TECHNOLOGICAL FRAMEWORKS FOR ASSESSING MUSIC TECHNOLOGY TEACHING AND LEARNING

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Abstract

Innovative music technology is an integral part of modern music production and assessment of music teaching and learning. In Nigeria, there is a growing interest in assessing music teacher competence. This is prompted by the demand for quality assurance and for greater recognition of the music teaching profession. Various assessment instruments have been developed in the western world to assess music teachers at various stages in their professional careers in the context of selection, certification, and professional development. There is a need for a framework design of this type to assess music teaching and learning in Nigeria. This paper developed three frameworks for assessing music teaching and learning in Nigeria. It discusses the advantages of these frameworks when using them to set up interpretive arguments. This design was derived from Bloom's taxonomy of domains, Dunkin and Biddle's theory of classroom teaching and learning, and Westera's competency model. It is fashioned for the peculiarity of music to be used as an instrument on which the assessor's judgment will be based for an improved music teacher's performance. It gives a spreadsheet of its application in practice in classroom assessment. It concludes that in developing the domain of competence, the assessment content should be relevant and representative of the teaching profession. The paper recommends that music education administrators and supervisors should use these frameworks for assessing music teachers and music teaching programs periodically. It is believed that the framework will serve its purpose for value judgments.

Keywords: Assessment, Music teacher, Competence, Music teachers' competence

Introduction

Teacher competence and its assessment have been of serious concern in developed countries. This is in response to public pressure from stakeholders upon schools to better and more effectively educate students. Teacher's competency enhances a teacher's ability to create an environment that is fair, understanding, and accepting of diverse students, ideas, experiences, and backgrounds. Judging from the role that teaching plays in the lives of students and society as a whole, it is believed that if the teacher impacts wrong information or knowledge to students, it could affect generations yet unborn. Moreover, teachers' incompetence could result in decreased enrolment and equally reduce the quality of students' academic achievement. Hence, the need to periodically assess the competence and performance of a teacher, Music teacher competence has a lot of influence on the learner because the teacher's competence of the subject matter is a pre-requisite for effective teaching. Sahan (2009) in his study on teacher competence and students' achievement emphasized that the basic areas of teacher competence include mastery of subject matter, understanding of human nature, interest in continued professional improvement, and knowledge of availability to apply the principles of teaching.

In the Netherlands, as well as in other countries, teacher assessment is receiving greater attention because of the increased scope for policy-making by schools, one of the consequences of which is to make differentiation of position and pay possible (Verloop, 1999; Straetmans Sanders, 2001). In addition, a law adopted in the Netherlands provides that professionals in education must satisfy competence requirements. The Dutch foundation for professional teaching competence (SBL, 2003) formulated requirements for academic purposes the seven domains are expected to be listed. These identified domains require periodic assessment for their relevance. The focus of developing assessment instruments is on obtaining the best possible evidence of the competence of teachers. This should depend on the degree to which the complete process of competent performance is represented, i.e. teacher decisions, teacher

actions, and student actions. Finally, a set of tasks and task situations should be chosen which can be considered representative, both quantitatively and qualitatively for the domain of competence under study.

Following the model of competent performance, criteria should start with desirable learning activities and outcomes among students, from which acceptable teacher actions and decisions can be derived. Increasingly, domains of competence are being stated in this way, not favoring a certain line of action but describing broad categories of activities and developing desirable learning activities. In addition, to distinguish levels of desirable performance, systematic comparisons between novices and experts within a profession can be made. Several different elements of teaching and learning have been emphasized throughout the history of evaluating teachers: personality traits that help to make a successful teacher; essential knowledge elements involving subject matter content, teacher thinking within a discipline; forms of teacher behavior that contribute to learning performance; practical knowledge and subjective theories of teachers determining teachers´ actions in specific teaching situations, and teaching as promoting powerful learning activities among learners. All separate elements of teaching cover some aspects of teacher competence, but none of them fully describe or explain the variables for assessing music teaching and learning. Based on reviews of literature there is no adequate sound and broad-based scientific framework of what constitutes an assessment of competent music teaching in Nigeria. Therefore, this paper fill this academic gap of a unified comprehensive concept of music classroom teaching is needed to consider all the different elements that are required in assessing music teaching and learning towards an improved teacher competence.

This paper presents frameworks that can form the basis for valid assessments in music teaching in Nigeria. According to Odunuga (2016), such framework can be used to set up interpretive arguments to substantiate judgments on teacher competence. Two limitations have prevented this type of research in music education from being widely conducted and accepted. These are: (1) the belief by many music educators that the most important results of music education are affective and therefore cannot be measured, and (2) the profession's fundamental lack of agreement on what should be taught. But lately, music researchers have agreed on what to teach and have also come to terms that music is not only affective but cognitive and psychomotor driven, hence, the conduct of this research.

This part describes how the frameworks can help develop assessment domains in music: cognitive, affective, and psychomotor. If assessors are able to interpret assessment results in terms of the postulated processes of the framework, the interpretive argument is supported. For example, assessors judging the quality of instruction may interpret student results in the way teachers make decisions when giving instruction, how they act, and what the consequences are for students in a specific classroom environment. An advantage of the framework is that varying or changing views on teaching do not affect its structure.

Concept of Competence

Concept of competence, as explained by Westera (2001), is strongly associated with the ability to master complex situations, and goes beyond the levels of knowledge and skills to include an explanation of how knowledge and skills are applied in an effective way. (Passos, 2009). There are two distinct meanings of competence in education. From a theoretical point of view, competence is understood as a cognitive structure that facilitates specified behaviors. From an operational point of view, competence seems to cover a broad range of higher-order skills and behaviors that represent the ability to deal with complex, unpredictable situations. This operational definition includes knowledge, skills, attitudes, meta cognition, and strategic thinking, and presupposes conscious and intentional decision-making (Westera, 2001).

Measuring Music Teachers' Competencies

Music teacher competence can be divided into various categories. They are professional, cognitive, affective, psychomotor, and pedagogical. In developing music teacher assessment instruments there is a need to work towards a shared view of competent teaching and representatives of the profession. The resultant view of this interaction may be a hybrid of all kinds of views of teaching which can be adopted in the formulation of frameworks of competent performance which must apply to large groups of teachers or a specific view for organizations that work according to a specific mission. The basis of such assessment must contain an overview of aspects of competence, the situations in which they must be demonstrated, and the desired degree of mastery. In assessing music teachers, the observer or the assessor must be trained in music because music is a subject that is domiciled with three domains of learning- the cognitive, affective, and psychomotor.

Assessing a music teacher with a general measuring stick may not fully capture the effectiveness and the competency level of the music teacher. The general yardstick involves a teacher using a variety of methods, relating objectives to

students' interests and needs, structuring students' behavior, monitoring time-on-task of students, and using pupils ideas. These competencies, when present in a music teacher, have been shown to positively change student attitude, and attentiveness but not music achievement and performance. Taebel (1990) corroborated this when he states that assessing music teachers without consideration of the uniqueness of the subject is not fair and remarks that it is important that music teachers be fairly evaluated in a way that is sensitive to the unique features of music teaching and learning. He argues rather convincingly that the common perspective on teaching (the explicit instruction model) relies on criteria that are improper for music teaching. He suggests the following improvements in current evaluation systems in order to make them fairer to music teachers: the classroom observation instrument should be as objective as possible, the manual for observers should include examples of music teaching, observer training should include discussion and observation of music classes, and consideration for the problems inherent in using the observation tool in a music performance class, the observation instrument should list behaviors that are important in evaluating a music teacher's classroom performance, such as demonstration, the accuracy of error detection and appropriateness of the feedback.

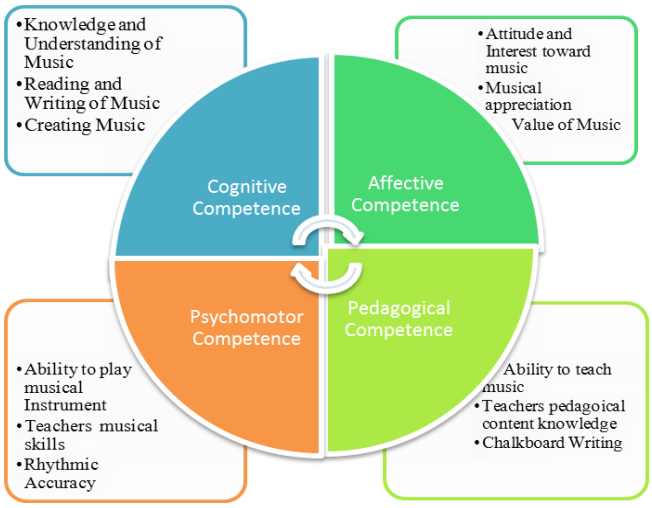
Music performance responses should be coded separately from behavioral or verbal responses, if music teacher's scores are considerably different from the norm, then separate norms should be adopted to allow music teachers to be compared only with each other, and professional development activities specific to the teacher's needs should arise from the evaluation. Ajibulu (1999) defines a competent music teacher as being characterized by good personal qualities, musical competencies, and professional qualities. She furthers that music teachers must be able to perform with musical understanding and technical proficiency. Teachers must be capable of playing accompaniments, be able to sing, conducting, compose as well as supervise and evaluate the performance of others. This shows that a music teacher's competence is characterized by the performance of adequate musical skills with matching pedagogical skills.

To demarcate domains of competence, selecting what is characteristic of adequate professional functioning and what is critical to functioning is necessary. Starting from this framework of competence, the important questions are: What are music teachers expected to demonstrate, and to what degree? What student achievement can be expected from teacher activities? Through which actions and decision-making processes might teachers be able to contribute to students' achievements? In view of these three questions, three frameworks were framed to cater to the teachers, the classroom, and the entire music teaching and learning process.

Theoretical Framework

The theoretical framework of this study was premised on three models that have to do with learning domains, teaching, and competence. This is because the study focuses on music teachers and music students' academic achievement and music as a subject involves all the domains of learning. The models are Bloom's taxonomy of learning, Mitzel's model of teaching as presented by Dunkin and Biddle (1974), and Westera model (1975).

Fig.1. Music Teachers Competence Framework



(Odunuga, 2015)

This framework presented is intended to give an understanding of the variables associated with music teachers' competence. In measuring music teacher competencies, musical cognitive competence, affective competence, psychomotor and pedagogical competence as listed in the diagram above should be the main focus. Cognitive competence involves the teacher's knowledge of music as a subject matter. This includes knowledge of music theory, music concepts like rhythm, melody, harmony, and music writing. The ability to create appropriate and original music is also part of cognitive competence. The teacher should also be equipped with a high level of musical understanding, analysis, and interpretation of music notations. Affective competence involves the right attitude and value toward music. This competence helps the teacher in music appreciation and achieving effective listening skills. It reflects in the music teachers' motor reactions, a number of recognized sound characteristics, and types of recognized sound characteristics. It can also be measured through sustained musical memory, understanding, and response to different periods and typologies in music.

Psychomotor competence involves performing skills of the music teacher. This is divided into Singing, dancing, and playing musical instruments. Singing competence is inherent in the teachers' display of tonal stability, expressive quality, rhythmic accuracy, melodic accuracy, good articulation, and motor reaction. Competence in playing either Western or African musical instruments involves melodic accuracy, rhythmic accuracy, articulation, tone clarity, and expressive quality. Dancing includes the appropriateness of the dance, originality, good coordination, types, and variety of moves. Pedagogic competence is the ability to impart musical knowledge in an effective way to the students. These involve good teaching methods, clarity of voice, good board writing, comportment, and reinforcement of students' responses. The teacher must also be equipped with assessment techniques and general musicianship. Professional competence is the capability to perform the duties of one's profession generally or to perform a particular professional task, with the skill of acceptable quality. Music professional competencies are those things that are expected of a music teacher which are developmental, impermanent, and context-dependent. Music teacher professional competencies involve discipline, good dressing, cordial relationship with the students, and being a good role model. It also includes knowledge of music teaching techniques, engaging students with music in a meaningful way, implementing the music curriculum effectively, assessing students' abilities in the various aspects of music; and explaining and demonstrating musical concepts (Ballantyne, 2006: 41).

Table 1: MUSIC TEACHER COMPETENCE ASSESSMENT SHEET (MTCAS)

Cognitive Competencies	**Very Adequate (3)**	**Adequate(2)**	**Inadequate(1)**	**Very Inadequate(0)**	**Score**
(i) Music knowledge					
(ii) Music writing					
(iii) Music reading					
(iv)Musiccreating (composition) (a)Originality					
(b) Appropriateness					
Affective Competencies					
(i) Motor reactions					
(ii) Music listening					
(iii) Number of recognized sound characteristics					
(iv) Types of recognized sound characteristics					
(v) Identification of periods and typologies in music					
(vi) Musical memory					
Psychomotor Competencies (Performing Skills)					
Singing					
(i) Tonal stability					
(ii) Expressive quality					
(iii) Rhythm accuracy					
(iv) Articulation					
(v) Motor reaction					
(vi) Melody accuracy					

Playing Musical Instrument (Woodwind, Brass, Percussion, Strings)					
(i) Melody accuracy					
(ii) Rhythm accuracy					
(iii) Clear articulation					
(iv) Tone clarity					
(v) Expressive quality					
Dancing					
(i) Appropriateness					
(ii) Coordination					
(iii) Types of moves					
(iv) Coordination of moves					
Pedagogic Competence					
Lesson Plan					
Teaching procedures					
Mastery of subject matter					
Good teaching methods					
Instructional materials (Variety)					
Class Management					
Clarity of voice					
Good board writing					
Students' participation and involvement					
Reinforcement of students' responses					
Assessment techniques					
General comportment					
Professional competence					
Cordial relationship with staff					
Cordial relationship with students					
Discipline					
Good dressing					
Good organization					
Obedience to authority					
Total Score					

This assessment sheet is a list of observable and measurable expected competencies expected of a music teacher. It is designed as an instrument for periodic assessment of music teaching for serving teachers in the basic classes. It is meant to assess the teachers quantitatively for professional development biennially. The forty-four (44) item instrument gives a total of one hundred and thirty-two (132) mark score of which a competent teacher can conveniently score one hundred marks (100). An average score that is lower than sixty (60) means that such a music teacher lacks adequate competence. This can be remedied by in-service training. These competencies can be assessed using three basic tools; observation techniques, interview techniques which gather evaluations of the music program from students and classroom teachers, and in-depth conferencing with the music teacher.

Music Teachers' Competence and Students' Achievement

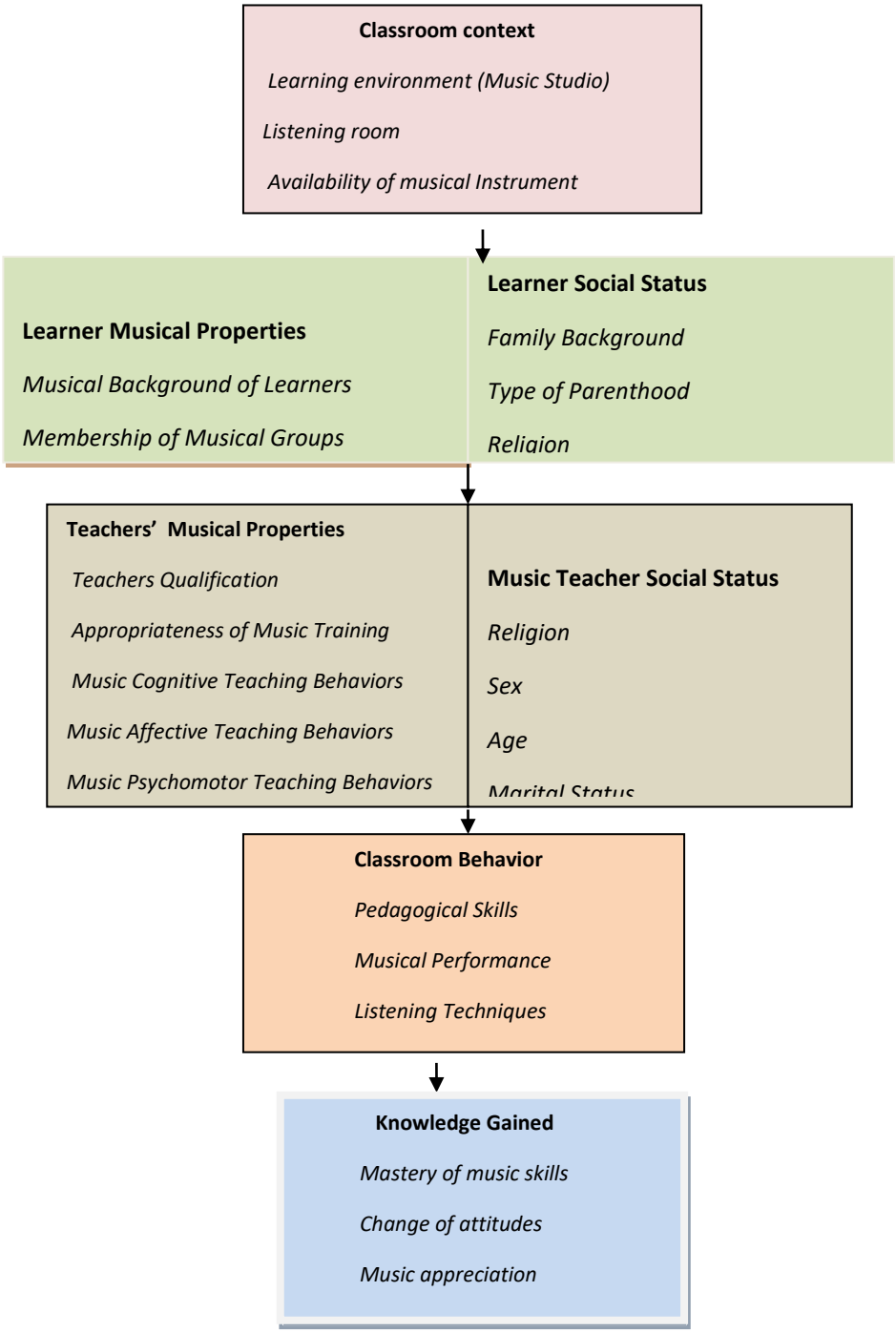
Music teaching and learning have suffered unfortunate situations in Nigerian basic schools for decades. The reason for this according to Ekwueme (2009) is the scarcity of candidates for the music teaching profession due to poor regard and poor attitude toward music in society. Much more is the inadequate periodic assessment of music teachers due to a lack of relevant assessment instruments. Nwakego (2006) in her study of competencies needed for effective teaching of music in basic schools identified thirty-six (36) items of competencies and divided them into seven clusters considered to be crucial for effective music teaching. These clusters include teachers' personality, knowledge of the subject matter, teaching approach, special skills, class management, resources management and evaluation technique. The result of the study showed that the music teachers who made up the sample for this study considered

understanding the subject matter and using methods dependent on enjoyment as the highest important competence for effective teaching of music. Effective music teaching therefore can be attained by matching musical opportunities and challenges to the developing competencies of the teachers in a way that keep the students engaged.

The competence of teachers is manifested in what teachers and students do in the classroom. These depend to some extent on the competencies they bring to the teaching and learning process. In Huitt's (1995) model, these are labeled inputs variables. The subcategory of teacher characteristics includes specific competencies which include such variables as cognitive, affective, psychomotor, and pedagogical. These are further broken down into knowledge and understanding of music, attitude, interest in music, ability to play a musical instrument, and ability to teach music. Others are values and beliefs; knowledge of students and the teaching/learning process; thinking, communication, and performance skills; and personality. If a teacher is competent to the extent that he can impart knowledge or skills, then that teacher is more likely to use the knowledge and skills he has and the students are more likely to learn.

The second subcategory of input is student characteristics. This includes all of the descriptions of students that might have an influence on the teaching/learning process and student outcome. Study habits, learning style, age, sex, gender, race, ethnicity, motivation and morale, socio-emotional, cognitive, and character development, all become important in the relationship between classroom processes and behavior and school achievement. Though we do not initially modify the characteristics that each student brings to the classroom, the teacher can arrange the teaching and learning process and modify each student's experience. This results in different outcomes, which in turn become the input for the next learning cycle. The second framework for assessing music teaching and learning through the listed variables reflects these. This framework states that music teaching competence is reflected in the consequences of teachers' actions, the most important being students' learning activities and academic achievement. The component 'actions' refer to professional activities that foster student learning or other consequences.

Fig. 3. Music Classroom Teaching and Learning Framework



The context of this music teaching and learning framework involves obtaining information about the existing learning situation to decide on music educational needs and to establish music program objectives. Indicators of this are the learning environment (school, community, studio, listening rooms, and classroom contexts), the availability of musical learning equipment (tape recorder, video machines, microphones, music stand, mutes, etc), and musical instruments (piano, electronic keyboard, brass, woodwind, strings and percussion, idiophones, aerophones, chordophones, and membranophones), background of learners; family, types of parenthood, religion, nationality and heir previous knowledge and skills in the subject, their interest and attitudes towards learning and their participation

in school and music activities. The input focuses on the teachers' contributions to the learning process. This includes information on the teacher's teaching qualification, appropriateness of music training, membership in musical groups, teaching experience, music teachers' cognitive, affective, and psychomotor teaching behaviors, and possession of musical instruments. It also includes the music teacher's social status which are religion, sex, age, and marital status.

The process is on the relationship of the teacher and the students as it affects learning and students' academic achievement. Process describes the interaction between the teacher and the learner in the teaching-learning process. This involves the teachers' classroom behavior which includes competence in pedagogical skills, musical performance, listening techniques, and learners' musical behavior which includes learners' musical reception and musical attitude. It also includes using appropriate methods of teaching. Output studies the effect of the program on the learner. This includes the knowledge and skills gained and the change of attitudes as a result of teaching and learning. It also involves the learner's growth and long-term learner effects. These will be measured by advancement in music knowledge, mastery of musical skills, practices, change of attitudes, music appreciation, as well as high course grades, and a number of students who continue the study of the subject at the senior secondary school level. The essence of this research is to give a comprehensive outlook of music teaching and learning and the variables that are germane to its development. It is expected that if the variables are kept functional and serviced, there will be notable progress and advancement in teacher competence and student academic music achievement and musicianship.

Conclusion

In the literature, different elements of teacher competence have been emphasized throughout the history of assessing teachers. For each of these conceptions of good teaching, specific assessment instruments were used. In developing a domain of competence, the assessment content should be relevant and representative of the teaching profession. Content reviews are used to set the boundaries within which inferences about teachers' competence are made. Various empirical analyses of how teachers function, empirical research on variables that contribute to higher learning performance and the mix of scientific and practical perspectives contribute to the acceptance and practical usability of instruments (Beijaard & Verloop, 1996; Duke & Stiggins, 1990; Uhlenbeck, 2002). Using these variables of music teacher competence as an interpretive framework for assessment, and considering criteria for construct validity, consequences for the construction of a content domain and procedures for collecting evidence of competence can be described. In this context, three things deserve closer attention: these are content, theory, and process.

The frameworks presented in this research looked at the classroom as the context of learning, teacher and students' characteristics, their social status as the input, the teacher-student relationship as the process, and the knowledge gained as the output. It also states that music teaching competence is reflected in the consequences of teachers' actions, the most important being students' learning activities. The component actions refer to professional activities that foster student learning or other consequences. Finally, it looked at the three domains of competence and three components of music (singing, playing a musical instrument, and dancing) to be equally assessed for improved music teachers' competence.

Recommendations

The following recommendations were given from the findings of this research work. Education administrators and supervisors should use these frameworks for assessing music teachers and music teaching programmes periodically. The assessors should interpret assessment results in terms of the postulated processes of the framework. If this is done, the interpretive argument will have a basis for its goal. Teachers are expected to draw from a professional knowledge base and from some personal characteristics when making decisions and performing activities in the classroom.

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