

**ALADE, BUKOLA OLAJUMOKE**

[acadastyle@gmail.com](mailto:acadastyle@gmail.com)

ORCID: 0000-0002-1166-5249

**Citation:** Alade, B. O; *Utilisation of Artificial Intelligence (AI) Tools in the Teaching and Learning of Music in Southwestern Nigerian Higher Institutions*

## **UTILISATION OF ARTIFICIAL INTELLIGENCE (AI) TOOLS IN THE TEACHING AND LEARNING OF MUSIC IN SOUTHWESTERN NIGERIAN HIGHER INSTITUTIONS: AN OPINION SURVEY**

### **Abstract**

*Music education, like any other field of study, has experienced a lot of transformations through Artificial Intelligence brought about by technological advancement. This has greatly influenced traditional music education and paved way for provision of digital materials for learning, technological enhanced music teaching and interaction with prompt feedback. Artificial Intelligence (AI) is a system which is available in academic settings to improve students' academic performance for integration of information and successful learning experiences. The study investigated opinion of teachers and learners on how artificial intelligence tools are being utilised in the teaching and learning of music in selected higher institutions in Southwestern part of Nigeria. Research design for this study is quantitative method, which the use of questionnaire is tailored in line with three research questions, provided in the structured questionnaire. The instrument was validated by three experts in music field while copies were also administered to ten participants that were not part of the sample used. In other to determine its reliability, Cronbach Alpha statistical tool was used. A reliability coefficient of 0.70 of the instruments was established. Results revealed that music educators and students have been using artificial intelligence tools available to them in teaching as well as in carrying out students' class activities, take-home exercises and also to enhance their learning. Based on the findings, artificial intelligence tools in music education should be used with caution because of its drawbacks.*

**Key Word:** Academic settings, Academic performance, Artificial intelligence, Artificial Intelligence tools, Music Education.

## **Introduction**

Music education like any other field of study has experienced transformation and significant changes from traditional method of teaching and learning vis-à-vis emergence of Artificial Intelligence (AI) technological tools. There have been pedagogical transformations when comparing traditional methods with the present era of technological advancement that brought about the use of Artificial Intelligence (AI) tools in music education. Music education traditionally involves instruction based on in-person directive, and teaching between teacher and students. Jiang (2022) assert that traditional music education emphasises oral instruction and is mainly guided by teacher's demonstrations. Despite benefits derived from traditional method, oftentimes it is faced geographical limitation and accessibility of resources. Learning through oral transmission, and practice done directly gave room for intimacy and personalized way to learning. The application of AI in music education has changed traditional music education model (Rizal & Milyartini, 2024). In essence, emergence of technological advancements led to remarkable changes in music pedagogy.

According to Zhang and Wan (2019), the first use of Artificial Intelligence (AI) in teaching of music was in the 1960s, when it was applied to musical keyboards to form new musical instruments. The foregoing revealed that AI has been in use prior to now but gained popularity in recent times. The use of AI in music education has largely enlarged mode of music teaching and enhanced its quality vis-à-vis music software (music notation software) and computer music system (Digital Audio Workstation (DAW) such as FL studio and Audacity. In essence, there are also software applications used for compositions, recordings as well as music production.

In addition to digital platforms for music learning, there are Artificial Intelligence (AI) tools for music production, these include Soundraw used for creation of soundtracks while splitter AI is used for extraction of different musical instruments from audio files. Lyric-Lablite is used for generation of lyrics of a song and as well as chord progression. There are AI tools that assist

teachers in creation of lesson plan (MagicSchool), generating questions (QuestionWell), composition of emails and other documents (ChatGPT). Hoover (2023) gives helpful Google AI tools for music teachers, including AI Duet, Bird Sounds, The Infinite Drum Machine, Melody Mixer, Semi-Conductor, Assisted Melody, Instrument Playground, Beethoven Beats and AR Synth.

The use of Artificial Intelligence (AI) music software creates communication and interactive platforms for both teachers and students. This has impacted greatly on music education teaching methods. Zhang and Wan (2019) affirm that application of AI music software in music teaching has greatly promoted the development of music teaching. It provides students the opportunity of better knowledge on lessons taught by the teacher in a classroom. Likewise, teachers use it as a follow-up to what had been taught previously. There are advantages of using AI in music education. AI technology supports the learning process to achieve musical knowledge and skills goals in innovative and interesting ways through various AI-based applications (Rizal & Milyartini, 2024). AI engages learners and improved personalised learning for students. It also gives room for learning environment that is inclusive for students with disabilities.

On the part of educators, Artificial Intelligence helps in reduction of workload, management of classroom effectively, professional development of teachers in terms of teaching needs and career-based goals. AI also helps educators in area of assessment integrity and security through plagiarism detection tools like Turnitin. Rizal and Milyartini (2024) argue that availability of AI technology created new potential for music teachers and students to learn and teach music in more effective way. However, despite all the inherent benefits in AI tools for music education, these tools also have their drawbacks.

Artificial Intelligence as good as it is, presents some challenges that need to be resolved. These covers the areas of assessment. While students are expected to do their work by themselves, AI enhance submission of work that is not their own, which means, it gives room for cheating. AI escalates cheating in which students can submit an ever-increasing variety of assessment tasks that they did not themselves complete (Shaw, 2024). Generative Artificial Intelligence (AI) tools such as ChatGPT has given rise to concerns about its impact on learners' creative ability. Cheng

(2025) argue that despite the enhanced learning achievement and experiences reported among music students, the use of generative AI in music education has raised concerns about the potential loss of diverse musical cultures and the impact on students' creative development.

### **Statement of the Problem**

Advancement in technology gave rise to Artificial Intelligence (AI) tools which are being used in various fields. In world over, the advent of music AI tools led to the paradigm shift from traditional mode of music education to technological driven music teaching and learning which has gained ground mostly in recent times. This study explores the use of Artificial Intelligence (AI) tools in music education towards promotion, development of teaching and learning in the tertiary institutions in Southwestern Nigeria.

### **Literature Review on Music Education and Artificial Intelligence (AI)**

The use of technology in the teaching and learning of music has gone beyond the four walls of schools. Presently, musical information can be accessed by teachers and students more effortlessly and both can easily interact. Zhang and Wan (2019) stated that the use of networked learning brought about two major changes in music education. It impacted on traditional music concepts and also changed the way music information is acquired. On the use of generative AI tools in music education, Shaw (2024) worked on the implication of AI and assessment in music education, and suggested recommendations for approaching assessment in the Artificial Intelligence (AI) era. Hoover (2024) provided several chatbots and AI specifically for music production and education. She gave some limitations as regards the use of AI tools. Also, Holster's (2024) work on language models, prompt with ChatGPT as well as ChatGPT used cases in music education as regards assessment and feedback among others.

Also, Zhang and Wan (2019) provided summary of the research achievement carried out by scholars on the application of AI in music education in China. They discovered that continuous development of AI has been widely infiltrated and promoted in the field of music education, realising the organic integration and interaction of music and science and technology which has greatly promoted the development of music education in China. Likewise, Cheng (2025),

Holland (2000), Ping et. al. (2023), and Sanchez-Jara et. al. (2024), also carried out studies on benefits of AI in music education as well as its drawbacks.

### **Research Questions**

The following research questions guided this study.

1. What is the level of awareness of music lecturers and students on the need to adopt the use of Artificial Intelligence (AI) in the teaching and learning of music in higher institutions in Southwestern Nigeria?
2. Of what benefits will the use of Artificial Intelligence (AI) tools be to music educators and students in the teaching and learning process of music in higher institutions of learning in Southwestern Nigeria?
3. Are there no perceived negative effects in the utilisation of AI tools on music students' critical thinking ability in higher institutions of learning in Southwestern Nigeria?

### **Scope of the Study**

The content scope of the study is utilisation of Artificial Intelligence (AI) tools in teaching and learning of music. The geographical scope of the study is limited to ten (10) higher institutions in Southwestern Nigeria where music is offered as a course of study. These include: five universities (University of Ibadan, Ibadan; Emmanuel Alayande University of Education, Oyo; Olabisi Onabanjo University Ago-Iwoye; Obafemi Awolowo University, Ile-Ife; and Adeyemi Federal University of Education, Ondo), three (3) polytechnics ( The Polytechnic Ibadan, Ibadan; Federal Polytechnic Ilaro, Ogun State; and Ogun State Institute of Technology, Igbesa ) and two (2) colleges of education (Federal College of Education, Oyo; and Lagos State College Education, Ijanikin). The population scope of the study covers thirty (30) music lecturers and one hundred and thirty (130) music students in nine (9) Music Departments in higher institutions in Southwestern Nigeria.

### **Methodology**

Descriptive survey is the research design used for the study. Data were collected via Google form to answer research questions in line with utilisation of Artificial Intelligence (AI) tools in teaching and learning of music in Southwestern higher institutions' Music Department.

## **Population**

The population of the study consist of lecturers and students in the selected Southwestern higher institutions where music is being offered as a course of study. In all five (5) Universities, three (3) Polytechnic and two (2) colleges of education formed the study population for this study.

## **Sample and Sampling Technique**

Purposive sampling technique was used in the selection of participants for the study. The basis was that participants must be music lecturers or music students in any of the selected Southwestern higher institutions in Nigeria. In all, one hundred and sixty (160) respondents participated in the study.

## **Instrumentation**

The instrument used for data collection is Artificial Intelligence Tools Utilisation Music Education Questionnaire (AITUMEQ) which was designed by the researcher with necessary consideration to relevant literature in line with the focus of the research questions. The instrument was validated by experts and peer reviewed while AITUMEQ were administered to ten participants that were not part of the sample used in other to determine its reliability using Cronbach Alpha Statistical Tool. A reliable valuable of 0.70 obtained was considered suitable for the study.

## **Method of Data Analysis**

The data collected were analysed using descriptive statistics of frequency count, percentage and pie chart.

## **Results**

The study' findings are presented in line with the research questions.

**Table 1**

Respondent	Number	Percentage
Lecturers	30	18.75
Students	130	81.25
<b>Total</b>	<b>160</b>	<b>100</b>

Out of 160 respondents for the study, 30 were music lecturer while 130 were music students.

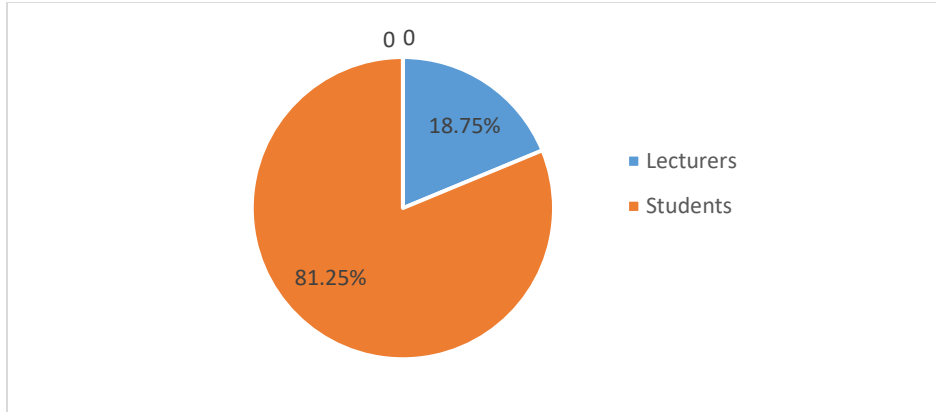


Figure 1: Pie Chart showing the number of respondents that participated in the study. Majority of the respondents that filled the Google form were music students.

### Research Question 1

What is the level of awareness of music lecturers and students on the need to adopt the use of Artificial Intelligence (AI) in the teaching and learning of music in higher institutions in Southwestern Nigeria?

**Table 2: Level of Awareness on the Need to Adopt the Use of Artificial Intelligence (AI) in the Teaching and Learning of Music**

S/N		Well Aware (%)	Aware (%)	Rarely Aware (%)	Not Aware (%)
1.	I have heard about the attempt to be using AI in music education in Nigeria higher institution.	70(43.8)	70(43.8)	20(12.4)	-
2.	The need to utilise AI tools in music teaching in Nigeria is widely discussed.	50(31.3)	90(56.3)	20(12.4)	-
3.	Use of AI in music learning in Nigeria is not widely recommended.	40(25.0)	40(25.0)	50(31.3)	30(18.7)
4.	Use of AI in music institutional delivery in Nigerian higher institutions is widely accepted among staff and students.	60(37.5)	40(25.0)	60(37.5)	-

5.	AI tools are being recommended for music programme in Nigerian higher institutions.	50(31.3)	60(37.5)	40(25.0)	10(6.2)
	Average (%)	54(33.8)	60(37.5)	38(23.7)	8(5.0)

Table 2 reveals that the percentage of the respondents who are aware of the need to adopt the use of Artificial Intelligence (AI) in teaching and learning of music is 37.5% which is the highest followed by 33.8% being the percentage of the respondents that are well aware.

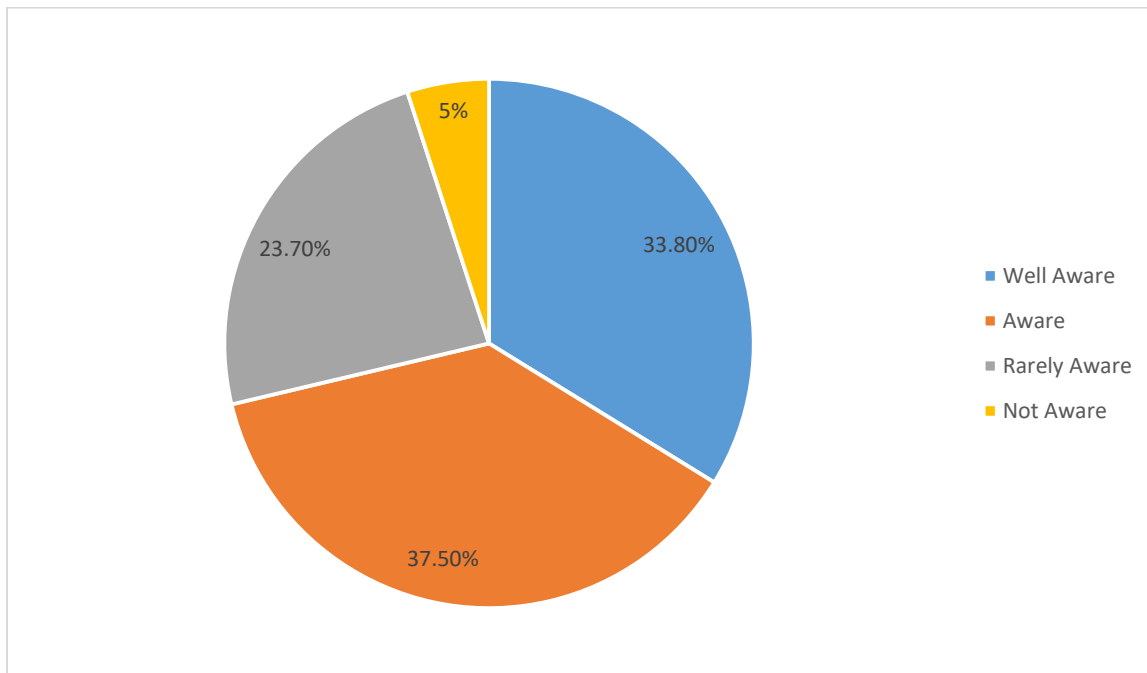


Figure 2: Pie Chart representation of the respondents’ opinions to research question one.

**Research Question 2**

Of what benefits will the use of Artificial Intelligence (AI) tools be to music educators and students in the teaching and learning process of music in higher institutions of learning in Southwestern Nigeria?

**Table 3: Benefit of the Use of AI Tools to Music Educators and Students in the Teaching and Learning Process of Music in Nigeria Higher Institutions of Learning**

S/N		Strongly	Agree	Disagree	Strongly
-----	--	----------	-------	----------	----------

		Agree (%)	(%)	(%)	Disagree (%)
1.	Use of AI will aid the teaching delivery of academic staff handling music courses in Nigerian higher institutions.	80(50.0)	80(50.0)	-	-
2.	AI tools usage will make music education students in Nigerian higher institutions be more creative.	60(37.5)	80(50.0)	20(12.5)	-
3.	Usage of AI to generate music education information will enhance music education implementation in Nigerian higher institutions.	70(43.7)	80(50.0)	10(6.3)	-
4.	Use of AI tools in music teaching and learning in Nigerian higher institutions will have more gains than disadvantages in the long run.	60(37.4)	70(43.8)	20(12.5)	10(6.3)
5.	The use of AI tools in Nigerian higher music education would influence the actualisation of its programme objectives.				
	Average (%)	66(41.2)	82(51.3)	10(6.3)	2(1.3)

Table 3 reveals that the larger percentage of the respondents with average percentage of 51.3% agreed that the use of Artificial Intelligence (AI) tools is beneficial to both music educators and students in the teaching and learning of music.

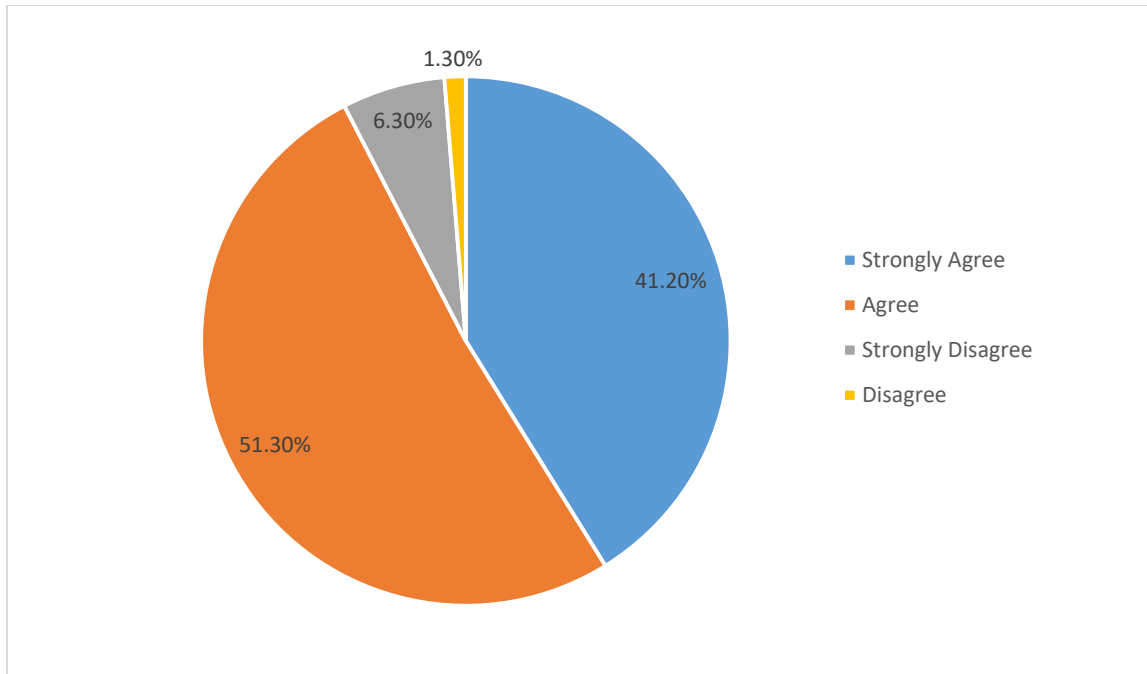


Figure 3: Pie Chart representation of the respondents' opinion to research question two.

### Research Question 3

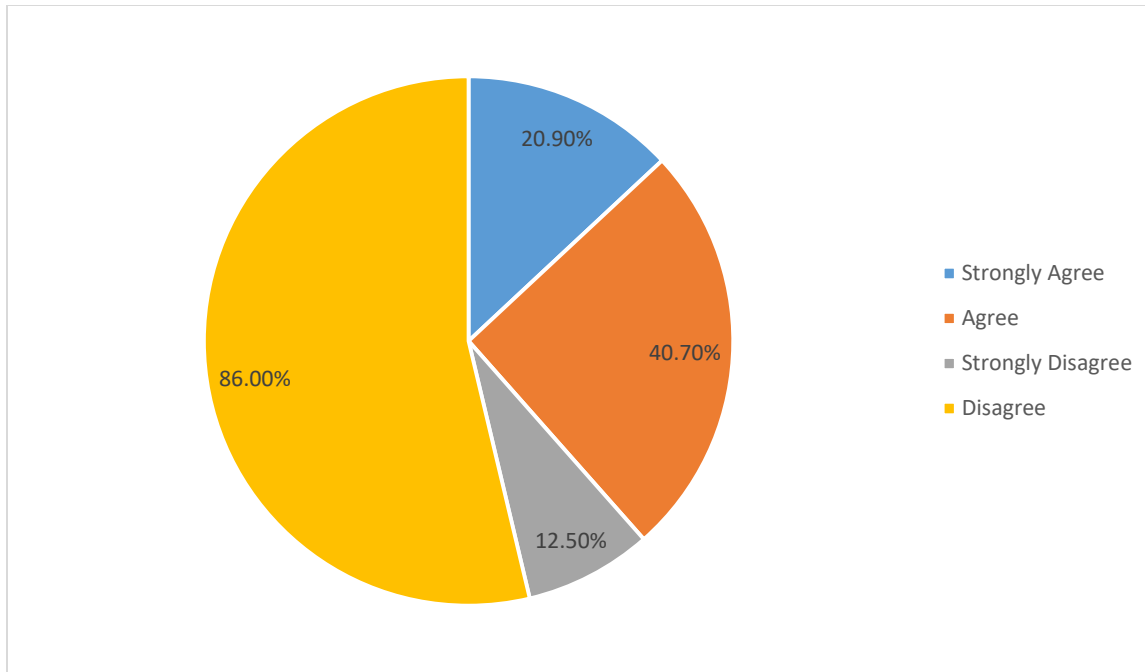
Is there no perceived negative effect in the utilisation of AI tools on music students' critical thinking ability in higher institutions of learning in Southwestern Nigeria?

**Table 4: Perceive Negative Effect of the Utilisation of AI Tools on Music Students' Critical Thinking Ability and Creativity in Nigerian Higher Institutions of Learning**

S/N		Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
1.	Use of AI tools will negatively affect students' ability to generate their own ideas on music contents/topics.	50(31.3)	60(37.5)	10(6.2)	40(25.0)
2.	Use of AI tools in music studies will not necessarily limits students' critical thinking skills.	40(25.0)	90(56.3)	10(6.2)	20(12.5)

3.	AI tools usage will drastically affect students' constructive ability in the teaching and learning process in Nigerian higher institutions.	10(6.3)	60(37.5)	30(18.8)	60(37.4)
4.	Adoption of AI tools in music instructions will not have any negative effect in students' intellectual development in Nigeria higher institutions.	40(25.0)	70(43.8)	20(12.5)	30(18.7)
5.	AI tools application in music studies will negatively affect self-critical thinking ability and creativity in assignments and tests/examinations.	40(25.0)	40(25.0)	30(18.8)	50(31.2)
6.	Use of AI tools in music education by students will negatively affect their ability to transfer knowledge by application of self-creativity potentials.	20(12.5)	70(43.8)	20(12.5)	50(31.2)
	Average (%)	33(20.9)	65(40.7)	20(12.5)	42(36.0)

Majority of the respondents that participated in the study agreed that there are negative effects of the utilization of Artificial Intelligence (AI) tools on music students' critical thinking, as shown in table 4 with 40.7% of the study population.



### Discussion of Findings

Research question one shows that larger percentage of the study population are aware of the use of Artificial Intelligence (AI) tools in teaching and learning of music in Nigerian higher institution of learning and it is widely discussed, but majority of the respondents were of the opinion that its use is not widely recommended. Equal percentage of 37.5% came from the respondents that are both well and rarely aware that Artificial Intelligence (AI) tools are widely accepted by lecturers and students. Likewise, it shows from table 2 that 37.5% which is the highest percentage on item 5 of the table, revealed the percentage of people that were aware that AI tools are recommended for music teaching and learning in Nigerian higher institutions.

Results from research question two reveal that 51.3% of study participants agreed that Artificial Intelligence (AI) tools are beneficial to both learners and lecturers in music teaching and learning in Nigerian higher institution as it aids teaching delivery. 50% of the respondents agreed while 37.5% strongly agreed to the opinion that the use of AI tools will improve students' creative ability. Also, 43.7% of the respondents strongly agreed while 50% agreed that the use of AI will enhance music education implementation. Results from item 4 on table 3 revealed that 43.8% of the study population which is the highest of the list agreed that there are more gains in the use of Artificial Intelligence (AI) tools than its drawbacks.

Results from research question three revealed that the highest percentage 40.7% of the respondents agreed that there are negative effects of using Artificial Intelligence (AI) tools on music students' critical thinking ability and creativity. From item number 3, 4, 5 and 6 (table 4) of the data collected for the study, it is indicated that the highest percentage for these items were from respondents that agreed that the implementation of AI tools will drastically affect students' constructive ability, thinking ability, creativity and their ability to transfer knowledge, but will not have any negative effect on students' intellectual development.

### **Conclusion**

The advent of Artificial Intelligence (AI) has brought about transformative changes in every field of study. It creates turning-point from traditional music education method of teaching to a number of Artificial Intelligence (AI) technological tools which give room for comfortability in evaluation approaches, methods of instruction and music pedagogy. Awareness on the need to adopt the use of AI tools in the teaching and learning process in Nigerian higher institutions especially in Southwestern Institutions of learning where music is offered as a course of study exists. Although larger population of the respondents for the study are of the opinion that the use of Artificial Intelligence (AI) tools is not widely recommended in music learning, but it is a welcome development in music education. This is in line with Jiang's (2022) study that Artificial Intelligence (AI) technology's implementation in area of music education is developing and becoming more common, and to some extent, has become a stimulant for music teaching.

Furthermore, findings of the study support the idea that there are benefits which come with the use of AI in teaching and learning process in music education among higher institutions of learning, especially in Southwest Nigeria. These benefits help students' creativity, enhancing the implementation of music education and influencing the actualisation of its programme objectives. These corroborate the position of Rizal and Milyartini (2024) which asserts that the benefits of Artificial Intelligence (AI) technology in music education can be applied as a medium to spark students' interest and enthusiasm in developing inspiration and creativity during music learning process. Although, there are possible negative effects that accompany the use of AI tools in music teaching and learning process as revealed in this study. These include effect on students' abilities to generate their own ideas on music content and their abilities to transfer

knowledge. Rizal and Milyartini (2024) argue that the use of AI, holds potential for negative impacts that are harmful to both teachers and students as well as the risk of losing the humanistic aspect of teaching music.

### **Recommendations**

Caution is needed when using Artificial Intelligence (AI) tools in music education so as to reduce potential negative effects on both teachers and students. Likewise, AI tools in music learning should be balanced with the role of educators in motivating and guiding students. There is need for technical know-how using Artificial Intelligence tools, therefore, educators and learners need to equip themselves with needed knowledge so as to make maximum use of the tools. On the whole, there are benefits of AI tools in music education content which can lead to valuable contributions to the advancement of music education. Therefore, the use of AI tools is widely recommended in music teaching and learning process.

### **References**

- Cheng, L. 2025. The impact of generative AI on student music education challenge and recommendation. *Arts Education Policy Review*. DOI:10.1080/10632913.2025.2451373.
- Holland, S. 2000. Artificial intelligence in music education: A critical review. In Miranda, E. (ed.) *Readings in Music and Artificial Intelligence*. Contemporary Music Studies Vo. 20. Harvard Academic Publishers, The Netherlands.
- Holster, J. 2024. Augmenting music education through AI: Practical application of ChatGPT. *Music Education Journal*. DOI:10.13140/RG.2.35958.57923/1.
- Hoover, T. 2023. An overview of AI in music education. Retrieved on February 27, 2025 from [www.offthebeatenpathinmusic.com](http://www.offthebeatenpathinmusic.com)
- Jiang, Q. 2022. Application of artificial intelligence technology in music education supported by wireless network. DOI:10.1155/2022/2138059.
- Rizal, H. and Milyartini, R. 2024. Improving the quality of music education through application's based on artificial intelligence. DOI:10.1051/shsonf/202419701004.

Sanchez-Jara, J. F., Gutierrez, S., Rodriguez, J., Syroyid, B. 2024. Artificial Intelligence – assisted music education: A critical synthesis of challenges and opportunities. *Education Sciences*. DOI:10.3390/edusci.14111171.

Shaw, B. P. 2024. Artificial Intelligence and assessment: Three implications form music education. *National Association of Music Education*. DOI:10.1177/00274321241296118.

Zhang, J. and Wan, J. 2019. A summary of application of artificial intelligence in music education. *Advances in Social Science, Education and Humanities Research*. Vol. 428. DOI:10.2991/assehr.k.200401.012.