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Creative Experimentation with "BaTA" Software In the Art of Music Learning Process

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Abstract

The learning process is successful when the learning process creates comfort, knowledge is easily accessible, learning activities are fun, and meaningful. Especially in the process of music learning activities not only know and understand music technically but experimentation and improvisation activities into specific activities can stimulate and foster creativity. Not all of the arranger or composer uses the notation of numbers in the writing of his musical works. To master the beam notation as the basic theory of music in the teaching and learning process absolutely must master the technological aspect as an important thing that supports the achievement of educational goals. This article aims to (1) describe the experimentation of the use of music notation transcript media programs, using computers, and media to help or facilitate teachers and students who have difficulty reading transcript notation with the notation program that is made. (2) creating a learning media model by using software in the process of learning music, especially in music notation material, will be easier.

The research method used by Research and Development (R & D) through a process of reviewing the model, and study type, and various studies of the philosophical forms and meanings of music learning process. This type of research used qualitative descriptive by describing the findings of the field in the form of visual data, interviews, and literacy studies that support to analyze the subject of this study. In this research, various research steps were taken as follows: literature study, observation, documentation, experiments, data, and visual data used as a basis of results of research. The stages of development used in this study use the development procedures from Timpuslitjaknov which include: (1) needs analysis, (2) initial product development, (3) expert validation and revision, (4) small-scale field trials, (5) trials large scale field. The process of need analysis is to examine the media needs for static promotion subjects. Initial product development is a process of making media based on needs analysis. Data collection methods in this study were observation, interviews, and questionnaires. The research instruments were observation guides, interview guides, and questionnaires.

The results of this study are; (1) The results of the creative experimentation design of the software program have the main function to copy the number notation to the notation in music learning. (2) Modeling learning media by using software in the process of learning music, especially in music notation material, will be easier. Some of the features offered are translate notation, sound settings, addition of voice staff, print outs, and playback.

Keyword: BaTA, Creative Experiment, Music Learning

Introduction

In the learning process, the most important thing is not just the transfer of knowledge to students, but the discovery of learning situations that are able to stimulate, grow, and develop an intense interest in learning. Especially in the subject of Music Arts, it begins with the development of a very basic love for music. The learning session begins by teaching the most basic things from the nature and principles of the art of music itself, both technical and non-technical. Soft skills and hard skills are grown gradually. Presentation of musical knowledge is technically as important to develop

affective and psychomotor aspects as students' psychomotor development. The higher the level of education, the higher the level of complexity of the material studied with the achievement of the skills and creativity that demand it.

In the field, the learning process in several schools is still often encountered by music teachers who do not have a background in music education and have self-taught music knowledge and skills as well as learn from their family and social environment. However, when it comes to understanding and mastering musical technicalities from the most basic. In line with what Syahrul Syah Sinaga explained, b*ased on observations in the field, the teachers who have competence in the field of music are reflected from their mastery of the basic elements of music in musical activities such as singing and/or playing a musical instrument. These competencies are generally not derived from the results of learning in formal education institutions, but because by chance they are born from the family who pursue the field of art (artists). In addition, some other teachers had experience in music since they were either a band player at school or an autodidact who learned music by themselves*.[1]

One of the most basic things in learning music is reading musical notation. Music notation is the most important part of music, because notation is the conversion of visual language and text into the tone of a musical work. Musical notation that is universally known describes its universalistic nature, so that through this notation, musical works can be played by anyone and from different cultural backgrounds in different parts of the world. Notation directs and constructs a tone concept to accompany a song arrangement as found in songs that are widely known today. Notation in music is described through universal symbols which can then be transformed through playing on musical instruments. Notation is generally known in two forms, namely number notation and block notation. Block notation is musical writing using five flat lines to indicate the high and low of a note, and numeric notation is musical writing using numbers as a unit of measure for tone levels [2].

The form of block notation is a symbol that has become a common and universal language in the music world and is also a teaching material in music lessons in schools. This is reinforced by Mudjilah's opinion which states that musical notation describes the amount of time in the horizontal direction, and the high-low notes in the vertical direction [3]. At this time in schools such as junior high school the subject matter to recognize and learn notation blocks is no longer a priority, but only as general knowledge in recognizing music theory, causing limited knowledge of students in understanding notation. The form of number notation has not yet become a common language because not all arrangers or composers use number notation in writing their musical works. However, in schools there are still teachers and students who use number notation as learning material. This is due to the limited ability of teachers and students in reading block notation. For this reason, it is important for teachers to master block notation as the basic theory of music in the teaching and learning process in schools. The technological aspect is very supportive and supports the achievement of educational goals. For music lessons, technology can be used to build and hone musicality, taste, and music theory itself.

This article discusses the creative experimentation of making software that functions to transcribe block notation into number notation so that it can help the music learning process in schools. This software is designed computerized using Borland Delphi software. After going through the transformation process through software, the results can be accessed on the Windows operating system. The reason for using Borland Delphi software, because this tool provides flexibility for users to design other software. In addition, Borland Delphi also has many features that make it easier to work on and read back. The reason for designing and making block notation writing applications from MIDI files is because access to music books is still quite expensive, so that through the design products it produces, it is able to assist users in making their own musical scores from MIDI files [4].

This of course provides access for users and students to obtain learning media using a computer with Borland Delphi 7 software. Software development is expected to facilitate or assist teachers and students in the music learning process. Rusnoto Susanto (2019: 463) The assumption of all-powerful media effects, launching what became known as the limited-effects tradition. Public education is quite capable of exploring the theory in communication and social formation system, and other participatory communications. [5] At this time, the pattern of transformation of contemporary culture emerges through changes in silent cultures (Susanto, 2019: 777).[6] Especially for students or beginners who have difficulty in reading block notation even though basically reading block notation is preferred in music theory. In making software transcripts from block notation to number notation using transformed computer media, it produces a program that has the ability to change the shape from block

notation to number notation. This article aims to (1) describe the experimental use of music notation transcription media programs, using computers, and media to assist or facilitate teachers and students who have difficulty reading transcription notation with the notation program created. (2) creating a learning media model using software in the process of learning the art of music, especially in music notation material, will be easier [6].

Method

The research method used by Research and Development (R & D) is through a process of reviewing models, and types of studies, and various studies of the philosophical form and meaning of the music learning process. This type of research uses qualitative descriptive by describing field findings in the form of visual data, interviews, and literacy studies that support the analysis of the subject of this research. In this study, various research steps were taken as follows: literature study, observation, documentation, experiments, data, and visual data used as the basis for research results. The development stages used in this study used the development procedure from Timpuslitjaknov which included: (1) needs analysis, (2) initial product development, (3) expert validation and revision, (4) small-scale field trials, (5) pilot testing. large scale field. The needs analysis process is to examine the media needs for the subject of static promotions. Initial product development is the process of creating media based on needs analysis. Data collection methods in this study were observation, interviews, and questionnaires. The research instrument was an observation guide, an interview guide, and a questionnaire.

Discussion

In accordance with the demands of technology and the development of the digital era, it certainly requires a breakthrough in the learning system through the development of technology-based learning media. Creative activities always require a number of aspects of experimentation to produce novelty in creativity. The process of the emergence of novelty creativity can be generated through a process of intensive interaction between individuals in a social environment in a dynamic learning climate with personal backgrounds, social characteristics and cultural domains that live in society. According to the implication theory of the perspective system by Mihaly Csikszentmihalyi, a novelty of creativity can be generated through the process of interaction between the individual with his personal background, his cultural domain, and the community in the field [8]. *In addition to that, Csikszentmihalyi also reveals that creativity is an ability to create appropriate novelty works. The creativity itself arises through a symbolic system of how the social system responds to the new idea. If the novelty idea passes the selection and is able to provide benefits, then the idea can be manifested.*[1]

The art education curriculum system from the beginning has included the art of music in stages in the context of broader knowledge and skills which aims to ensure that every child and adult has access to the right to education. The right to education is needed as an opportunity to be directly involved in efforts to instill and develop artistic talents and interests in a participatory manner. The basic reason is how efforts to grow the importance of art education as the main pillar in building characteristics as the main component of education in Indonesia. *Rohidi in his book entitled Art Education: Issues and Paradigms says that art education includes the art of music in a broader context aimed at ensuring every child and adult to get the rights of education and the opportunity to engage in development and participation in the field of culture and artistic. This is a fundamental argument for raising the importance of art education as a major component of educational programs. This is relevant to Read (1970:.1) in his book, "Education Through Art," that art should be the basis of education* [9] [10].

Learning to read musical notation is a musical activity that requires basic theoretical knowledge and basic musical skills which can ultimately be done using vocal accompaniment through singing activities or using musical instruments with in one arrangement playing musical instruments in an integrated manner. Tarwiyah, *in practicing the soprano recorder music instrument, it will be more effective if it is done through the use of music symbol instrument. Therefore, when the teacher has the ability to teach the music symbol notation, teaching the music symbol notation can be applied from primary level in a simple way* [11]. Technical competence of teachers in music is very basic but in creative learning plans and mastery of good skills are the main factors in developing musical creativity that can be transmitted to students. *There is no specific instructional method to increase the musical*

creativity of students. It is impossible to expand the musical creativity of a child without the teacher's creative teaching - learning strategy. Needless speaking the teacher's creative teaching - learning plan is a major factor in expanding musical creativity. Musical creativity has a very close relationship with general creativity, and musical creativity is directly related to general creativity. [12]

Understanding further that art should be the basis of education, learning activities rely on fun activities and adjust growth to the aspects of art that are of interest. Art learning media must also be designed according to the needs and developments of science and technology, so that the idea of conducting creative experimentation with software that is adaptive and easily accessible to students in learning the art of music becomes urgent. The basic design of this product is to use image data or images, which are run using the Borland language. The image data that is used as input data is first designed and entered into the design project, after everything is completed, it is continued by creating a programming language. Bonded with the initial design process chart for BaTA products can be seen below:

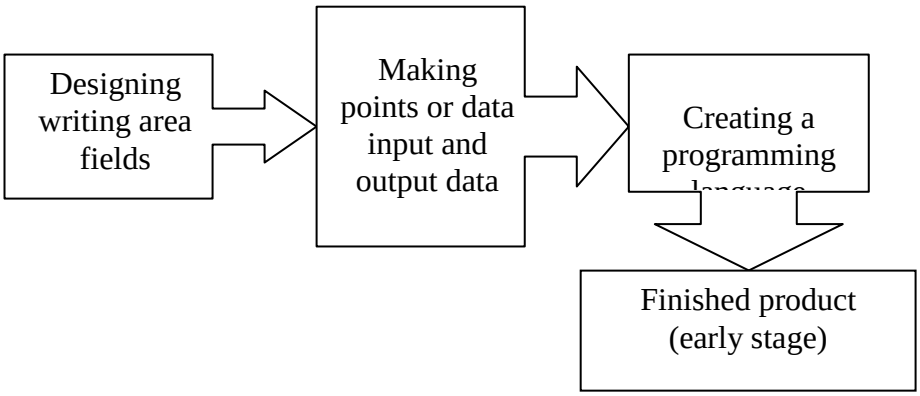

Figure 2. Initial product design steps

The initial design of this product is symmetrical, meaning that the area is divided into two parts, namely input and output. The note palette is provided above and is presented simply. Accessory functions such as save, open, new and others have not been enabled because at this stage we are only trying until the transcription function of the data entered is running. The output data is still in the form of text mode, so the resulting display is just a number in the form of text. At this stage the program has not been able to read note prices and for the time being the display arrangement pattern is still not neat. The initial design of the programming language was made with one main language to carry out the transcript function. From a main language then duplicated in each part that will carry out the transcript function, so that the programming language that is made becomes very long and complicated. The essence of the programming language created at this stage is to convert data from images to other forms of text type.

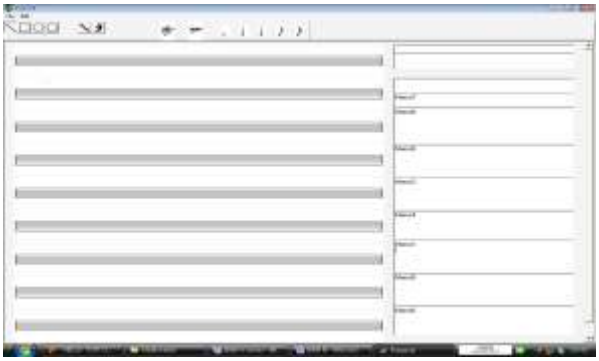

Figure 3. The initial appearance of the product

After the initial design of the product is finished and can be run, then the next step is to design some transcript points and accessories from the product itself. To make it look more beautiful and more attractive, the display is changed again to be more presentable. An added design form is adding multiple writing areas for different sounds. Due to limited ability and time, the writing area is made different. Voice 1, sound 2, sound 3, and sound 4 are made in different areas. The note palette has also

been made neater, so users can use it more easily. A very different change from the second design is in the layout or display on the main screen, which was originally divided into two areas, then changed to a simpler and easier one, namely the data entered can be written manually and the results of the transcript or output are presented directly under the area. inputs. The data output from the continuation of the initial design has changed, which was originally a text mode type, changed to an images mode.

Overall, the design form at this stage appears in the design in the data section, which can read the price or note value and the position of the note placement. The reason for changing the shape of the main display to be simpler is because the initial design was considered too complicated and a little confusing, besides that the style of the display also did not have a beauty value and in terms of convenience it had not been fulfilled. Furthermore, he made several changes to make it easier to use the software when it was operated, add value to the beauty of the display, and give the user a simple impression. The software is not only functional when operated, but there is an aesthetic touch to the layout and gives a functional impression that is friendly to users. Some forms of layout changes that affect the aesthetic design can be seen in the image below.

Figure 4. The shape of the second view

The next design stage, namely the third design, is the final design process from the initial stage of making the program, the display has been made user friendly or easy to use, the features provided are more complete and the visual appearance is more attractive and not boring. Psychologically, it will affect users in operating this software comfortably, feeling the creative spirit that arises when learning music or creating songs through musical instruments. The following is the main display form of the third design:

Figure 5: Main display shape

Features that have been included in the third design are: (1) Tool File, which consists of New to create a new file, Open to open the file and Save to save the file. (2) Track Tool, which consists of Properties that function to adjust the track used. The settings are selecting the sound on each track with the provided sound, (3) Tool Bar, which consists of Add Bar, Insert Bar, Delete Bar, and Properties to set the type of line and stroke mark, (4) Tool Help, which consists of Help and About. Then on the toolbar, several features are also provided, some of which are already in the tool above, as well as several features with different functions, including: (1) Print feature, to print the data being worked on. This display displays the job to be printed and the number of pages to be printed. (2) Properties feature, to set song properties such as title, author, notes, tempo and tonic. (3) Notes feature, to select the form or note mode, including arrows, notes to write notation, rest for rest sign selection, and delete to delete data, (4) Duration feature, to select the duration of the notation to be used. (5) Track feature, provides four sound sheets with different sound capabilities according to the options selected on the track property icon. (6) The property icon provides sixteen types of primary and several sub primary

sounds, which can be used for each selected track. This function is also found in the track tool. (7) The Play and Stop feature, serves to play and stop the song being played.

This creative product is a form of experimentation in the design of Beams to Figures software which is given the title "BaTA" which means Blocks to Numbers. Conceptually, the main function of this software is to change the form of notation as input from block notation to numeric notation as its output. This product is given the BaTA V.1.0 version, because it is the first time it has been designed which since the beginning of this design can be developed in a better and perfect direction. This software can operate on a Windows system, so users can easily run this program on their respective PCs, because generally computers that develop use the Windows operating system.

This software collects a folder which consists of several files, namely one Exe file or program installer, Font file and Help file. To be able to use this software, users can open the BaTA folder and click on the BaTA.Exe icon, and then the program will automatically run. This software is portable, meaning from an installer icon with an exe type, the program can be run directly without having to install it first. After the program is run, the main display appears on the screen, it can be seen in the image below:

Figure 8: Main view

Display on the toolbar at the top there are several menus, namely: (1) File, consisting of New, Open, Save, Save As and Exit, (2) Track, consisting of properties, (3) Bar, consisting of add bars to add bar, insert bar, delete bar and property, (4) Help, consists of Help and About. The functions of some of these sub menus can be explained in the table below:

Some of the advantages of this program include: (1) being able to make sheet music from the arrangement of musical notes on the notation bar which is divided into 4 sound tracks, (2) automatically converting musical notes on the sheet into numerical notes, (3) being able to play notes from notes that have been arranged on a track, (4) can save the sheet music into a file for later use, (5) print the sheet music that was worked on. The following is an example of how to use BaTA software to write notations: (1) Click the blue icon to run the application, (2) After running the application, the main screen will appear on the monitor screen, (3) To determine the tonic, write the title, author. and other information can open the property icon such as., (4) The settings have been determined by the user, then after that it can be continued by writing notations. To write block notation, you can press the icon on the note menu in the tone icon. And in other functions such as giving a break and deleting notes, it is also found in the notes menu. The notes are placed on the stave provided, the notes can be placed on sheet one, sheet two, sheet three or four, depending on the user's needs in writing songs. (1) To adjust the per-track sound, the user can enter the menu on the track toolbar or press the track icon to display the track properties menu. For tracks that you want to unmute, you can activate the Mute function. After everything is set, then when it is played it will make a different sound depending on the user's needs. (2) After the notation is written, it can be played by pressing the play icon and to stop it by pressing the stop button. Meanwhile, to add, insert and delete bars, you can use the icon on the menu bar. (3) After everything is done, the data can be saved by opening the file menu and using the Save and Save As functions, and to open the saved file, you can use the open function. The saved track data has the type “filename” NOT.

Conclusion

The results that can be presented are product presentations in the form of software called BaTA,

which means Blocks to Numbers. The work on this software uses computer assistance and the Borland Delphi 7 program. The resulting software has the following capabilities; (a) can make sheet music from the arrangement of musical notes on the notation bar which is divided into 4 sound tracks; (b) automatically convert the musical notes on the sheet into numeric notes; (c) able to play notes from notes that have been arranged on a track; (d) can save sheet music into a file for later use; (e) print sheet music. The resulting software is effective and able to help teachers and students who have difficulty reading block notation with the BaTA program.

From the results of articles conducted through questionnaires and product trials, it was found that 84% of respondents from among students, students and teachers, said that the BaTA software was good and very helpful for users in translating block notation. Some aspects that have not been perfected, including; (a) for dynamic signs, tempo and expression are not included in the program; (b) the program has not been able to open several files in one run of the program; (c) transcription features from number notation to block notation as well as several functions to play songs that are not yet available in the product; (d) the program cannot enter data from outside in MIDI format, and the available sound type is not yet stereo [4]. Based on the results obtained in this article, several suggestions can be made, namely with the resulting product, it is expected to trigger the creativity of music students in their work, with the aim of helping solve problems that exist in society, especially problems in the field of music.

The resulting product is still not perfect, because it was done in a short time and with limited human resources, therefore it is necessary to develop a program to a more perfect direction in the future, both in terms of appearance, advantages and existing features. With increasingly advanced technology, it is hoped that teachers in schools will develop more teaching methods using technology. It is hoped that this product will be able to stimulate the spirit of learning and creativity of students in the field of music at school. It is hoped that the products produced from this article can be used as a positive contribution to the world of Indonesian education.

Reference

[1] V. G. Sinaga, Syahrul Syah, Tjetjep Rohendi Rohidi, Soesanto, "Musical Activity in The Music Learning Process Through Children Songs in Primary School Level," *Harmon. J. Arts Res. Educ.*, vol. 18, no. 1, pp. 45–48, 2018.

[2] P. Banoe, *Kamus Musik*. Yogyakarta: Kanisius, 2003.

[3] Sri Hanna Mudjilah, *Teori Musik Dasar*. Yogyakarta: Institut Keguruan Ilmu Pendidikan Yogyakarta, 1998.

[4] R. Alamveta, "Perancangan dan Pembuatan aplikasi Penulisan Notasi Balok Dari file MIDI," Surabaya: Fakultas Teknologi Industri, Universitas Kristen Petra, 2007.

[5] Susanto, Moh Rusnoto. 2019. Social Media Transformation In The Public Education: A Critical Review Of Social Change, *International Journal Of Scientific & Technology Research (IJSTR) Volume 8, Issue 07, July 2019*, ISSN 2277-8616, p. 463.

[6] Susanto, Moh Rusnoto, Retnaningsih, Rahayu, et.all. 2019. Contemporary Culture Transformation Through Virtual Space: A Cyberculture Perspective, *International Journal of Recent Technology and Engineering* Volume-8, Issue- 1C2, May 2019, (IJRTE) ISSN: 2277-3878, p. 777

[7] I. I. Martina, *36 Belajar Komputer Pemrograman Visual Borland Delphi 7*. Jakarta: PT Elex Media Komputindo, 2004.

[8] Stemberg R J, *Handbook of Creativity*. Cambridge: Cambridge University Press, 1999.

[9] Rohidi T R, *Pendidikan Seni: Isu dan Paradigma*. Semarang: Cipta Prima Nusantara Semarang, 2016.

[10] Herbert Read, *Education through Art*. Chicago: University of Illinois Press, 1970.

[11] T. Tarwiyah, "Perbedaan Efektifitas antara Penggunaan Notasi Balok dengan Notasi Angka dalam Meningkatkan Ketrampilan Memainkan Rekorder Sopran Pada Mahasiswa Pendidikan Anak Usia Dini (PAUD) Iniversitas Negeri Jakarta," *Harmon. J. Art Res. Educ.*, vol. 10, no. 1, 2003.

[12] S. Hong, "Creativity Enhancement in Music Class; Focused on Teaching Strategy of Korean General Music Class, Elementary Level," *Int. J. Learn. Teach. Educ. Res.*, vol. 17, no. 10, pp. 112–126, 2018, doi: https://doi.org/10.26803/ijlter.17.10.8 p. 124.