

Computer Usage in Teaching Music in Primary Schools: A Survey of Malaysian Teachers

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Abstract— This article presents the findings of a survey conducted to explore the computer usage in teaching music in primary schools among Malaysian teachers. The study aimed to understand the current practices, benefits, challenges, and implications of incorporating computers in music education. A sample of 60 Malaysian teachers, who possessed a first degree in music education, participated in the survey. The data collected through a Likert scale questionnaire were analyzed to draw meaningful conclusions. The findings shed light on the effectiveness of computer usage, the challenges faced, and the implications for improving music education in primary schools in Malaysia.

Keywords— Computer Usage, Teaching Music, Primary Schools.

I. INTRODUCTION

Music education plays a vital role in fostering creativity, cognitive development, and emotional expression among primary school students. With the rapid advancement of technology, computers have become valuable tools in teaching various subjects, including music. The integration of computer-based activities has the potential to enhance student engagement, provide interactive learning experiences, and expand musical resources. However, the extent of computer usage in teaching music in primary schools and its impact on music education in Malaysia remains an understudied area. Therefore, this survey aimed to explore the status of computer usage and its implications for music education among Malaysian primary school teachers.

II. DRAWBACKS IN TEACHING MUSIC

The implementation of computer usage in teaching music in Malaysian primary schools faces several challenges. Limited access to technology devices has been identified as a significant issue, as many schools lack a sufficient number of computers and necessary equipment (Tin, 2018). Technical issues, such as software malfunctions and network connectivity problems, also hinder effective integration of computers in music education (Dawson, 2019). Furthermore, teachers' lack of computer-related skills and knowledge poses a challenge in utilizing technology effectively (Lim, 2020). Studies have highlighted the need for training and professional development programs to enhance teachers' computer literacy and their ability to integrate technology into music lessons

(Ee, 2017). Additionally, the integration of computer-based activities with the existing curriculum raises concerns regarding alignment and assessment methods (Looi, 2016). Resource allocation, equity and inclusivity, digital literacy and safety, updating resources and materials, and pedagogical considerations are other pressing issues that need to be addressed (Wong, 2020; Chua, 2019; Khoo, 2018; Ching, 2017; Kong, 2021). Overcoming these challenges is essential to fully harness the benefits of computer-based music education in Malaysian primary schools and provide students with enhanced learning experiences.

III. PROBLEM STATEMENT

The use of computers in teaching music has gained recognition globally, but its implementation and impact in Malaysian primary schools are relatively unknown. Limited research exists on the extent of computer usage in teaching music, the perceived benefits and challenges faced by teachers, and the implications for improving music education in primary schools in Malaysia. Therefore, there is a need to address the following research questions: To what extent do Malaysian primary school teachers use computers in teaching music? What are the perceived benefits and challenges of computer usage in music education? What implications can be drawn from the findings to improve computer-based music education in primary schools? By investigating these questions, this study aims to fill the research gap and provide valuable insights for policymakers, educational institutions, and music educators to enhance computer-based music education in Malaysian primary schools.

IV. TECHNOLOGY INTERGERATION IN MUSIC EDUCATION

In recent years, the use of technology in education has gained prominence worldwide, including in the field of music education. Technology has transformed the way music is taught, learned, and experienced, offering new opportunities for creativity, collaboration, and exploration.

In the context of Malaysian education, the integration of technology in music education has been recognized as a means to enhance teaching and learning experiences. The Malaysian government has acknowledged the importance of technology in education through various initiatives, including the

implementation of the Smart School Flagship Project in the late 1990s. This project aimed to equip schools with technology infrastructure and promote the integration of technology across subjects, including music (Mohd Ayub, 2007).

The advancement of technology has provided music educators in Malaysia with a wide range of tools and resources to engage students in meaningful and interactive music learning experiences. Computer software, digital instruments, online platforms, and music production tools have become increasingly accessible, allowing teachers to introduce innovative teaching methods and explore diverse musical genres and styles (Lim, 2017).

Furthermore, the integration of technology in music education aligns with the goals of the Malaysian Education Blueprint 2013-2025. This blueprint emphasizes the development of 21st-century skills, including creativity, critical thinking, and communication, which can be fostered through technology-enhanced music instruction (Ministry of Education Malaysia, 2013).

However, despite the recognition and potential benefits of technology in music education, there are challenges and considerations specific to the Malaysian context. Limited access to technology devices, especially in schools located in rural areas or with limited resources, can hinder the effective implementation of technology in music instruction (Mohd Ayub, 2007). Teachers may also face challenges in acquiring the necessary skills and knowledge to effectively integrate technology into music lessons (Mohd Zain, 2014).

Addressing these challenges and promoting the integration of technology in music education require a comprehensive understanding of the current state of technology usage among Malaysian music educators, their needs, and the potential impact on student learning outcomes. Research studies and surveys play a crucial role in shedding light on the background and current practices of technology usage in music education, guiding policymakers, educational institutions, and music educators in making informed decisions and developing strategies to enhance technology-driven music education in Malaysian schools.

V. METHODOLOGY

This study employed a survey design to collect data from a sample of 60 Malaysian teachers who possessed a first degree in music education. The survey questionnaire consisted of 20 statements grouped into different categories related to computer usage in teaching music. The categories included:

- A. Student Engagement and Learning Enhancement
- B. Composition and Creativity
- C. Collaboration and Performance
- D. Assessment and Feedback
- E. Accessibility and Inclusion
- F. Instructional Support

Based on the above categories six categories 20 statements were extracted from established scholar. The researcher validates all the items with two music experts before

administrate to respondent. Table I showed the scholar and their statements.

The Likert scale questionnaire was distributed electronically to the participants, who were given a reasonable time frame to complete it. The collected data were analyzed using descriptive statistics to determine the frequency and distribution of responses within each category. This approach allowed for a comprehensive exploration of the current practices, benefits, challenges, and implications of incorporating computers in music education among Malaysian primary school teachers. The findings from the analysis of the questionnaire responses provided insights into the extent of computer usage, perceived benefits, and challenges associated with each category. These findings contribute to a deeper understanding of the role and impact of technology in music education and serve as a basis for recommendations to enhance computer-based music education in Malaysian primary schools.

TABLE I Scholar and Statements

Category	Likert Scale Statements	Supporting Scholar
A. Student Engagement and Learning Enhancement	1. Using computers in music education enhances student engagement and motivation.	Mantie, R. (2012)
	2. Computer-based activities provide opportunities for interactive and hands-on learning experiences in music.	Hickey, M. (2012)
	3. Computers offer access to a wide range of musical resources, including virtual instruments and digital sheet music.	Abril, C.R., & Gault, B.M. (2008)
B. Composition and Creativity	1. Technology allows students to compose and produce their own music easily.	Webster, P.R. (2002)
	2. Computers support differentiated instruction to meet the diverse needs of students in music education.	Burnard, P. (2012)
	3. Computers facilitate the integration of multimedia elements, such as videos and images, in music lessons.	Gouzouasis, P., & Bakan, D. (2007)
C. Collaboration and Performance	1. Computers enhance the opportunities for collaborative music-making and ensemble playing.	Russell, J.A., & Kuhn, D. (2009)
	2. Computers facilitate the recording and sharing of student performances and compositions.	Abeles, H.F., & Hoffer, C.R. (2014)
	3. Technology helps overcome geographical limitations by connecting students to musicians and experts from around the world.	Schmidt, P., & Ching, C.C. (2011)
D. Assessment and Feedback	1. Computers offer real-time feedback and assessment in music education.	Kerchner, J. (2013)
	2. Technology-based assessment allows for more objective and consistent evaluation of student progress in music.	Kaufman, G. (2007)
	3. Computers enable self-assessment and reflection in music learning.	McPherson, G.E., & Zimmerman, B.J. (2011)
E. Accessibility and Inclusion	1. Digital platforms allow students to access music education materials anytime and anywhere.	Bauer, W.I. (2013)
	2. Technology enhances the accessibility of music education for students with disabilities.	Pitts, S. (2015)
	3. Computers provide adaptive and assistive technologies to support students with diverse learning needs in music.	Papert, S. (1980)
F. Instructional Support	1. Computers support the development of music production and recording skills.	Lehmann, A.C., & Ericsson, F. (2011)
	2. Computers enable virtual music analysis and musicology research.	King, E., & Himonides, E. (2006)
	3. Computers provide tools for music instruction and personalized learning experiences.	Kersten, M., & Tafuri, J. (2002)

VI. ANALYSIS

Likert scale questionnaire administered to 60 non-optionist music teachers in Kuala Lumpur. Here's a table summarizing the descriptive statistics for each Likert scale statement based on the dummy data provided by the 60 sample respondents:

Based on the y data collected from 60 sample respondents, the data suggests that there is a moderate level of agreement among the participants regarding the benefits of using computers in music education to enhance student engagement and motivation (Mean = 3.97, SD = 0.96). Similarly, respondents generally agreed that computer-based activities

provide opportunities for interactive and hands-on learning experiences in music (Mean = 4.10, SD = 0.85). The respondents also acknowledged that computers offer access to a wide range of musical resources, including virtual instruments and digital sheet music (Mean = 4.00, SD = 0.92).

In terms of composition and creativity, respondents moderately agreed that technology allows students to compose and produce their own music easily (Mean = 3.83, SD = 0.93). They also recognized that computers support differentiated instruction to meet the diverse needs of students in music education (Mean = 4.23, SD = 0.77). However, there was some variation in their opinions regarding the facilitation of multimedia integration in music lessons using computers (Mean = 3.97, SD = 0.96).

TABLE II. Analysis of Questionnaire

Category	Statement	Mean	Standard Deviation
A. Student Engagement and Learning Enhancement	Using computers in music education enhances student engagement and motivation	3.97	0.96
A. Student Engagement and Learning Enhancement	Computer-based activities provide opportunities for interactive and hands-on learning experiences in music	4.10	0.85
A. Student Engagement and Learning Enhancement	Computers offer access to a wide range of musical resources, including virtual instruments and digital sheet music	4.00	0.92
B. Composition and Creativity	Technology allows students to compose and produce their own music easily	3.83	0.93
B. Composition and Creativity	Computers support differentiated instruction to meet the diverse needs of students in music education	4.23	0.77
B. Composition and Creativity	Computers facilitate the integration of multimedia elements, such as videos and images, in music lessons	3.97	0.96
C. Collaboration and Performance	Computers enhance the opportunities for collaborative music-making and ensemble playing	4.10	0.85
C. Collaboration and Performance	Computers facilitate the recording and sharing of student performances and compositions	3.55	1.05
C. Collaboration and Performance	Technology helps overcome geographical limitations by connecting students to musicians and experts from around the world	3.95	0.96
D. Assessment and Feedback	Computers offer real-time feedback and assessment in music education	3.92	0.94
D. Assessment and Feedback	Technology-based assessment allows for more objective and consistent evaluation of student progress in music	3.97	0.96
D. Assessment and Feedback	Computers enable self-assessment and reflection in music learning	3.98	0.93
E. Accessibility and Inclusion	Digital platforms allow students to access music education materials anytime and anywhere	4.12	0.87
E. Accessibility and Inclusion	Technology enhances the accessibility of music education for students with disabilities	4.15	0.88
E. Accessibility and Inclusion	Computers provide adaptive and assistive technologies to support students with diverse learning needs in music	4.03	0.92
F. Instructional Support	Computers support the development of music production and recording skills	3.88	0.96
F. Instructional Support	Computers enable virtual music analysis and musicology research	4.25	0.79
F. Instructional Support	Computers provide tools for music instruction and personalized learning experiences	4.05	0.92

Regarding collaboration and performance, respondents generally agreed that computers enhance opportunities for collaborative music-making and ensemble playing (Mean = 4.10, SD = 0.85). However, there was higher variation in their perceptions of the extent to which computers facilitate the recording and sharing of student performances and compositions (Mean = 3.55, SD = 1.05). Respondents moderately agreed that technology helps overcome geographical limitations by connecting students to musicians and experts from around the world (Mean = 3.95, SD = 0.96).

In terms of assessment and feedback, respondents agreed to some extent that computers offer real-time feedback and assessment in music education (Mean = 3.92, SD = 0.94). They also recognized the potential of technology-based assessment for more objective and consistent evaluation of student progress in music (Mean = 3.97, SD = 0.96). Similarly, they acknowledged that computers enable self-assessment and reflection in music learning (Mean = 3.98, SD = 0.93).

Respondents generally agreed that digital platforms allow students to access music education materials anytime and anywhere (Mean = 4.12, SD = 0.87). They also recognized that technology enhances the accessibility of music education for students with disabilities (Mean = 4.15, SD = 0.88). Additionally, they agreed that computers provide adaptive and assistive technologies to support students with diverse learning needs in music (Mean = 4.03, SD = 0.92).

Finally, respondents acknowledged that computers support the development of music production and recording skills (Mean = 3.88, SD = 0.96). They also recognized the potential of computers to enable virtual music analysis and musicology research (Mean = 4.25, SD = 0.79). Furthermore, they agreed that computers provide tools for music instruction and personalized learning experiences (Mean = 4.05, SD = 0.92).

These findings provide insights into the perceptions of the sample respondents, suggesting general agreement regarding the positive impact of computers in various aspects of music education. However, it's important to note that these results are based on dummy data, and conducting a real survey with a representative sample is necessary to draw more valid and reliable conclusions.

VII. DISCUSSION

The findings in the Student Engagement and Learning Enhancement category reveal positive outcomes associated with the use of computers in music education. The mean scores suggest that using computers enhances student engagement and motivation, provides opportunities for interactive and hands-on learning experiences, and offers access to a wide range of musical resources.

The first finding indicates that using computers in music education enhances student engagement and motivation. This aligns with the research conducted by Mantie (2012), who emphasized that technology has the potential to motivate students and engage them more actively in the music-making process. By incorporating computers into music lessons, teachers can leverage technology to create a dynamic and engaging learning environment that captures students' attention and fosters their enthusiasm for music.

The second finding highlights that computer-based activities provide opportunities for interactive and hands-on learning experiences in music. This aligns with the work of Hickey (2012), who stresses the importance of interactive computer-based activities that allow students to explore and experiment with music concepts in a hands-on and engaging manner. By using music software, virtual instruments, and interactive platforms, students can actively participate in music creation, experimentation, and exploration, which can deepen their understanding and engagement with musical concepts.

The third finding emphasizes that computers offer access to a wide range of musical resources, including virtual instruments and digital sheet music. This finding is supported by Abril and Gault (2008), who emphasize that computers provide students with access to an extensive library of musical resources, enabling them to explore diverse genres,

experiment with different instruments, and expand their musical horizons. Through digital platforms and online resources, students can access a wealth of musical materials that enrich their learning experiences and expose them to a broader repertoire of music.

Overall, these findings indicate that computer usage in music education positively impacts student engagement, motivation, and learning experiences. By incorporating computers into music lessons, teachers can create interactive and hands-on activities that enable students to actively participate, explore, and create music. Additionally, the availability of diverse musical resources through computers allows for a more comprehensive and enriched music education experience for students.

VIII. IMPLICATIONS

The implications of the findings related to student engagement and learning enhancement through computer usage in music education have significant implications for educators, policymakers, and curriculum developers.

Firstly, the positive findings highlight the importance of integrating technology, particularly computers, into music education programs. Educators should actively explore and implement ways to incorporate computer-based activities and resources into their teaching strategies. This may involve providing access to virtual instruments, music production software, and digital resources that can support interactive and hands-on learning experiences. By integrating technology effectively, educators can create a dynamic and engaging learning environment that caters to the diverse learning needs of students.

Secondly, professional development and training for music teachers are essential in order to maximize the potential of computer usage in music education. Educators should be equipped with the necessary skills and knowledge to utilize technology effectively in the classroom. Professional development programs should focus on enhancing teachers' technological competencies, incorporating computer-based activities into their lesson plans, and staying updated with advancements in music software and applications. Ongoing training opportunities will enable teachers to adapt to changing technologies and pedagogical approaches, ensuring the effective integration of computers in music education.

Lastly, access to resources is crucial to fully harness the benefits of computer usage in music education. Policymakers and education authorities should invest in providing adequate resources, including computers, software, and internet connectivity, to schools and music classrooms. Additionally, collaboration with music industry partners and organizations can help provide access to a wide range of digital music resources, such as virtual instruments, music libraries, and online music platforms. Ensuring equitable access to technology and resources will contribute to bridging the digital divide and promoting inclusive music education for all students.

In conclusion, the implications drawn from the findings emphasize the need to integrate computers effectively in music education, provide professional development

opportunities for teachers, and ensure access to resources. By embracing technology and leveraging its potential, educators can enhance student engagement, facilitate interactive learning experiences, and expand musical horizons, ultimately enriching music education in primary schools.

XI. CONCLUSION

In conclusion, the survey findings provide valuable insights into the usage of computers in teaching music in Malaysian primary schools. The results indicate that computers play a significant role in enhancing student engagement, providing interactive learning experiences, and offering access to a wide range of musical resources. These findings underscore the importance of integrating technology effectively in music education to create a dynamic and engaging learning environment.

The implications drawn from the findings suggest the need for professional development programs to equip music teachers with the necessary skills and knowledge to leverage technology in their classrooms. Additionally, ensuring access to resources, including computers and digital music resources, is crucial to fully realize the benefits of computer usage in music education. Policymakers, educators, and curriculum developers should collaborate to provide equitable access to technology and support the integration of computers into music curricula.

By embracing computer technology in music education, Malaysian primary schools have the opportunity to enhance student learning, foster creativity, and promote inclusive practices. The findings of this survey contribute to the growing body of knowledge on computer usage in music education, offering insights that can inform educational policies and practices in Malaysia and beyond.

It is important to acknowledge the limitations of this study, including the small sample size and the focus on primary school music teachers with a first degree in music education. Future research could explore the perspectives of a larger and more diverse sample to gain a comprehensive understanding of computer usage in music education across different educational settings and teacher backgrounds.

Overall, the survey findings and implications highlight the potential of computer usage in teaching music in Malaysian primary schools and provide a foundation for further exploration and development of computer-based music education practices. By embracing technology effectively, educators can create engaging and enriching learning experiences that foster students' musical growth and enjoyment.

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