NEW CONCEPTUAL IN GAMELAN LEARNING: DESIGN OF VIRTUAL GAMELAN LEARNING MEDIA IN INDONESIA

Jarmani[1], Rusijiono[2], Bachtiar Saiful Bahri[3], Diah Yovita Suryarini[4]

[1,2,3]Department of Education Technology, Postgraduate, State University of Surabaya, Surabaya, Indonesia
[4]University of Wijaya Kusuma Surabaya

Abstract: **Virtual gamelan design is a transformation into the modern gamelan art form in multimedia design as an effective learning medium. The basic idea of media development is an effort to develop the love of the younger generation on the cultural assets of the country. The basic idea of media development is an effort to develop the love of the younger generation on the cultural assets of the country. One such effort is the use of multimedia technology.This design is a multimedia implementation in Java gamelan that is equipped with a wide selection of java gamelan sound menu recorded directly from various gamelan. This virtual gamelan can be played colossally in one   location using many computers where one computer plays one gamelan tool. This virtual gamelan design can also be used as multimedia java gamelan learning. This media is used as the beginning of cultural transmission to instill javanese gamelan art education in the community, especially middle and high school students.**

Keywords: **design, java gamelan, learning media**

I. INTRODUCTION

The national culture of the Indonesian nation is an aggregate of the results of regional / local cultural excavation efforts that are superior. As is known that gamelan art is not only owned by java but is found in other areas such as Sunda, Bali and Bugis, so gamelan art can be said to be the culture of the Indonesian nation that is sourced from the glory of the ancestors of the Indonesian nation that until now can be preserved [1]–[3]. Local cultures in Indonesia then become cultural heritage for the Indonesian nation. The concept of culture can be defined as the whole way a human behavior in his life becomes an identity. Society as the cultural heir of previous generations is blessed with the ability to create cultural values, and has a responsibility to convey knowledge of cultural values to the next generation. On the one hand, the appreciation of the younger generation towards the art of gamelan is increasingly rare; On the other hand, the development of music in the west today many are turning to the eastern region, including gamelan art owned by the Indonesian nation. Even gamelan art is growing rapidly in Vancouver, Canada through groups of enthusiasts of this type of art that exist in the country. In Vancouver there are also two major universities that actively support the development of gamelan art. The School for the Contemporary Arts at Simon Fraser University has since 1990 offered gamelan class programs every spring and summer [3]–[6]. This phenomenon becomes an optimistic foothold that gamelan art, especially Java gamelan in the era of globalization is very potential towards the creative industry.Activities to appreciate and work on music are very closely related to the availability of learning media as supporters [7]–[9]. In fact, not all schools have gamelan musical instruments. To overcome the above problems, by looking at the opportunities that schools have that every school already has computer equipment, it is necessary to strive for the right solution from the availability of useful learning media to help students in appreciating java gamelan art based on information technology [7], [10], [11].In this research gamelan art is used as an object of research in exploring the potential of local culture that can be seeded as the nation's culture. Gamelan in Java is not just as music but the elegance of its voice is used as something mystical, so the naming of gamelan is treated like humans, for example Gamelan Kyai Guntur Madu which is rung every piece and planted by select people. If the gamelan Kyai Guntur Madu is virtualized in a multimedia computer, anyone can virtually grow or play the gamelan.The transformation of traditional gamelan art that has a high cost (more than Rp.100 million) into multimedia will make gamelan cheaper and affordable by the public. Of course, this research can be a work that supports the creative industries of the Indonesian nation by exploring local excellence.

II. TEORITICAL FRAMEWORK

Art and Culture

Art according to Suwarna (1999) talks more about the expression of artists to a number of life problems. Definition above It clearly states that art speaks more to the human self that reveals itself into the work, whether it is feeling, divinity, joy, freedom, etc. which is hereinafter called expression. It takes personal expression to produce a work of art, and each artist has his or her own experience and knowledge to cultivate as a work. The work is produced because of the creative-exploratory-aesthetic creation process [12]–[17].Aesthetics is a way of knowing through the senses fundamental to life and the development of consciousness. Aesthetics, in the intellectual tradition, is generally understood as one of the branches of philosophy that addresses art and other aesthetic objects [6], [18], [19]. Aesthetics is achieved because of the intentional aspect and desire to create something new that is born from the contemplation of ideas that are exploratory. In other words, exploratory contemplation gives birth to the idea of creating. This idea is then sought by utilizing the technological aspect [3], [20]–[24]. These aesthetic creations arise because of taste. Taste arises from an instinctive impulse called karsa. Karsa can be individual or collective, depending on the environment and culture of the community.

Javanese Gamelan Art

Java gamelan is one type of gamelan music. Javanese gamelan consists of various musical instruments, including kendang, rebab, celempung, gambang, gong, and bamboo flute. The main components that make up gamelan musical instruments are bamboo, metal, and wood. Each tool has its own function in gamelan music performance [6], [25]–[32]. For example, gong plays the role of closing a long rhythm and giving balance after previously the music is decorated by a gending rhythm.The Javanese view of life expressed in gamelan music is an alignment in speaking and acting so as not to bring explosive expressions and realize tolerance among others. The real form in the music is the pull of the medium rebab, a balanced chorus of kenong sounds, sndang saron and gambang and the sound of gongs on each rhythm cover. The typical rhythm produced is a combination of sound types from each unit of gamelan equipment.Hypothetically, Javanese people before the Hindu influence had known ten skills, including puppets and gamelan. In the past the ownership of Javanese ageng gamelan was limited to the palace. Now anyone who is interested can have it as long as it is not Javanese gamelan-gamelan that belongs to the heirloom category [26], [33]–[38]. Philosophically Javanese gamelan is an integral part of Javanese society. That's it Because the philosophy of life of javanese people is related to its cultural arts in the form of Javanese gamelan and is closely related to the development of religion.

Multimedia

The development of computer technology in the field of information systems can not be separated from the development of multimedia. Multimedia communication is a form of visual communication design by using a computer to combine the art of combining the art of combining typography, sound, photographs, animation, and video in displaying information [7], [38]–[45]. The creative expression of combining photo, sound, and video elements can produce an informational sensation that captivates the attention of its audience.

.

III. METHODS

The multimedia design development method in this study uses a qualitative descriptive model, which is a way or procedure of solving problems by using a predetermined sequence of steps to produce an expected product [7], [46]. This descriptive design activity makes an effort to describe, record, analyze, and explain the state of the object being investigated as it is based on actual facts that are in the field at the present moment. This activity is carried out through several phases.

Phase 1.

Initialization of research This phase defines and assesses the needs and benefits of documentation design in the multimedia system to be built. The analytical method for exploration and evaluation used in this study is the Synectics method, which is essentially the same as the brainstorming method, but involves parties in broader competencies, including individuals outside the design discipline i.e. puppeteers, gamelan teachers and other culturalists.

Phase 2.

Requirements specifications This phase analyzes and documents the requirements in developing multimedia design. Data source selection uses non-probability techniques, where sampling is more on the subjective considerations of researchers based on the depth range of the problem being studied. In this study, the selection of sources is based on being able to learn:

a. The potential of gamelan art that shapes the noble values of people's lives. By holding a java gamelan concert to better blend with what is researched.

b. Java's virtual multimedia design in support of the creative industries as a local advantage in the global era. Primary data is obtained by interview and observation methods with direct sources by researchers. And secondary data from reading in the form of documents, letters, and literature, as well as obtained directly from seeing and hearing

Phase 3.

The design stage uses syntatic semiotic principles where the signs / symbols / cues of gamelan art elements to be delivered in multimedia form must have coherence and uniformity to produce a good image, so that it can be embedded and can be remembered by the community, especially middle and high school students to recognize, love, and preserve local culture as self-identity.

1. Concept: includes the conclusion of analysis of the previous phase that is clearly defined in order to create interactive multimedia design that can lift the potential of local culture into a creative industry in the global era.

2. Form generator: A design creation guide guided by verbal, visual, and technological concepts.

3. Rough design: Rough sketches of exploratory forms of design alternatives

Phase 4.

Implementation of this phase implements the design and design in accordance with the concept of the technology used. The initial stage was carried out by recording the sound of all types of gamelan both from the Surakarta Hadiningrat Palace and those in central Java Cultural Park, followed by processing sound recordings with multimedia using Adobe Flash CS3 Professional to import all data to produce interactive multimedia in accordance with the final design. The next step is to implement interactive learning multimedia related to gamelan art for middle and high school students. The final stage is to create multimedia gamelan that can be rung online through the boundaries of space and place.

Phase 5.

This phase of testing tests whether the multimedia design implemented has been as planned. Design testing uses a review method by conducting a review that is emphasized on the quality of ease of acceptance and use for users (fitness for user). Implementation testing is carried out by testing methods in several degrees of difference, which are sequenced unit tests, integrations, systems, and admissions to provide more realistic experiments to students (users). The test was conducted at 5 high schools in different areas, namely SMAN 1 Surabaya, SMA IPIEMS, SMAN 5 Surabaya, SMA Barunawati, and SMAN 13 Surabaya. In testing also conducted java gamelan concerts to compare the use between physical gamelan devices and virtual gamelan.

Phase 6.

Maintenance In this phase is done to fix errors and deficiencies that occur in the actual application.

IV.   RESULT

The results of psychomotor and affective attitudes towards gamelan showed a significant influence on the need for virtual gamelan, while the results of cognitive attitudes showed no significant influence on the confidence level of 0.95 or 0.05 errors. An interesting result of data processing is a significant affective attitude with a negative coefficient. Students who do not like gamelan have a good perception of the need for virtual gamelan. These empirical results show that virtual gamelan is highly expected by students who do not like gamelan to be able to increase their love of gamelan.According to information that can be gathered from several art teachers, especially gamelan arts in SLTP and SLTA, in general they hope that the virtual gamelan model displayed with computer media will be able to attract students to play gamelan without having the impression of old-fashioned, because what they face is a set of computers as icons of modern technology. Such a model can be an alternative to solving the problems they face in teaching gamelan arts to students, especially those related to the scarcity of gamelan devices and students' interest in gamelan devices used in learning.Excavation of the importance of conveying knowledge of cultural values, especially Javanese gamelan art to the next generation by using information media and multimedia-based learning models that can preserve and effectively introduce the cultural potential of gamelan art that contains noble values in the characteristics of community life as the identity of the Indonesian nation. The importance of gamelan learning media in the form of multimedia has received permission from the Government of Surabaya. The Keraton where the source of the history of the creation of gamelan in java is aware of the weak introduction of gamelan among teenagers, so they welcome this research to revive the love of teenagers for gamelan that has a democratic philosophy and can be an opening door for students in understanding the overall way of behaving in life as contained in the javanese gamelan philosophy.resulting software can meet the needs of users with the creation of an application with the name Virtual Gamelan as a means of teachers helping students to be more interested in learning and growing gamelan. View the results of the implementation of the front page of the application that has been designed before. On the front page there is a menu of options to use Indonesian or English (bilingual). For the implementation of the next menu page appeared by selecting the language in the menu bar on the front page. On the menu page there are four menus: learning, orchestra, games, and help. On the learning menu there are learning options: gamelan history, playing techniques, getting to know the forms of gending, and simulation. In the choice of simulation students can choose to learn to grow by choosing one of the gamelan equipment to be played. On the menu the student orchestra can grow gamelan together, can even be played gamelan music colossally where one computer represents one gamelan tool played by students.

V.   CONCLUSION

With multimedia gamelan learning students can practice gamelan on their own by choosing the desired tools to accompany tembang and other tools played by computers. This multimedia gamelan learning can bridge students to love real gamelan games more, and can effectively preserve and introduce the potential of gamelan art culture that contains noble values in the character of people's lives as the identity of the Indonesian nation. Multimedia gamelan is expected to be played by many people online through the boundaries of space and place.Drug Recommendation System based on Sentiment Analysis of Drug Reviews using Machine Learning." Garg, Satvik author of the paper suggested that the emotional analysis of the drug review study was researched to develop a recommendation program using different types of machine learning, such as Logistic Regression, Perceptron, Multinomial Naive Bayes, Ridge classifier, Stochastic gradient descent. , LinearSVC, used in Bow, TF-IDF, and dividers such as Decision Tree, Dedicated Forest, Lgbm, andCatboost are used in Word2Vec and Manual features method. Improvement of hyper parameters is also required for partition algorithms to improve model accuracy. it has been suggested that the only way one can use to extract emotions from data and makedistinctions is to create a positive system.

VI.   ACKNOWLEDGMENT

VII.   REFERENCES

[1]   J. Becker and R. E. Brown, "Javanese Court Gamelan," Ethnomusicology, vol. 25, no. 1. JSTOR, p. 175, 1981, doi: 10.2307/851008.
[2]   K. Jawa, "Local Genius," pp. 18–19, 1986.
[3]   I. Fitriyadi and G. Alam, "Globalisasi Budaya Populer Indonesia (Musik Dangdut) di Kawasan Asia Tenggara," Padjadjaran J. Int. Relations, vol. 1, no. 3, p. 251, 2020, doi: 10.24198/padjir.v1i3.26196.
[4]   O. Sudana, K. C. P. I. Putu, and A. Wirdiani, "Model Forest Tree dalam Sistem Informasi Gamelan Terintegrasi," Techno.Com, vol. 19, no. 3. Universitas Dian Nuswantoro, pp. 274–285, 2020, doi: 10.33633/tc.v19i3.3701.
[5]   S. McNiff, "Foundations of Expressive Arts Therapy," p. 222, 1998.
[6]   Hartono, "Perkembangan Estetika Musikal Seni Karawitan Jawa Dan Pengaruhnya Terhadap Masyarakat Pendukungnya," Media seni dan desain, vol. 1, no. 1, p. 25, 2012.
[7]   M. Safari and D. O. January, "The development of Virtual Javanese Gamelan to improve Gamelan learning achievement," MUDARRISA: Jurnal Kajian Pendidikan Islam, vol. 10, no. 2. IAIN Salatiga, p. 222, 2019, doi: 10.18326/mdr.v10i2.222-244.
[8]   J. Lin, The Dunhuang Grottoes and Global Education. 2019.
[9]   J. Diamond et al., "Out of Indonesia: Global Gamelan," Ethnomusicology, vol. 42, no. 1. JSTOR, p. 174, 1998, doi: 10.2307/852839.
[10]   N. K. Sebastian and J. A. Simanjuntak, "Study of Preference for Stereo Recording Techniques of a Pelog-based of

Gamelan Gender, Bonang, and Peking Ensemble," Proceedings of the 1st International Conference on Interdisciplinary Arts and Humanities. SCITEPRESS - Science and Technology Publications, 2019, doi: 10.5220/0009911105400546.

[11]   Nikhilkumar D. Parikh, "Effectiveness of Teaching through Mind Mapping Technique," Int. J. Indian Psychol., vol. 3, no. 3, 2016, doi: 10.25215/0303.054.

[12]   C. Harrison, "Music education in the 21st century in the United Kingdom: achievements, analysis and aspirations," Music Educ. Res., vol. 14, no. 1, pp. 119–120, 2012, doi: 10.1080/14613808.2012.667942.

[13]   B. Heimarck, "Music of Death and New Creation: Experiences in the World of Balinese Gamelan Beleganjur," American Ethnologist, vol. 30, no. 3. Wiley, pp. 455–456, 2003, doi: 10.1525/ae.2003.30.3.455.

[14]   J. Goldman, "4. José Evangelista. Du gamelan balinais à l'hétérophonie contemporaine," La création musicale au Québec. Presses de l'Université de Montréal, pp. 77–102, 2018, doi: 10.4000/books.pum.5348.

[15]   G. Festival, "Enculturation and Cross-Cultural Experiences in Teaching Indonesian Gamelan," pp. 43–54, 2010.

[16]   B. Almén and E. Pearsall, Approaches to meaning in music. 2006.

[17]   P. Prasetyo, "Seni Gamelan Jawa sebagai Representasi dari Tradisi Kehidupan Manusia Jawa: Suatu Telaah dari Pemikiran Collingwood," Fak. Ilmu Pengetah. Budaya Univ. Indones., pp. 1–139, 2012, [Online]. Available: http://lib.ui.ac.id/file?file=digital/20291476-S1336-Panji Prasetyo.pdf.

[18]   F. Hananto, "Gamelan Sebagai Simbol Estetis Kebudayaan Masyarakat Jawa," representamen, vol. 6, no. 1. Universitas 17 Agustus 1945 Surabaya, 2020, doi: 10.30996/representamen.v6i01.3511.

[19]   I. ARTADANA, M. MARHAENI, and M. SUARNI, "Pengaruh Metode Pembelajaran Demonstrasi Berbantuan Cd Interaktif Terhadap Motivasi Belajar Dan Hasil Belajar Pada Mata Pelajaran Ilmu Pengetahuan Alam Kelas X Sekolah Menengah Atas Luar Biasa C1 Negeri Denpasar," J. Ilm. Pendidik. dan Pembelajaran Ganesha, vol. 5, no. 1, p. 207592, 2015.

[20]   D. Antropologi and U. Airlangga, "Dinamika Kesenian Gamelan pada Fungsi dan Pelestarian Kesenian Gamelan dalam Sanggar Budaya Singhasari di Kecamatan Singosari , Kabupaten Malang , Jawa Timur Noor Hidyat Iswara Abstrak Pendahuluan Kebudayaan adalah keselu- ruhan perilaku manusia dalam keh."

[21]   A. M. Geraldina, "Terapi Musik: Bebas Budaya atau Terikat Budaya?," Bul. Psikol., vol. 25, no. 1, pp. 45–53, 2017, doi: 10.22146/buletinpsikologi.27193.

[22]   C. Plummeridge, Review of Music education: Cultural values, social change and innovation., vol. 36, no. 3. 2008.

[23]   K. Rismandika, "Popularitas Gamelan Gong Kebyar Dalam Arena Pertarungan Kekuasaan Gamelan Bali," SELONDING, vol. 13, no. 13. Institut Seni Indonesia Yogyakarta, 2019, doi: 10.24821/selonding.v13i13.2914.

[24]   "Music and Culture in Southeast Asia," Focus: Gamelan Music of Indonesia. Routledge, pp. 41–56, 2010, doi: 10.4324/9780203930991-11.

[25]   C. Basset, "Gamelan, architecture sonore (et Gamelan mécanique)," Moussons, no. 8. OpenEdition, pp. 157–170, 2005, doi: 10.4000/moussons.2274.

[26]   T. Teguh, "Ladrang Sobrang Laras Slendro Patet Nem," Resital J. Seni Pertunjuk., vol. 18, no. 2, pp. 103–112, 2017, doi: 10.24821/resital.v18i2.2447.

[27]   K. Aribawa, "Pengembangan Aplikasi Game Musik Tradisional Bali Megamelan Berbasis Multiplatform," J. Teknol. Inf. dan Ilmu Komput., vol. 5, no. 1, p. 7, 2018, doi: 10.25126/jtiik.201851493.

[28]   J. McIntosh, The women's international gamelan group at the Pondok Pekak. Oxford University Press, 2018.

[29]   Sumarsam, R. Vetter, and M. of the World, "The Sultan's Pleasure: Javanese Gamelan & Vocal Music," Asian Music, vol. 22, no. 1. JSTOR, p. 174, 1990, doi: 10.2307/834302.

[30]   D. H. Schaareman, "The Gamelan Gambang of Tatulingga, Bali," Ethnomusicology, vol. 24, no. 3. JSTOR, p. 465, 1980, doi: 10.2307/851154.

[31]   E. Heins, M. Hood, and H. Susila, "Music of the Venerable Dark Cloud: The Javanese Gamelan Khjai Mendung," Ethnomusicology, vol. 13, no. 2. JSTOR, p. 393, 1969, doi: 10.2307/850170.

[32]   E. A. CLENDINNING, "American Gamelan and the Ethnomusicological Imagination." University of Illinois Press, 2020, doi: 10.5406/j.ctv176kvq8.

[33]   C. R. Wairata, E. R. Swedia, and M. Cahyanti, "Pengklasifikasian Genre Musik Indonesia Menggunakan Convolutional Neural Network," Sebatik, vol. 25, no. 1, pp. 255–261, 2021, doi: 10.46984/sebatik.v25i1.1286.

[34]   J. Daryanto, "GAMELAN SEKATEN DAN PENYEBARAN ISLAM DI JAWA," Jurnal IKADBUDI, vol. 4, no. 10. Universitas Negeri Yogyakarta, 2016, doi: 10.21831/ikadbudi.v4i10.12030.

[35]   C. Richards, "Teen Spirits: Music and Identity in Media Education," Igarss 2014, 1998.

[36]   G. Iswantoro, "Traditional Gamelan Java Art Music As Indonesian Cultural Feasibility," J. Sains Terap. Pariwisata, vol. 3, no. 1, pp. 129–143, 2017.

[37]   S. Pamungkas, "TRANSFORMASI BENTUK NAGA PADA RANCAKAN GAMELAN COKEKAN PAMOR," CORAK, vol. 3, no. 1. Institut Seni Indonesia Yogyakarta, 2014, doi: 10.24821/corak.v3i1.2343.

[38]   N. Syahputri, "RANCANG BANGUN MEDIA PEMBELAJARAN MATEMATIKA SEKOLAH DASAR KELAS 1 MENGGUNAKAN METODE DEMONSTRASI Nita," JSIK (Jurnal Sist. Inf. Kaputama), vol. 2, no. 1, pp. 89–95, 2018.

[39]   L. A. Hiller, Computer Music, vol. 201, no. 6. 1959.

[40]   M. I. Cohen, Gamelan: The Traditional Sounds of Indonesia (review), vol. 22, no. 2. 2005.

[41]   J. Romero, I. Conference, and G. Goos, Artificial Intelligence in Music , Sound , Art and Design. 2020.

[42]   H. Spiller, "Lou Harrison's Music for Western Instruments and Gamelan: Even More Western than It Sounds," Asian Music, vol. 40, no. 1. Project Muse, pp. 31–52, 2008, doi: 10.1353/amu.0.0018.

[43]   M. Tenzer, "Timbre and Polyphony in Balinese Gamelan," The Oxford Handbook of Timbre. Oxford University Press, 2018, doi: 10.1093/oxfordhb/9780190637224.013.19.

[44]   M. Müller, Fundamentals of Music Processing. 2015.

[45]   S. Ediyono, S. Budi, and S. T. Widodo, "The Potentials of Gamelan as Education Tourism Media in Surakarta," vol. 279, no. Icalc 2018, pp. 95–102, 2019, doi: 10.2991/icalc-18.2019.15.

[46]   D. T. Untari, "Buku Ajar Metodologi Penelitian," Pena Persada, Banyumas, Jawa Tengah, Indones., p. 186, 2018, [Online]. Available: www.penapersada.com.