

**FUTURE TRENDS: THE DEVELOPMENT OF ICT-BASED MUSIC STUDIES AND THE PROSPECTIVE
IMPENDING ADVANCEMENTS IN MUSIC EDUCATION IN PLATEAU STATE**

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Abstract

This study examines music lecturers' and students' attitudes toward Information and Communication Technology (ICT) in music teaching and learning within Plateau State. It investigates the availability and utilization of ICT music resources in selected institutions. Five research questions and two null hypotheses guided the study. A descriptive survey method was employed, involving 230 randomly sampled lecturers and students. Data collection utilized structured questionnaires and checklists, analyzed using mean, standard deviation, percentage, and t-tests. The results reveal that both lecturers and students exhibit positive attitudes toward ICT. However, ICT music resources are derisory and demand urgent redress from appropriate authorities and to sustain these positive attitudes, the study suggests that urgent redress from authorities is needed for the effective provision of additional ICT music facilities in the region.

Keywords: Lecturers, Students, Attitudes, ICT, Music Education, Teaching and Learning, Tertiary Institutions.

Introduction

Plateau State, a pluralistic society, constitutes an integral part of Nigeria's thirty-six states. It boasts six tertiary institutions across the three geopolitical zones of the state, of which two universities, three colleges of education, and one polytechnic are owned by federal and state governments. Only two of these institutions have music departments: the Federal College of Education, Pankshin, and the University of Jos. This research investigates the use of information and communication technology (ICT) in teaching music, revealing positive compliance despite inadequate and outdated equipment requiring urgent upgrades or replacement.

Background of the Study

Technological advancements enhance Nigerian educational institutions' functionality, particularly tertiary education, to meet societal demands for effective manpower provision (Alabi & Akinnubi, 2013). Nigerian and international universities and colleges increasingly recognize ICT's importance in acquiring skills and delivering proficient academic programs. This adaptation draws from successful records in developed countries, where ICT has enhanced teaching and research. Derbyshire's (2013) research on teachers' attitudes toward ICT highlights its crucial role in producing knowledgeable music graduates. Teachers' positive attitudes toward ICT are vital, as they serve as role models in the rapidly growing technology landscape.

Research indicates that teachers' attitudes significantly influence technology integration (Albirini, 2006; Kluever et al., 1994). Developing teachers' positive attitudes is key to overcoming resistance to ICT use (Watson, 1998). Woodrow (1992) emphasizes that educational transformation relies on teachers' positive attitudes toward new technology. Although most teachers and students have positive attitudes toward ICT, few effectively integrate it to motivate students and stimulate higher-level thinking. Pedagogical change is necessary for effective music education integration.

The process of changing students' negative attitudes toward Information and Communication Technology (ICT) involves identifying the factors driving their attitudes and using this information to effect change (Ministry of

Education Guyana, 2016). Technology significantly impacts students' daily lives, playing a crucial role in developing their positive and negative attitudes toward it (Volk et al., 2013). Positive attitudes toward learning are vital for students to acquire knowledge and skills for real-life problem-solving. Both teachers' and students' attitudes toward ICT substantially influence their use in teaching and learning.

Most studies conducted in Nigeria focus on ICT adoption (Kpolovie & Awusaku, 2016). Despite extensive research on ICT use in Nigerian tertiary education, there is limited understanding of music lecturers' and students' attitudes toward ICT (Halilu et al., 2019). Exploring music lecturers' and students' attitudes toward ICT in Plateau State tertiary institutions is crucial for informed decisions about ICT use in higher education.

This study investigates music lecturers' and students' attitudes toward ICT resources for teaching and learning in Plateau State tertiary institutions. Its objectives are:

- to determine music lecturers' and students' attitudes toward ICT
- to investigate the availability of ICT music resources
- to assess the adequacy of these resources
- to determine their use in teaching and learning music

Research Questions.

1. What are the attitudes of music lecturers toward ICT in teaching and learning in Plateau State tertiary institutions?
2. What are the attitudes of music students toward ICT in teaching and learning in Plateau State tertiary institutions?
3. What are the levels of availability of ICT music resources for lecturers and students in Plateau State tertiary institutions?
4. To what extent do lecturers use ICT music resources in teaching in Plateau State tertiary institutions?
5. To what extent do students use ICT music resources in learning in Plateau State tertiary institutions?

Review of Related Literature

Information and Communication Technologies (ICTs) are defined as a set of technological tools and resources used to communicate, teach, create, share, store, and manage information (Alabi & Akinnubi, 2013). These technologies include radio, television, video, DVD, telephone, satellite systems, computers, network hardware and software, and associated equipment and services, such as video-conferencing and electronic mail. Odachi (cited in Modeme & Adeogun, 2021) defines ICT as "a range of technologies for gathering, storing, retrieving, processing, analyzing, and transmitting information." In the context of music education, ICT refers to electronic musical instruments, digital devices, protocols, and applications that facilitate teaching and learning. The computer is a fundamental tool that simplifies music education.

Music has been defined in various ways by scholars. Some view it as an expression of sound, while others consider it an expression of thought and feeling in aesthetic form. Edgard (cited in Jack, 1991) defines music as "organized sound" (p. 7). Similarly, Modeme & Adeogun (2021) explain that music, generally defined as the arrangement of sounds in one or more voices or instruments, is a universal form of expression that impacts and is impacted by socio-cultural norms.

Attitude refers to feelings toward something, a person, or an idea, influenced by emotions, behaviours, and socioeconomic and political factors. These feelings can be learned through active or vicarious experiences and are susceptible to change yet stable enough to be enduring. Past experiences and knowledge can shape attitudes.

ICT in music education has transformed teaching and learning methods, making music more accessible. It enables independent work, allows teachers to move freely, and enables students with limited musical knowledge to generate ideas and complete musical activities (Chan et al., 2006; Modeme & Adeogun, 2021).

Music and computer technology are frequently used in classrooms for computer-aided instruction, promoting skill development, and creativity, and facilitating learning. Cain (2006) notes that technological developments have brought practical changes to music education, as teachers incorporate new hardware and software into their teaching.

Education has evolved as teachers incorporate new hardware and software into their teaching. Electronic keyboards and computers provide children with a range of sounds similar to those in popular music, bridging the gap between school music and the outside world (p. 126). Savage (2005) notes that Information and Communication Technologies (ICTs), such as computers, enable students to:

- compose music
 - receive playback feedback
 - interact with recording technologies
- ICTs enhance music-related skills, including:

- reading
- pitch recognition
- rhythmic skills

This empowerment fosters confidence in applying music knowledge, leading to improved performance and engagement in music-related activities.

However, technology presents a challenge for music teachers: integrating digital music knowledge into the school setting and embedding it within the curriculum. Today's students rely on digital technologies for music production and communication. To address this, music teachers must create scaffolding elements using ICT tools, enabling students to express their creativity in functional contexts that support their skills, values, knowledge, and resources relevant to their learning, both in and out of the classroom (Stuart et al., 2011).

Methodology

This study surveyed music lecturers' and students' attitudes toward Information and Communication Technology (ICT) in teaching and learning within Plateau State's tertiary institutions. The population comprised 30 lecturers and 200 students from the College of Education, Pankshin, and the University of Jos. Data were obtained through questionnaires and checklists. The study aimed to understand attitudes toward ICT in teaching and learning, testing two null hypotheses at a 0.05 confidence level.

The study's instruments were validated by university experts in Music Education, Measurement and Evaluation, and Statistics. Data were analyzed using SPSS, incorporating both descriptive and inferential methods. Descriptive analysis determined the mean, standard deviation, frequency, and percentage of respondents' attitudes and availability of ICT music resources. The inferential analysis tested hypotheses at a 0.05 confidence level.

Data Presentation and Analysis

The collected data were analyzed and presented in tables related to the research questions and hypotheses.

Research Question One: What are the attitudes of music lecturers toward ICT in teaching and learning in Plateau State's tertiary institutions?

Table 1: Mean and standard deviation of lecturers' attitude towards ICT in teaching and learning in Tertiary Institutions in Plateau State.

Item	Item Statement	N	Mean	Standard Deviation	Decision
Item1	I like using ICT in the teaching and learning of music.	30	3.40	.50	Accepted
Item2	I like ICT because it helps music teachers to organize teaching work with ease.	30	3.40	.56	Accepted
Item3	I dislike using ICT in music classroom because it waste precious time during teaching.	30	1.87	.78	Rejected
Item4	I dislike the use of ICT resources for teaching music because It is time consuming and difficult to find.	30	1.73	.58	Rejected
Item5	I like using ICT because it makes music lessons more interesting.	30	3.47	.73	Accepted
Item6	I like ICT because it provides the fastest means of getting effective and informative knowledge for music teaching.	30	3.03	.85	Accepted
Item7	I like ICT in teaching music if there are relevant equipment available.	30	3.33	.48	Accepted
Item8	I like using ICT as it makes teaching music interesting and enjoyable.	30	3.33	.71	Accepted
Item9	Capable music teachers dislike the use of ICT to teach.	30	2.00	.95	Rejected

Item10	Every music teacher can easily learn to operate ICT devices.	30	2.40	.72	Rejected
Item11	I like the idea of compulsory ICT skills to be acquired by every music teacher for teaching and learning music.	30	3.57	.63	Accepted
Item12	Using music ICT equipment to teach music is phobic.	30	1.97	.76	Rejected
Item13	I dislike ICT because it wastes my time and effort when I use it in teaching music.	30	1.70	.60	Rejected
Item14	I like working using ICT in teaching music because it does not make me exert much energy in teaching.	30	2.63	.93	Accepted
Item15	I dislike the use of ICT because it may in the long run replace the music teacher in the classroom.	30	2.13	1.04	Rejected
Ground Mean			2.66	0.72	Accepted

Music lecturers' attitudes to ICT in teaching and learning in tertiary institutions in Plateau State:4 -point scale was used ranging from 1.00 to 1.99 = SD, 2.00 to 2.49 = D, 2.50 to 3.49 = A, 3.50 to 4.00 = SA.

Table 1: Mean and Standard Deviation of Lecturers' Attitudes toward ICT in Teaching and Learning in Tertiary Institutions in Plateau State.

Music Lecturers' Attitudes toward ICT in Teaching and Learning in Tertiary Institutions in Plateau State:

A 4-point scale was utilized, ranging from:

1.00-1.99: Strongly Disagreed (SD)

2.00-2.49: Disagreed (D)

2.50-3.49: Agreed (A)

3.50-4.00: Strongly Agreed (SA)

To address Research Question 1, items 1-15 on the lecturers' questionnaire were analyzed. Respondents' responses are presented in Table 1.

The scoring criteria were:

- Mean score below 2.50: Low (rejected)

- Mean score of 2.50 and above: High (accepted)

Table 1 displays the mean (M) and standard deviation (SD) of music lecturers' attitudes toward ICT in teaching and learning music in Plateau State's tertiary institutions.

Results indicate that lecturers responded with acceptable mean scores above 2.50 (criterion mean) for items 1, 2, 5, 6, 7, 8, 11, and 14 (M = 3.40, 3.40, 3.03, 3.33, 3.33, 3.57, and 2.63), indicating agreement or positive attitudes. Conversely, items 3, 4, 9, 10, 12, 13, and 15 had mean scores below 2.50 (M = 1.87, 1.73, 2.00, 2.40, 1.97, 1.70, and 2.13), indicating disagreement or negative attitudes.

The overall mean score for items 1-15 was 2.66, exceeding the criterion mean of 2.50, indicating positive attitudes. Therefore, it can be concluded that music lecturers exhibit positive attitudes toward ICT in teaching music.

Research Question Two: What are the attitudes of music students toward ICT in teaching and learning in tertiary institutions in Plateau State?

Research Question Two: What are the attitudes of music students towards ICT in teaching and learning in Tertiary Institutions in Plateau State?

Table 2: Mean and standard deviation on the attitude of music students toward ICT in teaching and learning in Tertiary Institutions in Plateau State.

Items	Item Statement	N	Mean	SD	Decision
Item1	I like the use of ICT in the learning of music.	200	3.48	.71	Accepted
Item2	I like the use of ICT during music teaching and learning.	200	3.30	.77	Accepted
Item3	I dislike using ICT in music classrooms because it wastes precious time in learning.	200	1.87	.84	Rejected
Item4	I dislike the use of ICT resources for learning music because is time-consuming and difficult to find.	200	1.95	.86	Rejected
Item5	I like using ICT because it makes music lessons more interesting.	200	3.37	.74	Accepted

Item6	I like ICT because it provides the fastest means of getting effective and informative knowledge for music learning.	200	3.33	.85	Accepted
Item7	I dislike ICT in learning music events there are relevant equipment available.	200	2.00	.86	Rejected
Item8	I like using ICT as it makes music lessons interesting and enjoyable.	200	3.28	.73	Accepted
Item9	Capable music students dislike the use of ICT to learn.	200	2.29	1.03	Rejected
Item10	Every music student can easily learn to operate ICT devices.	200	3.01	.94	Accepted
Item11	I like the idea of compulsory ICT skills to be acquired by every music student in the music teaching-learning profession.	200	3.29	.75	Accepted
Item12	Using ICT music equipment to learn music is phobic.	200	2.25	.98	Rejected
Item13	I dislike ICT because it wastes my time and effort when I use it in learning music.	200	2.59	1.01	Accepted
Item14	I like using ICT in learning music because it does not make me exert much energy.	200	2.84	.99	Accepted
Item15	I dislike the use of ICT because it may in the long run replace the music teacher in the classroom and me later as a teacher in training.	200	2.20	1.04	Rejected
Ground Mean			2.73	0.87	Accepted

Music students' attitudes to ICT in learning music in Tertiary Institutions in Plateau State:4 -point scale was used ranging from 1.00 to 1.99 = SD, 2.00 to 2.49 = D, 2.50 to 3.49 = A, 3.50 to 4.00 = SA.

Table 2: Mean and Standard Deviation of Music Students' Attitudes toward ICT in Teaching and Learning in Tertiary Institutions in Plateau State.

Music Students' Attitudes Toward ICT in Learning Music in Tertiary Institutions in Plateau State:

A 4-point scale was utilised, ranging from:

1.00-1.99: Strongly Disagreed (SD)

2.00-2.49: Disagreed (D)

2.50-3.49: Agreed (A)

3.50-4.00: Strongly Agreed (SA)

To address Research Question 2, items 1-15 on the students' questionnaire were analyzed. Respondents' responses are presented in Table 2.

Table 2 displays the mean (M) and standard deviation (SD) of music students' attitudes toward ICT in teaching and learning music in Plateau State's tertiary institutions.

Results show that students responded with acceptable mean scores above 2.50 (criterion mean) for items 1, 2, 5, 6, 8, 10, 11, 13, and 14 (M = 3.48, 3.30, 3.37, 3.33, 3.28, 3.01, 3.29, 2.59, and 2.84), indicating agreement or positive attitudes. Conversely, items 3, 4, 7, 9, 12, and 15 had mean scores below 2.50 (M = 1.87, 1.95, 2.00, 2.29, 2.20, and 2.25), indicating disagreement or negative attitudes.

The overall mean score for items 1-15 was 2.73, exceeding the criterion mean of 2.50, indicating positive attitudes. Therefore, it can be concluded that music students exhibit positive attitudes toward ICT in learning music.

Research Question Three: What is the level of availability of ICT music resources for lecturers and students in teaching and learning in tertiary institutions in Plateau State?

Table 3: Frequency counts and percentages of availability of ICT music resources to both lecturers and students for teaching and learning in Tertiary Institutions in Plateau State.

S/N	Music Resources	Students		Lecturers	
		Available Frequency/%	Not Available Frequency/%	Available Frequency/%	Not Available Frequency/%
1	Cassette Players	87 (43.5)	113 (56.5)	7 (23.3)	23 (76.7)
2	CD players	99 (49.5)	101 (50.5)	29 (96.7)	1 (3.3)

3	Laptops	133 (66.5)	67 (33.5)	30 (100)	0 (0)
4	Radios	80 (40)	120 (60)	3 (10)	27 (90)
5	DVD players	93 (46.5)	107 (53.5)	16 (53.3)	14 (46.7)
6	Tape recorders	91 (45.5)	109 (54.5)	7 (23.3)	23 (76.7)
7	Speakers	195 (97.5)	5 (2.5)	30 (100)	0 (0)
8	Microphone	188 (94)	12 (6)	30 (100)	0 (0)
9	MP3 players	116 (58)	84 (42)	4 (13.3)	26 (86.7)
10	Smartphones	182 (91)	18 (9)	30 (100)	0 (0)
11	Computers	172 (86)	28 (14)	30 (100)	0 (0)
12	Televisions	99 (49.5)	101 (50.5)	3 (10)	27 (90)
13	Electric Guitar	191 (95.5)	9 (4.5)	30 (100)	0 (0)
14	Electric Keyboard	195 (97.5)	5 (2.5)	30 (100)	0 (0)
15	Projectors	181 (90.5)	19 (9.5)	30 (100)	0 (0)
16	Cameras	79 (39.5)	121 (60.5)	5 (16.7)	25 (83.3)
17	Electric Drum kit	23 (11.5)	177 (88.5)	0 (0)	30 (100)
18	IPad	16 (8.0)	184 (92.0)	5 (16.7)	25 (83.3)
19	Smartboard	20 (10)	180 (90)	0 (0)	30 (100)
20	Synthesizers	62 (31.0)	138 (69.7)	9 (30.0)	21 (70)
21	MIDI	37 (18.5)	163 (81.5)	12 (40)	18 (60)
22	Sibelius	57 (28.5)	143 (71.5)	6 (20)	24 (80)
23	Tuner	44 (22.0)	156 (78.0)	12 (40)	18 (16)
24	Metronome	54 (27.0)	146 (73.0)	16 (30.4)	14 (46.7)
25	Sonar	19 (9.5)	181 (90.5)	2 (6.7)	28 (93.3)
26	Reason	20 (10.0)	180 (90.0)	1 (3.3)	29 (96.7)
27	Cubase	21 (10.5)	179 (89.5)	2 (6.7)	28 (93.3)
28	FL Studio	25 (12.5)	175 (87.5)	10 (33.3)	20 (66.7)
29	Mixer	189 (94.5)	11 (5.5)	30 (100)	0 (0)

30	Earphones	182 (91.0)	18 (9.0)	30 (100)	0 (0)
Ground Frequency/%		2950 (49)	3050 (51)	449 (49)	451 (51)

Availability of ICT music resources to both lecturers and students for teaching and learning in Tertiary Institutions in Plateau State. Fifty percent (50%) and above was considered adequate or available while forty-nine percent (49%) and below is considered inadequate or not available.

Table 3: Frequency Counts and Percentages of Availability of ICT Music Resources for Lecturers and Students in Tertiary Institutions in Plateau State.

The availability of ICT music resources in tertiary institutions in Plateau State is a mixed bag. For students, resources like Item 3, 7, 8, 9, 10, 11, 13, 14, 15, 29, and 30 are adequately available, with frequency rates of 50% and above. However, resources like Item 1, 2, 4, 5, 6, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28 have low frequency rates of 49% and below, indicating inadequacy

A similar pattern emerges for lecturers, with resources like Item 2, 3, 5, 6, 7, 10, 11, 13, 14, 29, and 30 being adequately available, while resources like Item 1, 4, 8, 9, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28 are inadequate.

Overall, the ground percentage rates for both students and lecturers show that 51% of resources are available, while 49% are not. This suggests that ICT music resources are inadequate for teaching and learning music in tertiary institutions in North-Central Nigeria.

To improve this situation, institutions can consider investing in more ICT resources and providing training for lecturers on how to effectively use these resources in their teaching. Research has shown that ICT can significantly enhance academic achievement, particularly when integrated into instructional activities.

Key Areas for Improvement:

- ICT Resource Availability: Increase availability of resources like Item 1, 2, 4, 5, 6, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28.
- Lecturer Training: Provide training for lecturers on effective use of ICT resources in teaching.
- Infrastructure Development: Invest in infrastructure to support ICT resource usage.

By addressing these areas, tertiary institutions in Plateau State can enhance the teaching and learning of music, ultimately improving academic achievement.

The Extent to Which ICT Music Resources Are Used by Lecturers in Teaching in Tertiary Institutions in Plateau State:

A 4-point scale was utilized, ranging from:

- 1.00-1.99: Never/Not Used (NU)
- 2.00-2.49: Rarely Used (RU)
- 2.50-3.49: Often Used (OU)
- 3.50-4.00: Very Often Used (VOU)

Research Question Four: What are the extent to which ICT music resources are used by lecturers in teaching in Tertiary Institutions Plateau State?

Table 4: Mean and standard deviation on the extent of usability of ICT music resources are used by lecturers in teaching in Tertiary Institutions in Plateau State.

S/No	Items	N	Mean	SD	Decision
Item1	Cassette players	30	1.63	0.81	Rejected
Item2	CD players	30	1.9	1.16	Rejected
Item3	Laptops	30	3.3	0.79	Accepted
Item4	Radios	30	1.53	0.9	Rejected
Item5	DVD Players	30	2.07	1.05	Rejected

Item6	Tape Recorders	3			Rejected
		0	1.57	0.82	
Item7	Speakers	3			Accepted
		0	3.27	0.58	
Item8	Microphones	3			Accepted
		0	3.57	0.5	
Item9	MP3 Players	3			Rejected
		0	2.00	1.23	
Item10	Smart Phones	3			Accepted
		0	3.57	0.77	
Item11	Computer	3			Accepted
		0	3.03	0.81	
Item12	Television	3			Rejected
		0	2.13	1.2	
Item13	Electric Guitars	3			Accepted
		0	3.63	0.61	
Item14	Electric Keyboard	3			Accepted
		0	3.87	0.35	
Item15	Projector	3			Accepted
		0	2.87	0.86	
Item16	Camera	3			Rejected
		0	1.9	1.16	
Item17	Electric Drum Kits	3			Rejected
		0	1.2	0.41	
Item18	IPad	3			Rejected
		0	1.77	1.04	
Item19	Smart board	3			Rejected
		0	1.53	0.97	
Item20	Synthesizers	3			Rejected
		0	2.1	1.16	
Item21	MIDI	3			Rejected
		0	2.17	1.18	
Item22	Sibelius	3			Rejected
		0	2.1	1.24	
Item23	Tuner	3			Rejected
		0	2.03	0.96	
Item24	Metronome	3			Rejected
		0	2.13	1.01	
Item25	Sonar	3			Rejected
		0	1.6	1.07	
Item26	Reason	3			Rejected
		0	1.8	1.16	
Item27	Cubase	3			Rejected
		0	1.83	1.29	
Item28	FL studio	3			Rejected
		0	2.3	1.21	
Item29	Mixer	3			Accepted
		0	3.17	0.7	
Item30	Earphones	3			Accepted
		0	3.23	0.9	
Ground Mean			2.36	0.93	Rejected

The extent to which ICT music resources are used by lecturers in teaching in Tertiary Institutions Plateau State: 4 -point scale was used ranging from 1.00 to 1.99 = never/ not used (NU), 2.00 to 2.49 = rarely used (RU), 2.50 to 3.49 = often used (OU) and 3.50 to 4.00. = Very often used (VOU).

To address Research Question 4, items 1-30 on the lecturers' checklist were analyzed.

The scoring criteria were:

- Mean score below 2.50: Low (rejected)
- Mean score of 2.50 and above: High (accepted)

Table 4 displays the mean (M) and standard deviation (SD) of the extent to which ICT music resources are used by music lecturers in teaching in Plateau State's tertiary institutions.

Results indicate that lecturers responded with low rates, yielding rejected mean scores below 2.50 (criterion mean) for items 1, 2, 4, 5, 6, 9, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28. This suggests inadequate usage. Conversely, items 3, 7, 8, 10, 11, 13, 14, 15, 29, and 30 had accepted mean scores above 2.50, indicating adequate usage.

The overall mean score for items 1-30 was 2.36, below the criterion mean of 2.50, indicating inadequate usage. Therefore, it can be concluded that lecturers do not adequately utilize ICT music resources in teaching in Plateau State's tertiary institutions.

Research Question Five: To what extent do students use ICT music resources in learning in tertiary institutions in Plateau State?

Table 5: Mean and standard deviation on the extent of usability of ICT music resources by students in learning in Tertiary Institutions in Plateau State.

S/No	Item Statement	N	Mean	SD	Decision
Item1	Cassette players	20	2.14	1.07	Rejected
Item2	CD players	20	2.25	1.12	Rejected
Item3	Laptops	20	2.93	1.04	Accepted
Item4	Radios	20	2.11	1.17	Rejected
Item5	DVD Players	20	2.24	1.14	Rejected
Item6	Tape Recorders	20	2.19	1.17	Rejected
Item7	Speakers	20	3.3	0.81	Accepted
Item8	Microphones	20	3.37	0.81	Accepted
Item9	MP3 Players	20	2.38	1.13	Rejected
Item10	Smart Phones	20	3.07	1.05	Accepted
Item11	Computer	20	2.81	1.11	Accepted
Item12	Television	20	2.16	1.15	Rejected
Item13	Electric Guitars	20	3.41	0.87	Accepted
Item14	Electric Keyboard	20	3.63	0.7	Accepted
Item15	Projector	20	2.79	1.0	Accepted
Item16	Camera	20	2.06	1.1	Rejected
Item17	Electric Drum Kits	20	1.79	1.06	Rejected
Item18	IPad	20	1.99	1.19	Rejected

Item19	Smartboard	20 0	2.03	1.15	Rejected
Item20	Synthesizers	20 0	2.00	1.13	Rejected
Item21	MIDI	20 0	1.86	1.06	Rejected
Item22	Sibelius	20 0	1.94	1.11	Rejected
Item23	Tuner	20 0	2.13	1.19	Rejected
Item24	Metronome	20 0	2.07	1.22	Rejected
Item25	Sonar	20 0	1.9	1.11	Rejected
Item26	Reason	20 0	1.92	1.11	Rejected
Item27	Cubase	20 0	1.9	1.1	Rejected
Item28	FL Studio	20 0	2.01	1.13	Rejected
Item29	Mixer	20 0	2.9	0.98	Accepted
Item30	Earphones	20 0	2.94	1.13	Accepted
Ground Mean			2.41	1.07	Rejected

The extent to which ICT music resources are used by students in learning music in Tertiary Institutions in Plateau State: 4 -point scale was used ranging from 1.00 to 1.99 = never/ not used (NU), 2.00 to 2.49 = rarely used (RU), 2.50 to 3.49 = often used (OU) and 3.50 to 4.00. = Very often used (VOU).

Table 5: Mean and Standard Deviation of the Extent of Usability of ICT Music Resources by Students in Learning in Tertiary Institutions in Plateau State.

The Extent to Which ICT Music Resources Are Used by Students in Learning Music in Tertiary Institutions in Plateau State:

A 4-point scale was utilized, ranging from:

1.00-1.99: Never/Not Used (NU)

2.00-2.49: Rarely Used (RU)

2.50-3.49: Often Used (OU)

3.50-4.00: Very Often Used (VOU)

To address Research Question 5, items 1-30 on the students' checklist were analyzed.

Table 5 displays the mean (M) and standard deviation (SD) of the extent to which ICT music resources are used by students to learn music in Plateau State's tertiary institutions.

Results indicate that students responded with low rates, yielding rejected mean scores below 2.50 (criterion mean) for items 1, 2, 4, 5, 6, 9, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28, indicating inadequate usage. Conversely, items 3, 7, 8, 10, 11, 13, 14, 15, 29, and 30 had accepted mean scores above 2.50, indicating adequate usage.

The overall mean score for items 1-30 was 2.36, below the criterion mean of 2.50, indicating inadequate usage. Therefore, it can be concluded that students do not adequately utilize ICT music resources in learning music in Plateau State's tertiary institutions.

Hypothesis 1 (H01): There is no significant difference ($p < 0.05$) between the mean responses of music lecturers and students regarding attitudes toward ICT in tertiary institutions in Plateau State.

Table 8: t-test summary table for the difference in the responses of music lecturers and students with respect to their attitudes towards ICT in Tertiary Institutions in Plateau State.

Respondents	N	Mean	Df	t-cal	Sig. value
Lecturers	30	2.66	228	-.460	.646
Students	200	2.73			

Interpretation of Results:

A significant difference implies rejection of H₀ (null hypothesis), while a non-significant difference ($p > 0.05$) leads to acceptance of H₀.

Table 8 reveals a sig. value of 0.646, exceeding the 0.05 alpha level. Consequently, the null hypothesis (H₀) is accepted, indicating no significant difference between music lecturers' and students' attitudes toward ICT in tertiary institutions in Plateau State.

Hypothesis 2 (H₀₂): There is no significant difference ($p < 0.05$) between the mean responses of music lecturers and students regarding the extent of ICT music resource usage in teaching and learning in tertiary institutions in Plateau State.

Table 9: t-test summary table for the difference in the responses of music lecturers and students on the extent to which ICT music resources are used in teaching and learning in Tertiary Institutions in Plateau State.

Respondents	N	Mean	Df	t-cal	Sig. value
Lecturers	30	2.36	228	-.234	.815
Students	200	2.40			

Table 9: t-test Summary Table for Differences in Music Lecturers' and Students' Responses on ICT Music Resource Usage in Teaching and Learning in Tertiary Institutions in Plateau State.

Table 9 indicates a sig. value of 0.815, exceeding the 0.05 alpha level. Consequently, the null hypothesis is accepted, indicating no significant difference between music lecturers and students regarding the extent of ICT music resource usage in teaching and learning in tertiary institutions in Plateau State.

Discussion of Findings

Music lecturers and students in Plateau State's tertiary institutions exhibit positive attitudes toward Information and Communication Technology (ICT), with mean scores of 2.50 and above. They value ICT's role in organizing work, making lessons engaging, providing effective knowledge, and enhancing teaching enjoyment. However, some students express reservations, citing concerns about time wastage, accessibility issues, and potential teacher replacement. The research assessed the availability of ICT music resources in Plateau State's tertiary institutions. The data revealed that various resources were scarce, but laptops, speakers, microphones, smartphones, computers, electric guitars, keyboards, projectors, mixers, and earphones were available with acceptable percentages. The overall percentage for both students and lecturers was 51%, indicating a need for additional resources. This study highlights the necessity for improved ICT resources in music departments in the 21st century. Ideal music rooms should be equipped with smartboards, televisions, projectors, laptops, books, magazines, journals, and instruments for effective teaching and learning.

Recommendations

1. Encourage music lecturers and students to develop positive ICT attitudes through incentives and supportive environments.
2. Policymakers should integrate ICT into teaching and learning practices.
3. Music associations should organize conferences, symposiums, seminars, and workshops on ICT in music.
4. The government should provide essential music teaching resources, including ICT-related ones, to tertiary institutions responsible for teacher training.

5. Music departments should conduct regular workshops and seminars on using instructional resources, including ICT-related materials.

Conclusion

This study demonstrates that music lecturers and students have positive attitudes toward ICT in teaching and learning. However, available ICT music resources are inadequate, and usage is ineffective. To improve instructional delivery, the study recommends providing and implementing necessary resources. By doing so, ICT resource utilization and delivery are expected to enhance.

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