1: Teachers' Perception of the NPECF Policy

To complement the quantitative results, our researchers interacted with the teachers about their perceptions of the policy and the implementation actions. One of the teachers shared this with us:

From my personal view, I have no doubt in my mind that the modern curriculum is designed with recognition of the difficulty of modern times and the importance of quality education. What does this mean to Ghanaians that are looking to give their children the best knowledge? If the implementation goes according to plan, the country can expect to see a gradual rise in literacy and retention of learned skills. (Excerpts from TR-001)

Relatedly, another teacher expressed his view as captured below:

For me as a teacher, the GES' (Ghana Education Service's) new curriculum for basic schools is one of the most significant developments in the education sector by far. It is a phenomenal achievement that will improve the relevance of education, far beyond the previous system that acted as a mere conveyor belt, passing young people to the world. I strongly believe that if the NPECF is well embraced, it will change the educational fortunes. Also, it will make learning more practical, lively, and permanent. (Excerpts from TR-002)

From the views shared, we could infer that the curriculum intends to provide students with skills, both soft and hard, to allow them to navigate the modern world and inherent challenges. However, how the government agencies (Ghana Education Service, NaCCA) have implemented this holistic approach to learning remains paradoxical.

Theme 2: Teachers' Lived Experiences

To expound the views on the teachers' lived experiences of the NPECF since its implementation, we gathered these experiences from the teachers.

As a teacher in the classroom, I am really struggling to implement the policy in the classroom. The fault is not coming from us but the fact is that we were not provided with enough training to effectively roll out the policy. As I speak to you, most of [my] colleague teachers are still facing the challenge of writing lesson plans. Teaching and learning materials are not enough and adequate for the policy implementation. So honestly, the policy is a good policy but the implementation process remains a challenge for we the teachers.

In another interaction, one of the teachers had this to share:

For me as a teacher, unfortunately, the demands of a learner-centred approach in the new framework does not match our Ghanaian school infrastructure. Most of us in basic schools with no communication network would find it difficult to introduce information and communications technology as a pedagogical tool. Other schools with good networks also have no electricity to teach Computing. Have we also taken into consideration how many dilapidated schools are going to cope with the implementation

of the new curriculum? Are their inadequate classrooms, broken walls, ripped off roofs permissive enough for the total adoption of a learner-centered approach to learning? I believe that though the new reforms are good, but it should have been predicated on solutions to problems we have in the educational sector. (Excerpts from TR. 004)

Theme 3: Suggested Measures to Sustain the NPECF Policy

To juxtapose and confirm the quantitative responses, some excerpts were gathered from some of the teachers and they are captured below:

We live in a country where national policies are based on political capital rather than professionalism. You cannot develop education in Ghana this way. Leave education to educationists to attend to. Have we, for example, addressed issues of class size? In classes where there are over 60 pupils and the classrooms are packed in such a way that the teacher cannot even have a space to pass through, how interactive can such a class be? Let us take the issue of pupils in many of our basic schools sitting on the bare floor in the classroom for lack of furniture. How effective will it be in developing competencies like writing under the new curriculum? For me, this policy can only be effective if there is coordination and collaboration among parents, civic society, individuals, and across political divides to remain in united to provide solid foundation for education for our country. (Excerpts from TR-008)

Another classroom teacher had this to share:

I share the view that the more practical approach towards solving the issues of education in Ghana will be to solve the fundamental problems of financing education not necessarily from government coffers because that would obviously not be enough, looking at the quality, retraining, and motivation of teachers, and stakeholder engagements, among others. I do agree that there is the need to change and redesign a new curriculum, but this is a secondary issue that we can look at once we get the fundamentals right. I mean the government should invest in the education sector by building school blocks and employing more teachers. (Excerpts from TR-008)

Akin to the above, one of the teachers added to the study:

During the training process, logistics such as projectors, flip charts, marker boards, maker pens, sheet of papers, and even training venues have financial implications on the organizers and the trainers. So, when these could not be met, authorities at the district and school level stayed aloof to the implementation difficulties teachers were raising. We are going into 4 years of the reform, and we do not have teaching textbooks and related materials. How can we execute our mandate as teachers? So, clearly, there are challenges in the classrooms. I suggest that the government and the policy makers should include teachers in any policy design. More funding should also be allocated to the education sector to facilitate its policies and programs. (Excerpts from TR-009)

For me, to ensure successful implementation, the government of Ghana should provide comprehensive training programs for teachers to familiarize them with the curriculum framework. This training should include an in-depth understanding of the curriculum content, teaching methodologies, assessment strategies, and the use of teaching aids and technology. Also, it is important to conduct orientation sessions for teachers at the

beginning of each academic year to introduce them to the curriculum framework and its components. This will help teachers understand the curriculum's goals, objectives, structure, and pedagogical approaches. (Excerpts from TR-010)

Discussion

Curriculum reforms are seen as transversal policies and fragmented approaches that can produce inefficiencies and loss of potential synergies if not properly handled. In any curriculum reform, critical policies are necessary to ensure consistency. This may include the provision of adequate initial teacher education and professional development opportunities and the alignment of the evaluation and assessment framework with the requirements of the new curriculum. Placing the study within the context of other countries, it appears that much is required in Ghana to make the policy effective and beneficial. For example, in Finland, the 2019 curriculum reform involved local municipalities and schools developing their own curriculum according to national guidelines. Given that teachers are highly professional, qualified, and autonomous in Finland, this resulted in the implementation of a decentralized curriculum that was owned by the profession and strongly influenced school practices, the provision of education in municipalities, and also activated new school development programs and educational research in Finland (Halinen, 2018).

Sequel to the above, it is essential to note that high-performing education systems, such as Singapore, Finland, Canada, and Australia, have well-developed policies that train and support teachers as a profession (Darling-Hammond, 2017). In their policy implementation, the processes are always continuous in nature. It starts from teacher selection and education and extends into lifelong professional development. Reading from these countries' curriculum frameworks, to safeguard a teacher, there is the need for sufficient capacity to implement a new curriculum change; investments and training at various stages of the teaching profession are always adhered to and practiced. Learning from India, we gathered an interesting view about their curriculum reform. Batra (2015) argued that the New Curriculum Framework 2005 was not aligned with existing teacher's capacity. Particularly, the principles guiding the New Curriculum Framework, such as connecting knowledge to life outside school, enriching the curriculum beyond the textbook, and taking learning away from mere rote memorization, cannot be achieved through textbooks alone, but require the proactive engagement of the teacher. Batra (2015) considered that teachers did not possess the sufficient skills or the agency to follow these principles. Consequently, he urged the government to redesign both pre-service and in-service teacher education programs, to equip teachers with the adequate skills, and to implement the curriculum in a way that would translate into better educational processes and outcomes (Batra, 2015).

Further lending empirical support to the study, Kisa and Correnti (2015) in their survey research in the U.S., found that teachers were more likely to change their practices to match the goal of the reform if the school provided relevant sustained professional development. Similarly, Garet et al. (2021) showed that enhanced knowledge and skills have substantial influence on changing teaching practices. Allen and Penuel (2015) see advantages of sustained professional development in increasing the likelihood of teachers engaging in instructional practices that are in line with the reformed standard. Stabback (2016) suggests that if the professional development focuses on a particular teaching practice, the teacher is more likely to use that practice in the classroom, which supports the claim that professional development could effectively initiate changes concerning curriculum reform. Darling-Hammond (2013) points out that jurisdictions that often rank high in international rankings, such as Finland, Hong Kong, Singapore, South Korea, and Japan, are also the ones that invest in teachers and support them throughout their careers.

It must be noted that educational change takes time, and, as such, some countries have successfully established a periodic curriculum cycle to deflate the political dimension of curriculum change, the cycle following its own pace toward a nonpartisan vision of education (Gouédard et al., 2020). Many countries

establish a curriculum framework to ensure coherence around the curriculum and facilitate curriculum implementation. Several models (product or process) and curriculum designs (content-, objective-, or competency-based approach) can support a country's educational vision. The development of standards to guide the implementation (teachers' qualifications, teaching loads, class size, teaching materials, etc.) and delimit learning objectives (national content standards) is also usual in some countries but has been criticized by some educators as it may narrow down the curriculum experience to what is tested, instead of focusing on what is important (Gouëdard et al., 2020).

Clearly, the results from our study suggest that the current curriculum changes in Ghana brought many classroom reforms at the basic school level. However, in the midst of all these informed changes, it appears that the reforms are hindered by several classroom challenges. For instance, it was found that the training offered to teachers for the implementation of the curriculum was not enough and adequate to successfully sustain the framework. Evidentially, most of the teachers were trained in teacher training institutions, but that is still not sufficient in the classroom when it comes to the implementation of the NPECF. This makes the changes made in the curriculum quite technical to comprehend, let alone for the teachers to implement it. These findings corroborate similar studies (Apau, 2021; Aboagye & Yawson, 2020; Mahama, 2022) conducted on NPECF.

In another finding from our study, we gathered that one of the key structural effects of the framework is the unavailability of textbooks. It is imperative to note that the NPECF change has been met with the unavailability of textbooks for all the subjects, not just the new subjects introduced. The logistics to support the curricular implementation have been woefully inadequate. This accrued evidence shares some common ground with related studies, such as Apau (2021), Aboagye and Yawson (2020), and Ameyaw et al. (2019), which reported similar findings from different samples. Akin to the above, the accrued results from our study give shreds of evidence to indicate that the lack of teaching resources for teachers hampered the implementation of the curriculum. As such, this could lead to teachers leaving some portions of the curriculum untaught. From our study, we could infer that politicization of the education sector, inadequacy in teacher training, nonavailability of textbooks, and insufficient funding of activities are critical in curriculum implementation.

Conclusions

Educational reforms, including curriculum changes in Ghana, point to several issues. Considerably, changes in educational reforms occur to respond to the changing needs of Ghanaian society within the global educational transformation. We have gained some insights from basic school teachers on the curriculum policy and some challenges that hinder the implementation process. We also reviewed and discussed examples from different countries on how they roll out their curriculum policies and how they were successful in the implementation processes. From our study, it can be inferred that the implementation of this current curriculum has been fraught with implementation gaps leading to several classroom challenges. These challenges span from unavailability of textbooks even after 3 years into the implementation of the curriculum. There are inadequate funds and logistics for training of teachers to implement the curriculum. This raises the idea that concerned educational agencies need to collaborate and review other countries' reforms to learn and adapt some best practices that will guide the Ghanaian NPECF.

Recommendations

Based on the accrued findings, we recommend the following for policy and practice:

1. Continue Teacher Training: Teachers need to be adequately trained on the curriculum framework and teaching methods that are aligned with the framework. The training should be ongoing and relevant

to the specific subject areas that they teach. This will ensure that teachers are able to effectively implement the curriculum framework in their classrooms.

2. **Resources:** Teachers need access to the necessary resources, such as textbooks, teaching aids, and technology that are aligned with the curriculum framework. This will enable them to effectively implement the framework in their classrooms and help students meet the learning objectives.
3. **Supportive School Environment:** Schools need to create a supportive environment for teachers to implement the curriculum framework. This includes providing teachers with adequate time and resources to plan and prepare their lessons as well as opportunities for collaboration and professional development.
4. **Student Assessment:** The curriculum framework should include clear learning objectives and assessment criteria. Teachers should be trained on how to assess students' progress toward these objectives, and assessments should be designed to measure students' understanding of the material rather than just their ability to memorize it.
5. **Monitoring and Evaluation:** The implementation of the curriculum framework should be monitored and evaluated regularly to ensure that it is effective in achieving its intended outcomes. This will enable stakeholders to make necessary adjustments and improvements to the framework.
6. **Community Engagement:** Community engagement is important in ensuring that the curriculum framework is understood and supported by all stakeholders, including parents, students, and local leaders. This can help to create a sense of ownership and accountability for the successful implementation of the framework.

It is believed that where there is a political will, there is always a way. As such, we are optimistic that the wide-ranging policy proposals and recommendations we have advanced in our study are profound in their implications, presenting a vast and complex challenge for structural reforms of the Ghanaian educational system and beyond.

References

- Aboagye, E., & Yawson, J. A. (2020). Teachers' perception of the new educational curriculum in Ghana. *African Educational Research Journal*, 8(1), 6–12. https://www.netjournals.org/z_AERJ_20_004.html
- Akyeampong, K. (2017). Teacher educators' practice and vision of good teaching in teacher education reform context in Ghana. *Educational Researcher*, 46(4), 194–203. <https://doi.org/10.3102/0013189X17711907>
- Allen, C., & Penuel, W. (2015). Studying teachers' sensemaking to investigate teachers' responses to professional development focused on new standards. *Journal of Teacher Education*, 66(2), 136–149. <http://dx.doi.org/10.1177/0022487114560646>.
- Ameyaw, J. A. S., Turnhout, E., Arts, B. J. M., & Wals, A. E. M. (2019). Creating a responsive curriculum for postgraduates: Lessons from a case in Ghana. *Journal of Further and Higher Education*, 43(4), 573–588. <https://doi.org/10.1080/0309877X.2017.1386285>
- Apau, S. K. (2021). Teachers' concerns about the implementation of the standard-based curriculum in Ghana: A case study of Effutu Municipality. *Educational Research and Reviews*, 16(5), 202–211. <https://doi.org/10.5897/ERR2020.4051>
- Baah-Duodu, S., Osei-Buabeng, V., Cornelius, E. F., & Hegan, J. E. (2020). Review of literature on teaching and learning geometry and measurement: A case of Ghanaian standards-based mathematics curriculum. *International Journal of Advances in Scientific Research and Engineering*, 6(3), 103–124. <https://doi.org/10.31695/IJASRE.2020.33766>
- Batra, P. (2015). Voice and agency of teachers: Missing link in national curriculum framework 2005. *Economic and Political Weekly*, 40(40), 4347–4356. <http://www.jstor.org/stable/4417232>
- Benavot, A., & Romero-Celis, T. (2019). *Promoting effective mathematics teaching: Analyzing teacher enactment of grade 8 mathematics curricula using TIMSS Data*. IEA Compass: Briefs in Education. Number 6. International Association for the Evaluation of Educational Achievement.
- Braun, L. (2017). Theorizing race and racism: Preliminary reflections on the medical curriculum. *American Journal of Law & Medicine*, 43(2–3), 239–256.
- Burns, T., Köster, F., & Fuster, M. (2016). *Education governance in action: Lessons from case studies*. Educational Research and Innovation, OECD Publishing. <http://dx.doi.org/10.1787/9789264262829-en>.
- Castro, M. D. B., & Tumibay, G. M. (2021). A literature review: Efficacy of online learning courses for higher education institution using meta-analysis. *Education and Information Technologies*, 26, 1367–1385.
- Darling-Hammond, L. (2013). Teaching and the change wars: The professionalism hypothesis. In L. Darling-Hammond (Ed.) *Leading Professional Practice in Education*, SAGE Publications Inc.
- Darling-Hammond, L. (2017). Teacher education around the world: What can we learn from international practice? *European Journal of Teacher Education*, (40)3, 291–309. <https://doi.org/10.1080/02619768.2017.1315399>
- Darvas, P., & Balwanz, D. (2019). *Basic education beyond the millennium development goals in Ghana: How equity in service delivery affects educational and learning outcomes* (No.: 978-1-4648-0098-6). World Bank Studies. <https://doi.org/10.1596/978-1-4648-0098-6>.
- Fullan, M. (2015). *The new meaning of educational change* (5th ed.). Teachers College Press. <https://books.google.fr/books?id=YxGTCwAAQBAJ>.

- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2021). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915–945. <https://doi.org/10.3102/00028312038004915>
- Gervedink-Nijhuis, C. J., Pieters, J. M., & Voogt, J. M. (2013). Influence of culture on curriculum development in Ghana: An undervalued factor? *Journal of Curriculum Studies*, 45(2), 225–250.
- Gouédard, P., Pont, B., & Huang, S. H. P. (2020). Curriculum reform: A literature review to support effective implementation. *OECD Education Working Papers*, 2(39), 1–59. <https://doi.org/10.1787/19939019>
- Halinen, I. (2018). The new educational curriculum in Finland. *Improving the quality of childhood in Europe*, 7, 75–89. https://doi.org/10.1007/978-3-030-41882-3_3
- Kankam, B. O., Ayivor, E. J., & Danso, P. K. (2019). Implementing the Ghana education service curriculum in basic schools: A study of the challenges facing teachers in the Asante Akim North District of Ghana. *Journal of Education and Practice*, 10(17), 96–102.
- Kisa, Z., & Correnti, R. (2015). Examining implementation fidelity in America's choice schools: A longitudinal analysis of changes in professional development associated with changes in teacher practice. *Educational Evaluation and Policy Analysis*, (37)4, 437–457. <http://dx.doi.org/10.3102/0162373714557519>.
- Mahama, I. (2022). Creative teaching as a component of the new standard-based curriculum in Ghana: Curriculum rushed or curriculum planned. *Mediterranean Journal of Social & Behavioral Research*, 6(1), 27–33. <https://doi.org/10.30935/mjosbr/11569>
- McLachlan, C., Fleer, M., & Edwards, S. (2018). *Early childhood curriculum: Planning, assessment and implementation*. Cambridge University Press.
- Ministry of Education (2018). *Teacher reform, Dr. Matthew Opoku Prempeh, (MP) Hon. Minister for Education Meet the Press Series, November 20, 2018*. Ministry of Education.
- Ministry of Education (2019). *Science curriculum for primary schools (Basic 4–6)*. Ministry of Education.
- Morrish, D., & Neesam, M. (2021). Trends in coverage of hygiene and disease prevention topics across national curriculum frameworks for primary science, physical education, and health. *Prospects*, 51(1), 363–381. <https://doi.org/10.1007/s11125-020-09525-7>
- National Council for Curriculum and Assessment (2019). *Teacher resource pack primary 1–6*. NaCCA.
- Oduro, G. K., Frimpong, G. K., & Appiah, K. A. (2019). Teacher preparedness for the implementation of the revised pre-tertiary education curriculum in Ghana. *International Journal of Education and Practice*, 7(3), 142–155.
- Organisation for Economic Co-operation and Development (2018). *Systems approaches to public sector challenges: Working with change*. OECD Publishing. <http://dx.doi.org/10.1787/9789264279865-en>
- Organisation for Economic Co-operation and Development (2020). An implementation framework for effective change in schools. *OECD Education Policy Perspectives*, No. 9. OECD Publishing. <https://dx.doi.org/10.1787/4fd4113f-en>
- Pieters, J., Voogt, J., & Roblin, N. R. (2019). *Collaborative curriculum design for sustainable innovation and teacher learning*. Springer International Publishing. <http://dx.doi.org/10.1007/978-3-030-20062-6>
- Priestley, M., & Biesta, G. (Eds.). (2013). *Reinventing the curriculum: New trends in curriculum policy and practice*. A&C Black.
- Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed.). Sage.
- Snyder, B. (1992). Decolonizing the curriculum for global perspectives. *Educational Theory*, 63(6), 621638.

- Stabback, P. (2016). *What makes a quality curriculum? Current and critical issues in the curriculum and learning*. UNESCO-IBE. https://neqmap.bangkok.unesco.org/wp-content/uploads/2019/06/WHAT_MAKES_A_QUALITY_CURRICULUM.pdf
- Teddle, C., & Tashakkori, A. (2019). Mixed methods research. *The Sage handbook of qualitative research*, 4, 285–300. <https://doi.org/10.1177/1360780419849437>
- van den Akker, J. (2016). *Curriculum design research*. SLO: Netherlands Institute for Curriculum Development. ISBN: 978 90 329 2329 7
- Vavrus, F., & Bartlett, L. (Eds.). (2013). *Teaching in tension: International pedagogies, national policies, and teachers' practices in Tanzania (Vol. 1)*. Springer Science & Business Media.
- Vera Cruz, A. C., Madden, P. E., & Asante, C. K. (2018). Toward cross-cultural curriculum development: An analysis of science education in the Philippines, Ghana, and the United States. In *Intercultural studies of curriculum* (pp. 37–57). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-60897-6_3
- Wedell, M., & Grassick, L. (2017). Living with curriculum change: An overview. In *International Perspectives on Teachers Living with Curriculum Change*. Palgrave Macmillan UK. http://dx.doi.org/10.1057/978-1-137-54309-7_1.
- Zhang, W., & Creswell, J. (2013). The use of “mixing” procedure of mixed methods in health services research. *Medical Care*, 51(8), e51–e57. <https://doi.org/10.1097/MLR.0b013e31824642fd>



The *Journal of Educational Research and Practice* is a peer-reviewed journal that provides a forum for studies and dialogue about developments and change in the field of education and learning. The journal includes research and related content that examine current relevant educational issues and processes. The aim is to provide readers with knowledge and with strategies to use that knowledge in educational or learning environments. *JERAP* focuses on education at all levels and in any setting, and includes peer-reviewed research reports, commentaries, book reviews, interviews of prominent individuals, and reports about educational practice. The journal is sponsored by The Richard W. Riley College of Education and Leadership at Walden University, and publication in *JERAP* is always free to authors and readers.