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Music teachers' preparation strategies for practical and aural examinations in Ghanaian Senior High Schools: A qualitative inquiry

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Abstract

Practical performance and aural competency are central to music education, yet students in Ghanaian Senior High Schools consistently underperform in these areas of the West African Senior School Certificate Examination. This pattern has been documented by successive WAEC chief examiners' reports, but the classroom practices through which music teachers prepare students remain poorly understood. This qualitative study examined how SHS music teachers in the Cape Coast Metropolis of Ghana prepare students for practical and aural examinations, what challenges they encounter, and how institutional, curriculum, and learner factors shape their instructional decisions. Eight purposively selected music teachers participated in semi-structured interviews analysed using Braun and Clarke's reflexive thematic analysis. Three principal findings emerged: teachers employ a systematic multi-strategy preparation repertoire encompassing phrase-by-phrase teaching, tonic sol-fa transmission, rehearsal sequencing, formative assessment cycles, and individualised remediation; preparation is constrained by four structural conditions operating in combination — inadequate rehearsal facilities, insufficient instruments, restricted instructional time, and large class sizes; and teachers respond to these constraints through adaptive instructional bricolage. The findings suggest that effective preparation depends on teacher pedagogical content knowledge and adaptive capacity, but is structurally capped by institutional conditions that individual resourcefulness cannot overcome. Policy responses that invest in teacher resilience without addressing resource deficits will not produce sustainable improvements in student examination readiness.

1. INTRODUCTION

1.1 Broad Opening

Practical performance and aural discrimination are foundational to musical understanding. Both competencies develop through sustained, structured practice under informed pedagogical guidance, and both are assessed in high-stakes external examinations that determine students' academic progression and professional trajectories in music. In Ghana, the West African Senior School Certificate Examination (WASSCE) assesses music students across three domains — written theory, practical performance, and aural discrimination — and WAEC chief examiners' reports have consistently identified the latter two as the areas of weakest candidate performance [1]. This pattern of underperformance is not new, and it is not adequately explained by student ability alone. It reflects, in significant part, what happens — and what fails to happen — in the music classrooms of Ghanaian Senior High Schools during the years preceding the examination.

The question of how music teachers prepare students for practical and aural examinations is therefore a question with direct consequences for curriculum policy, teacher education, and examination outcomes in Ghana. It is also a question that the existing literature has not answered for this context. International research on music examination preparation is substantial, and Ghanaian music education scholarship has grown since the NaCCA curriculum reforms of 2023, but the specific instructional practices through

which Ghanaian SHS music teachers develop their students' practical performance and aural skills — the strategies they use, the constraints they manage, and the decisions they make — have not been examined through direct empirical inquiry. This study addresses that gap.

1.2 Literature Review and Gap

What is established: Effective strategies in music examination preparation

The international literature on practical and aural music preparation identifies several evidence-based instructional approaches. Phrase-by-phrase modelling — in which the teacher performs a musical phrase and students reproduce it before moving to the next — is among the most consistently documented strategies for developing both performance accuracy and aural discrimination [2]. This approach aligns with Vygotsky's zone of proximal development [3]: by scaffolding performance into manageable units under teacher guidance, teachers support students in reaching levels of musical achievement they could not attain independently.

Formative assessment and feedback are particularly well established as drivers of musical skill development. Black and Wiliam [4], in their foundational review of classroom assessment, demonstrated that formative assessment — defined as assessment used to adjust teaching in response to student learning — is among the highest-yield instructional practices available. Hattie and Timperley [5] showed that feedback is most effective when it addresses the task level (what the student is doing), the process level (how they are doing it), the self-regulation level (how the student monitors their own learning), and occasionally the self level (who the student is as a learner). In music, Hallam [6] established that students who receive regular, specific performance feedback develop musical self-regulation strategies that sustain their practice independently — a finding directly relevant to aural and practical examination preparation, where students must ultimately perform without teacher support.

Rehearsal sequencing — the systematic organisation of practice from simple to complex, from section to whole, from slow to performance tempo — is documented by Woody [7] and McPherson and Gabrielsson [8] as the structural backbone of effective practical music preparation. Tonic sol-fa, as a sight-singing and pitch literacy system, has particular relevance in the Ghanaian music education context, where it has been used in church and school music since the missionary period and remains the primary notation system through which choral and folk melodies are transmitted in SHS music education [9, 10].

What is contested: The role of resources and institutional context

The relationship between resource availability and music education quality is more complex than it initially appears. Hash [11], in a study of resource allocation in secondary music programmes, found that teacher instructional quality — not resource level alone — was the strongest predictor of student music achievement, suggesting that teacher strategy mediates the relationship between resources and outcomes. Schmidt [12], examining barriers to learner-centred music education globally, found that

teachers in resource-constrained contexts develop adaptive strategies that partially compensate for material deficits, but that these adaptations are sustainable only up to a structural threshold beyond which individual teacher resourcefulness cannot substitute for institutional provision.

In Ghanaian SHS contexts, Acquah and Kwofie [13] documented that music teachers in the Central Region of Ghana face systematic resource challenges — inadequate instruments, insufficient practice space, and limited instructional time — that constrain their examination preparation capacity. Amuah, Acquah, and Dzansi-McPalm [14] confirmed that these challenges are experienced across multiple Ghanaian SHS contexts and produce predictable patterns of student underpreparedness. Akuno and Amponsah [15] added that large class sizes and variation in students' prior musical experience compound these structural constraints, because individualised practical coaching — the most effective form of performance preparation — becomes logistically difficult at scale.

What is absent: The teacher's pedagogical perspective

Despite this body of work, a critical gap remains. Existing Ghanaian SHS music education research documents what challenges teachers face but not how teachers navigate them at the level of daily instructional decision-making. No study has examined the specific strategy repertoire that Ghanaian SHS music teachers use in practical and aural preparation, how those strategies are selected and sequenced, how teachers diagnose and respond to individual student difficulty, or what theoretical frameworks — implicit or explicit — guide their instructional choices. This gap matters because without understanding what teachers do in classrooms and why, policy interventions aimed at improving WASSCE practical and aural outcomes lack the evidential basis to target the right leverage points.

Shulman's concept of pedagogical content knowledge (PCK) provides the theoretical frame that connects this gap to a broader question: what is the nature of the professional knowledge that enables a music teacher to transform subject matter understanding into forms that students can develop and use [16]? PCK is not simply subject knowledge (knowing how to play a musical instrument or discriminate pitch) or generic pedagogy (knowing how to organise a classroom); it is the integration of both in response to specific student learning needs in specific content areas. Understanding what PCK Ghanaian SHS music teachers draw on in practical and aural preparation — and how that PCK is enabled or constrained by institutional context — is the empirical question at the centre of this study.

1.3 Research Objectives

This study addresses three objectives. First, to document the strategies that SHS music teachers in the Cape Coast Metropolis of Ghana use to prepare students for practical and aural examinations. Second, to identify the challenges these teachers encounter in implementing examination preparation effectively. Third, to examine the institutional, curriculum, and learner factors that shape teachers' instructional decisions in this preparation process.

1.4 Paper Structure

The remainder of this paper is structured as follows. Section 2 describes the methodology, including research design, participant selection, data collection, and data analysis. Section 3 reports the findings across the three research objectives. Section 4 discusses the findings in relation to the theoretical frameworks and prior literature. Section 5 states the conclusions and their implications for policy and practice.

2. METHODOLOGY

2.1 Research Design

This study adopted a qualitative exploratory descriptive design within a constructivist model [17]. A qualitative design was chosen because the research objectives required understanding teachers' lived experiences, professional judgements, and instructional practices in their natural classroom contexts — phenomena that quantitative measures cannot adequately capture. A constructivist model was appropriate because the study treats teachers' knowledge and practice as contextually constructed rather than objectively fixed: different teachers working within the same national curriculum may develop different preparation approaches depending on their experience, their students' needs, and the specific resources and constraints of their institutional environment.

An exploratory descriptive design was applied rather than a more structured case study or phenomenological approach, because the primary aim was to map the range of strategies, challenges, and decision factors present in the population of SHS music teachers in Cape Coast, rather than to develop a thick description of a single case or to identify the essential structures of teachers' lived experience. This design allowed for cross-participant comparison while preserving the contextual specificity that qualitative inquiry offers.

2.2 Participants

Participants were eight practising SHS music teachers from selected schools in the Cape Coast Metropolis of Ghana, purposively sampled on the basis of two criteria: direct responsibility for preparing students for WASSCE practical and aural examinations, and a minimum of two years' teaching experience in that role. Purposive sampling was appropriate because the study required participants with specific professional experience rather than a representative cross-section of all music teachers [18, 19].

Participants held between two and eighteen years of SHS music teaching experience. Three were female and five were male. All held at least a Bachelor of Education in Music or Arts Education from a Ghanaian university. Thematic saturation — the point at which new interviews produce no new thematic content — was reached at the seventh interview, with the eighth conducted to confirm saturation [20]. Participants are identified in this paper by codes T1 through T8 to protect anonymity.

2.3 Data Collection

Data were collected through semi-structured interviews conducted by the researchers between January and March 2026. Each interview lasted between 45 and 75 minutes and was conducted in English at a time and location convenient to the participant, most often in the teacher's school. An interview guide was developed from the research objectives and piloted with two music teachers not included in the main sample. The guide covered five domains: preparation strategies for practical examinations; preparation strategies for aural examinations; challenges encountered; adaptation strategies; and factors influencing instructional decisions.

Semi-structured interviews were chosen because they allow the researcher to cover defined thematic terrain while remaining responsive to participants' own framings and emphases — an important feature for a study examining professional knowledge that may not map neatly onto the researcher's prior categories [18]. Field notes were recorded during and immediately after each interview, capturing contextual observations, non-verbal cues, and the researcher's analytical reflections. All interviews were audio-recorded with participants' consent and transcribed verbatim.

2.4 Data Analysis

Data were analysed using Braun and Clarke's reflexive thematic analysis framework [21], following six phases: familiarisation with the data through repeated reading and note-taking; generation of initial codes; construction of candidate themes; review of themes against the coded data and the full dataset; definition and naming of final themes; and production of the written analysis. The analysis was conducted independently by both researchers, with a third-party review of theme definitions and coding decisions conducted by a doctoral supervisor at the University of Cape Coast [22]. Where coding disagreements arose, they were resolved through discussion and documented in an audit trail.

Reflexive thematic analysis was chosen over other qualitative approaches because the study did not aim to produce a universal theory of SHS music teacher preparation (which would require grounded theory) or to describe the essential structures of a shared phenomenon (which would require phenomenology). It aimed to identify patterns across participants' experiences while remaining attentive to the particular institutional and contextual factors that give those patterns their specific character — an analytic aim for which reflexive thematic analysis is well suited [21].

2.5 Trustworthiness

Trustworthiness was addressed through four strategies following Lincoln and Guba [22]. Credibility was enhanced through prolonged engagement with participants, member-checking of emerging themes with three participants, and peer debriefing with the doctoral supervisor. Transferability was supported by providing thick descriptions of the research context, participants, and school settings. Dependability was addressed through the audit trail of coding decisions and theme development. Confirmability was achieved through reflexivity statements that document the researchers' positions as music education graduates with direct familiarity with SHS music teaching contexts.

2.6 Ethical Considerations

Ethical clearance was obtained from the University of Cape Coast. Headteachers provided institutional permission for access to participating schools. All participants provided written informed consent before the interviews began. They were informed of their right to withdraw at any stage without consequence. Audio recordings and transcripts are stored on a password-protected institutional server accessible only to the research team. All participant-identifying information has been anonymised.

2.7 Positionality

All researchers are music education professional with direct experience of the Ghanaian SHS music curriculum and WASSCE preparation requirements. This insider positioning enabled rapport with participants and facilitated nuanced interpretation of classroom contexts. It also created a risk of confirmation bias — the tendency to read findings as confirming prior assumptions about what effective preparation looks like. This risk was managed through the independent coding process, the peer debriefing sessions, and the deliberate inclusion in the analysis of findings that challenged the researchers' initial expectations.

3. FINDINGS

Three themes emerged from the thematic analysis, corresponding to the three research objectives: the strategy repertoire teachers use in practical and aural preparation; the structural challenges they encounter; and the factors that shape their instructional decisions. Each theme is reported with representative participant quotes. The number of participants raising each theme is noted where relevant.

3.1 Theme 1: A Systematic Multi-Strategy Preparation Repertoire

All eight participants described preparation for practical and aural examinations as a deliberate, multi-phase process that began well in advance of the examination period and drew on a defined repertoire of strategies. The repertoire was not uniform across teachers, but four strategy clusters appeared consistently across the majority of participants.

Strategy cluster 1: Structured performance modelling and phrase-by-phrase transmission.

Seven of the eight teachers described using systematic phrase-by-phrase modelling as the primary vehicle for transmitting practical performance content, particularly in vocal and instrumental preparation. T3 described the approach in the following terms: "I never give them the whole song first. I play or sing one phrase, they echo it back to me, we correct together, then we move forward. If they cannot do phrase one cleanly, phrase two is not going to help them." T6 described a similar practice, noting that phrase-by-phrase work was especially important for students without prior music exposure: "Some of them have never touched a keyboard before SHS. They need very small steps. One phrase. Correct. Next phrase. Build from there." This graduated, scaffolded approach was described by T1 as designed to develop not

only technical accuracy but also musical memory and independent performance capacity: "By the time they can do all the phrases separately, they start to feel how the music works. Then putting it together is easier."

Strategy cluster 2: Tonic sol-fa as a dual practical and aural preparation tool.

Six participants described tonic sol-fa as central to both practical performance preparation and aural training. T5 articulated the dual function clearly: "Sol-fa is not just for singing. It trains the ear. When a student can sing back a melody on sol-fa syllables, they are doing aural work and practical work at the same time." T2 described integrating written sol-fa with performance practice as a way of developing musical literacy alongside instrumental skill: "I make them write the sol-fa before they play it. Then they play it. Then they sing it on sol-fa. Three times through the same material, three different skills." The use of sol-fa as a bridge between theoretical understanding and practical execution reflects the particular character of Ghanaian SHS music pedagogy, which inherits both the missionary tonic sol-fa tradition and the contemporary performance-based curriculum requirements.

Strategy cluster 3: Rehearsal sequencing and mock examination practice.

Seven participants described systematic rehearsal sequencing — from simple to complex, from section to whole, from slow to performance tempo — as the structural backbone of their preparation programmes. T4 described a semester-long rehearsal arc: "First term we build the basic skills — scales, exercises, simple melodies. Second term we go into the examination repertoire section by section. Third term we put everything together and run full mock examinations." The use of mock examinations as formative tools was particularly prominent. T7 described their function explicitly: "Mock examinations are not just for marks. They are the most important feedback tool I have. When a student does a mock and I sit with them afterwards, they can hear exactly what they got wrong. That conversation is where most of the real learning happens." T8 noted that the mock examination format also reduces performance anxiety by familiarising students with the examination conditions before the actual assessment.

Strategy cluster 4: Formative assessment cycles and individualised remediation.

All eight participants described using formative assessment throughout the preparation process, though the mechanisms varied. T1 described continuous informal assessment during rehearsal: "I am always listening and watching. If I see three students struggling with the same interval, I stop the whole class and we address it together. If only one student is struggling, I see them separately." T5 described a more structured weekly assessment cycle: "Every Friday we do a short performance exercise. I mark it, I give them feedback by Monday, and I adjust the following week's plan based on what I heard." Individualised remediation for students experiencing difficulty was described by all eight participants as a standard practice, though the time available for it was a consistent source of strain. T3 noted: "I run extra sessions before school for the students who are really behind. It is not in my official schedule, but without it some of them would not be ready."

3.2 Theme 2: Four Structural Constraints Operating in Combination

All eight participants identified the same four structural challenges as the most significant constraints on their preparation effectiveness. These challenges were not experienced independently — participants consistently described them as mutually compounding, with each challenge intensifying the impact of the others.

Constraint 1: Inadequate rehearsal facilities.

Seven participants reported that their schools lacked dedicated music rehearsal rooms, requiring practical preparation to take place in general classrooms, school halls, or in outdoor spaces. T2 described the acoustic and logistical difficulties this created: "When I teach in the classroom, the sound bounces everywhere. Students cannot hear themselves properly. They cannot hear each other. Aural training in that environment is genuinely difficult." T6 described using an outdoor corridor as a rehearsal space: "We go outside because inside is too noisy and too small. But then we disturb other classes, or if it rains we have to stop."

Constraint 2: Insufficient or non-functional instruments.

Six participants reported working with instruments that were broken, inadequate in number, or inappropriate for the examination repertoire. T4 described a situation in which the school's only keyboard had two non-functioning octaves: "The keyboard we have is missing keys in the middle register. That is where most of the examination pieces sit. Students have to learn around it." T7 reported that instrument sharing between students during practice was the norm in their school, producing insufficient individual practice time: "I have eight keyboards for forty students. You do the mathematics."

Constraint 3: Restricted instructional time.

All eight participants identified limited teaching time as a primary constraint. The official SHS music timetable allocates insufficient contact hours for the combination of theoretical, practical, and aural preparation that the WASSCE requires. T1 described the time pressure explicitly: "The examination covers three areas. I have the same number of hours as a core subject teacher. It is not enough. Something always gets less time than it deserves." T3 noted that the practical and aural components — which require the most sustained individual engagement — typically suffer most from time constraints because theoretical content is perceived by both teachers and school administrators as easier to teach at pace.

Constraint 4: Large class sizes and variation in prior musical experience.

All eight participants described large class sizes (typically 30–45 students) as fundamentally incompatible with the individualised coaching that effective practical and aural preparation requires. T5

articulated the core tension: "Practical music is a one-to-one teaching domain. You need to hear each student individually, diagnose exactly what they are doing, and give them specific feedback. With forty students, that is mathematically impossible within a normal class period." The challenge was compounded by wide variation in students' prior musical experience: T8 noted that in any given class, "some students come from strong church music backgrounds and can already sing in parts and read sol-fa. Others have had no music at all. I am not teaching one class — I am teaching five or six different classes at the same time."

3.3 Theme 3: Multi-Factor Instructional Decision-Making

All eight participants described their instructional decisions as shaped by the interaction of five factors, rather than by any single dominant influence. No participant described curriculum requirements or examination specifications as the sole driver of their planning; all described a dynamic process of balancing multiple competing demands.

Factor 1: Curriculum requirements and examination specifications.

All participants described the NaCCA music curriculum [23] and the WAEC examination specifications as the formal framework within which their preparation decisions were made. T1 described consulting the WAEC chief examiners' reports as part of annual planning: "Before I start the year, I read the previous year's examiner's report. It tells me which areas candidates nationally struggled with. Those are the areas I give extra time." T4 described aligning weekly plans to curriculum competencies while monitoring progress against the examination criteria.

Factor 2: Learner ability and prior experience.

Seven participants described learner ability as a primary day-to-day adjustment factor. T6 described differentiating the difficulty of practice repertoire based on ongoing assessment of individual students: "I keep a running record of each student's progress. If I can see that a student has reached the required standard in a skill area, I move them on. If they are still struggling, I adjust. The plan is never fixed."

Factor 3: Available resources.

Six participants described available resources as a significant shaping factor, particularly for practical preparation. T2 noted that the absence of functioning instruments directly determined which preparation activities were feasible: "If the keyboard is not working, I cannot do keyboard preparation that day. I move to sol-fa work or aural exercises. I adapt to what I have."

Factor 4: Institutional support and scheduling.

Five participants described institutional decisions about timetabling, access to rehearsal space, and support for extra-curricular music activities as significant influences on what they could achieve in preparation. T7 described a supportive headteacher who had authorised additional music periods in the term before examinations: "My headteacher understands that music needs more time before WASSCE.

He gives me extra periods in the third term. That makes a real difference." T3, in contrast, described an institutional environment in which music competed for resources with subjects perceived as higher priority: "I have to make a case every year for keeping the music room on the timetable. It should not be a negotiation, but it is."

Factor 5: Teachers' professional knowledge and experience.

All eight participants described their own professional knowledge — including familiarity with the examination requirements, understanding of their students' developmental trajectories, and experience of what strategies had worked in previous examination cycles — as the integrating factor that mediated all others. T1 described this professional judgement in terms that resonate with Shulman's PCK framework [16]: "Experience teaches you to read a student's performance and know exactly what the problem is, and know exactly what to do about it. You cannot learn that from a textbook. It comes from years in the classroom."

4. DISCUSSION

4.1 Pattern Summary

The three themes converge on a consistent picture. Ghanaian SHS music teachers in the Cape Coast Metropolis deploy a deliberate, multi-strategy preparation repertoire that is pedagogically sophisticated and — in its integration of formative assessment, scaffolded performance modelling, and individualised remediation — substantially aligned with what the international evidence base identifies as effective music examination preparation practice. At the same time, this preparation operates within four structural constraints that individually reduce its effectiveness and collectively cap it below the level that even highly skilled teachers can overcome through professional resourcefulness alone. The instructional decisions that teachers make navigate these constraints through adaptive professional judgement, but that navigation places a cognitive and workload burden on individual teachers that institutional conditions should instead absorb.

4.2 Interpretation Against Prior Literature

The finding that Ghanaian SHS music teachers use phrase-by-phrase modelling, tonic sol-fa, rehearsal sequencing, and formative assessment cycles as their core preparation strategies confirms and extends the international literature in specific ways. The use of phrase-by-phrase modelling as a scaffolding strategy is consistent with Vygotsky's ZPD framework [3] and with McPherson and Welch's documentation of rehearsal-based skill development in instrumental and vocal pedagogy [2]. The integration of tonic sol-fa as both a practical and aural preparation tool is a distinctively Ghanaian pedagogical practice that the international literature has not adequately theorised: it functions simultaneously as a sight-singing system, a pitch discrimination training mechanism, and a musical literacy bridge — a triple function that standard formative assessment models [4, 5] were not designed to capture.

The finding that formative assessment cycles — including mock examinations and individualised remediation — are central to teachers' preparation practice confirms Hattie and Timperley's four-level feedback model as applicable to this context [5]. However, the data suggest that Ghanaian SHS music teachers disproportionately operate at the task and process levels of Hattie and Timperley's taxonomy — providing feedback on what students are playing and how — and have limited capacity to develop self-regulation level feedback, which requires sustained individual engagement that large class sizes structurally prevent. This finding extends the feedback literature by identifying class size as a structural moderator of feedback effectiveness that the model does not explicitly address.

The four structural constraints identified in Theme 2 are consistent with Acquah and Kwofie [13], Amuah, Acquah, and Dzansi-McPalm [14], and Akuno and Amponsah [15], confirming that the challenges these studies identified are present in the Cape Coast Metropolis and experienced as mutually compounding rather than independently manageable. The finding extends this literature by documenting the specific mechanism — instructional bricolage — through which teachers respond to compounded constraints, and by identifying the threshold at which bricolage becomes insufficient: when instruments are non-functional across an entire register, or when class sizes prevent any meaningful individual diagnostic assessment, no level of teacher adaptive skill can substitute for the missing institutional provision.

4.3 Mechanisms and Theoretical Implications

The concept of instructional bricolage — the construction of workable pedagogical frameworks from whatever institutional resources are available — describes with greater precision what the data show than the standard resilience framing used in the Ghanaian music education literature. Resilience implies a return to a prior stable state; bricolage implies ongoing creative construction. Ghanaian SHS music teachers are not resilient in the face of adversity; they are constantly building, adapting, and rebuilding their preparation approaches in response to shifting constraints. This distinction has theoretical implications for how teacher professionalism is understood in resource-constrained African secondary education contexts: it positions the teacher not as a passive recipient of institutional provision but as an active pedagogical constructor — a position that demands institutional support proportional to the cognitive and creative labour it requires.

Shulman's PCK framework [16] provides the most illuminating theoretical lens for understanding how teacher professional knowledge integrates curriculum understanding, student knowledge, and instructional strategy in this context. The data show that the teachers most effective at preparation are those who have developed a sophisticated, subject-specific understanding of how practical and aural skills develop — understanding that enables them to diagnose precisely where a student's difficulty lies and select from their strategy repertoire the intervention most likely to address it. This integration of subject knowledge and pedagogical skill is the core of Shulman's PCK — and it is what makes the teachers' preparation repertoire more than a collection of techniques: it is a coherent professional knowledge system that organises and deploys those techniques in response to specific student learning challenges.

4.4 Practical Implications

Three practical implications follow directly from the findings. First, professional development programmes for Ghanaian SHS music teachers should prioritise the development and formalisation of the multi-strategy preparation repertoire identified in Theme 1 — particularly the integration of tonic sol-fa with aural training and the design of mock examination feedback cycles. These are the elements of teachers' existing practice that the literature most strongly supports and that professional development can most effectively build on. GES, NaCCA, and teacher education institutions should design continuing professional development that makes this repertoire explicit, systematises it, and provides structured opportunities for teachers to observe and critique each other's preparation practice.

Second, institutional administrators in Ghanaian SHS music education — headteachers, circuit supervisors, and GES district directors — need to recognise that the four structural constraints identified in Theme 2 are not background conditions but active determinants of examination outcomes. Instrument maintenance budgets, dedicated rehearsal space provision, music timetable protection, and class size management in music elective classes are not peripheral concerns: they are the infrastructure on which the teacher preparation work that WAEC examines depends.

Third, the WAEC chief examiners' reports that consistently document candidate underperformance in practical and aural examinations should be read not only as evidence of student deficit but as evidence of systemic institutional failure to provide the conditions that preparation requires. The policy response should be structural — resource investment, timetable reform, class size reduction in music elective classes — rather than purely curricular.

4.5 Limitations

This study has three principal limitations. First, the sample is drawn exclusively from the Cape Coast Metropolis, which has a relatively high concentration of established SHS institutions and may not represent the resource conditions and instructional practices of music teachers in rural or peri-urban Ghanaian contexts. Second, data were collected through self-report interviews rather than direct classroom observation, meaning that the strategies teachers described may differ in important ways from what they do in practice. The consistency of accounts across eight participants, and the convergence between described strategies and established research, increases confidence in the accuracy of the reports, but classroom observation data would strengthen the evidential basis significantly. Third, the study does not follow students through the preparation process to the examination itself, and thus cannot establish a direct relationship between the strategies documented and actual WASSCE practical and aural examination outcomes.

4.6 Future Research Directions

Four concrete research directions follow from these findings. First, a multi-site replication study extending the inquiry to SHS music teachers in rural and peri-urban regions of Ghana would establish whether the strategy repertoire and challenge patterns identified in Cape Coast are consistent across

different resource environments and institutional contexts. Second, a mixed-methods study combining teacher interview data with direct classroom observation and student examination score data would provide the triangulation necessary to establish which preparation strategies most strongly predict WASSCE practical and aural performance outcomes. Third, an experimental or quasi-experimental study testing a structured professional development intervention based on the strategy repertoire identified in Theme 1 would provide the implementation evidence needed to translate research findings into scalable teacher education practice. Fourth, a study examining the relationship between teachers' PCK profiles and their students' practical and aural examination outcomes would provide the direct empirical test of the Shulman framework's applicability to Ghanaian SHS music preparation [16].

5. CONCLUSIONS

This study yields four principal conclusions. First, SHS music teachers in the Cape Coast Metropolis of Ghana employ a systematic, multi-strategy preparation repertoire for WASSCE practical and aural examinations that is pedagogically deliberate and substantially consistent with international evidence on effective music examination preparation practice. This repertoire — centred on phrase-by-phrase modelling, tonic sol-fa integration, rehearsal sequencing, mock examination cycles, and individualised remediation — represents a professionally sophisticated response to a demanding preparation challenge.

Second, preparation is structurally constrained by four conditions — inadequate rehearsal facilities, insufficient or non-functional instruments, restricted instructional time, and large class sizes with wide variation in prior musical experience — that operate in combination and mutually compound each other's impact. These are not individual teacher management problems; they are institutional provision failures that require institutional responses.

Third, teachers navigate these structural constraints through instructional bricolage: the ongoing, adaptive construction of workable preparation frameworks from available resources. This bricolage reflects high levels of professional knowledge and commitment, but it places cognitive and workload burdens on individual teachers that sustainable institutional structures should instead absorb.

Fourth, effective preparation for practical and aural music examinations in Ghanaian SHS contexts is ultimately a function of two interacting variables: teacher PCK and institutional conditions. Policies that develop teacher PCK without improving institutional conditions will produce teachers with sophisticated strategies they cannot adequately deploy. Policies that improve institutional conditions without developing teacher PCK will produce better-resourced classrooms that teachers are not optimally prepared to use. Sustainable improvement in WASSCE practical and aural outcomes requires investment in both simultaneously.

Collectively, these conclusions call for a reframing of the WAEC examination performance gap — from a problem of student ability or teacher effort to a problem of institutional design. What students can achieve in WASSCE practical and aural examinations is not determined primarily in the examination hall.

It is determined in the music classrooms of Ghanaian Senior High Schools, across the years of preparation that precede the examination — preparation that the institutional conditions of those schools currently constrain more than teacher skill alone can overcome.

DECLARATIONS

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This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data Availability

The interview transcripts and audio recordings that support the findings of this study are not publicly available due to participant confidentiality commitments made at the time of data collection. The data are stored on a password-protected institutional server at the University of Cape Coast and may be requested from the corresponding author subject to institutional ethical approval.

Ethics Approval

Ethical approval for this study was obtained from the Institutional Review Board of the University of Cape Coast (Reference: SCA/DME/1.1/VOL. 2/181). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and the Ghana National Research Ethics guidelines.

Consent to Participate

Prior to data collection, all participants were provided with detailed information about the study's purpose, procedures, potential risks and benefits, and their rights as participants. Written informed consent was obtained from all participants before they took part in the study. Participants were assured of their right to withdraw at any time without penalty.

Consent to Publish

All participants provided written consent for the publication of anonymised data and direct quotations from their interviews. Participants were informed that their identities would be protected through the use of codes (T1–T8) and that all identifying information would be removed from the manuscript.

Competing Interests

The authors declare no competing interests.

Author Contributions

Lamptey GK and Darko-Yorson D conceptualised the study, designed the methodology, collected and analysed the data, and drafted the initial manuscript. Dzakey FA contributed to study conceptualisation,

supervised the research process, and critically revised the manuscript for intellectual content. Kpodo BK, Obeng E, and Kornu P assisted with data collection and contributed to manuscript revision. Aglago JM, Avorgbehia SH, Addo Botchway C, and Arkhurst K contributed to data collection and manuscript review. All authors reviewed and approved the final version of the manuscript.

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