

Pakistan Journal of Society, Education and Language (PJSEL)

Journal Homepage: <https://pjsel.jehanf.com/index.php/journal>

ISSN

2521-8123 (Print)
2523-1227 (Online)

Rational Study Of The Use Of Computer Aided Softwares By The Composers

Sajjad Hussain Qureshi*¹, Shamsa Javaid², Muhammad Ahsan Javaid³

Original Article

1. Department of Information Technology, Islamia University, Bahawalpur, Pakistan.

*Corresponding author: Email address: sajjads2002@yahoo.com

2. Department of Computer Science GC University Faisalabad, Pakistan.

3. Department of Computer Science GC University Faisalabad, Pakistan.

Keywords

Composer, Computer softwares, Classic, rhythmic

Abstract

To meet the audience taste and expectation is the main task of the composer. Audience interest is based upon the characterization of timbres, feeling of rhythms and tempos. To maintain proper pitch orientation, rhythmic orientation and timbre orientation by conventional methods are the main problems faced by young musicians. Computer softwares are the only solution to these problems. The study was carried out among the professionals, teachers and students to find out the problems associated with musical composition and role of computer softwares in the solution of these problems. Quantitative research method was utilized to collect the data and chi square test was exploited to check the significance. Significant differences were observed for Classic music, Folk music, Rock music, Soul music and Hip hop music for the music type used by the musicians, pitch orientation and rhythmic orientation for the Compositional problems faced by the musicians, Notion 6, MuseScore 2, Sibelius First and Finale PrintMusic for the Softwares used by the musicians in the solution of compositional problems. Non significant differences were observed for Timbre orientation and Noteflight. The study showed that Noteflight (online musical composition software) was most used musical composition software to solve the compositional problems. The study not only elaborates the available musical compositional software in the market but also provides the guidelines to overcome the compositional problems with the help of computer.

Introduction

Improvement in music learning is observed with the use of computer in music teaching (Volynskiy et al., 2011). Music teaching not only needs traditional music instruments but also needs modern computer equipments in music creation and composition (Khusainova & Chegischeva, 2013). Use of

technology has strong footing in music. However, modern musicians use it in composing and sound (Crawford, 2014). This first model happens with regards to programmed music age frameworks joining formal particulars of fleeting structures and intuitiveness. The goal of the use of computer in melodic production is to produce music with intelligent time structures (Assayag et al., 2006). Nika et al., (2016) described an intelligent music framework showing the interaction of human computer interaction. The application of computer aided technologies in the music help in cultural learning among the children (Ko & Chou, 2013). The new technologies have shown strong impact in musical education (Portowitz, Peppler, & Downton, 2014). It provides young musicians in learning through video sharing (Cayari, 2014) and improvement of their skills (HeathReynolds & VanWeelden, 2015). Kilic (2015) reported the enhancement of the self-efficacy among the students and teachers of musical educations through the use of computer. Different tools and softwares are available that enhance the knowledge of the musicians and help them in showing their hidden abilities (Carlisle, 2014). Technologies like MP3-players, mobile phones and YouTube are being continuously added in musical teaching (Stowell et al., 2014). Music and the computer are viewed with respect to musical pedagogy that provides an opportunity for learning musical process development (Sakai, 2014). Many technologies are designed for the development of musical skills (Nielsen, 2013). The study of sepp et al. (2015) showed significant improvement in the students where computer aided programs were used in training. Considering the need of the project, the aim of the study is to find out the role of computer in the solution of compositional problems faced by young musicians.

Material and methods

Musical composition problems are the main hindrances in growth of young musician. The study was performed to find out the role of computer in the solution of musical composition problems. The quantitative research approach was exploited to record the data for analysis. Bryman (2006) studies were used for quantitative research which describes the general idea about the population. The questionnaire was used in the collection of quantitative data that was further checked for its significance of chi square test. The study was performed among the musicians having mostly concerned with composition problems (professionals, teachers and students). The population having the size of 90 musicians was studied who had equal representation in the sampling. Professionals, teachers and students were provided with a questionnaire in a face to face meeting. The questionnaire had different parts each elaborating its purpose and significance. Demographic information of the musicians like gender, age and status (professionals, teachers and students) was presented in the first part of the questionnaire. The second part of the questionnaire explored which music type used by the musicians (classic music, folk music, rock music, soul music, hip hop music). Compositional problems faced by the musicians (pitch orientation, rhythmic orientation, timbre orientation) were elaborated in the third section of the questionnaire. Softwares used by the musicians in the solution of compositional problems (Notion 6, MuseScore 2, Sibelius First, FinalePrintMusic, Noteflight) were presented in the fourth section of questionnaire. The data collected of questionnaire was tested for its significance of chi square test.

Results

The research was performed to analyze the role of computer as a solution to musical compositions for 21st century musicians. The research was intended on the population having size of 90. Each variable (professionals, teachers and students) had equal (N=30) submission in the population. It has been studied that professional used music type of 20% of classic music, 40% of folk music, 73% of rock music, 17% of soul music and 33% of hip hop music. The teachers used music type of 67% of classic music, 53% of folk music, 60% of rock music, 84% of soul music and

23% of hip hop music. Similarly, students 13% of classic music, 23% of folk music, 84% of rock music, 40% of soul music and 73% of hip hop music type respectively (Figure 1).

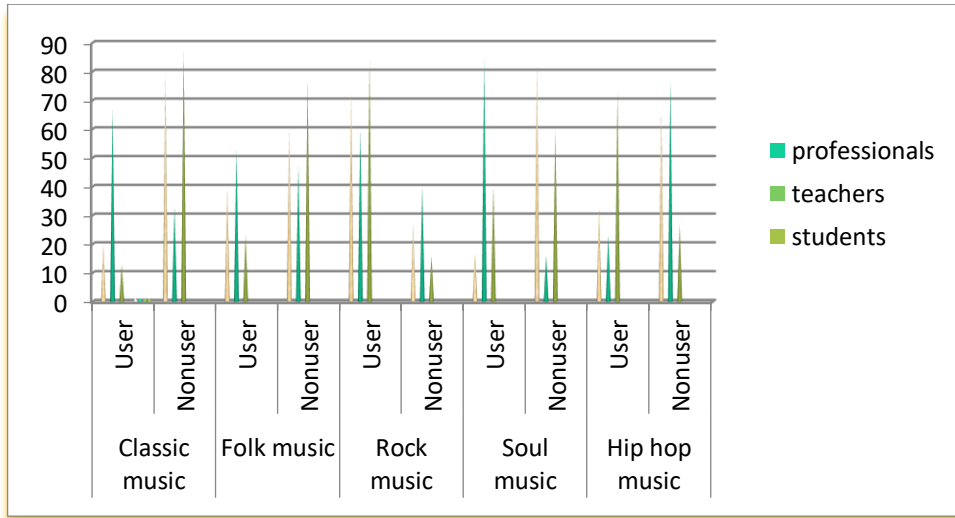


Figure 1: statistics of music type used by professionals, teachers and students.

The compositional problems faced by the musicians were further studied. It was recorded that 67%, 13% and 93% of professionals, teachers and students faced problems in pitch orientation, 33%, 17% and 80% of professionals, teachers and students in rhythmic orientation, 13%, 10% and 7% of professionals, teachers and students in timbre orientation respectively (figure 2).

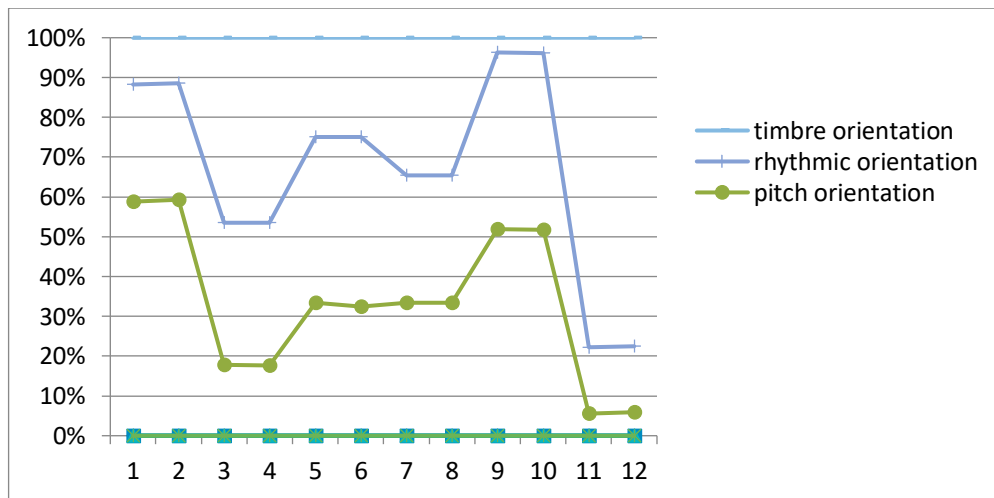


Figure 2: Compositional problems faced by the musicians

It was studied that 83% of professionals, 50% of teachers and 17% of students applied Notion 6 software, 40% of professionals, 77% of teachers and 20% of students applied MuseScore 2 software, 23% of professionals, 60% of teachers and 20% of students applied Sibelius First software, 90% of professionals, 37% of teachers and 17% of students applied Finale PrintMusic software, 87% of professionals, 80% of teachers and 83% of students applied Noteflight software for the solution of compositional problems (Figure 3).

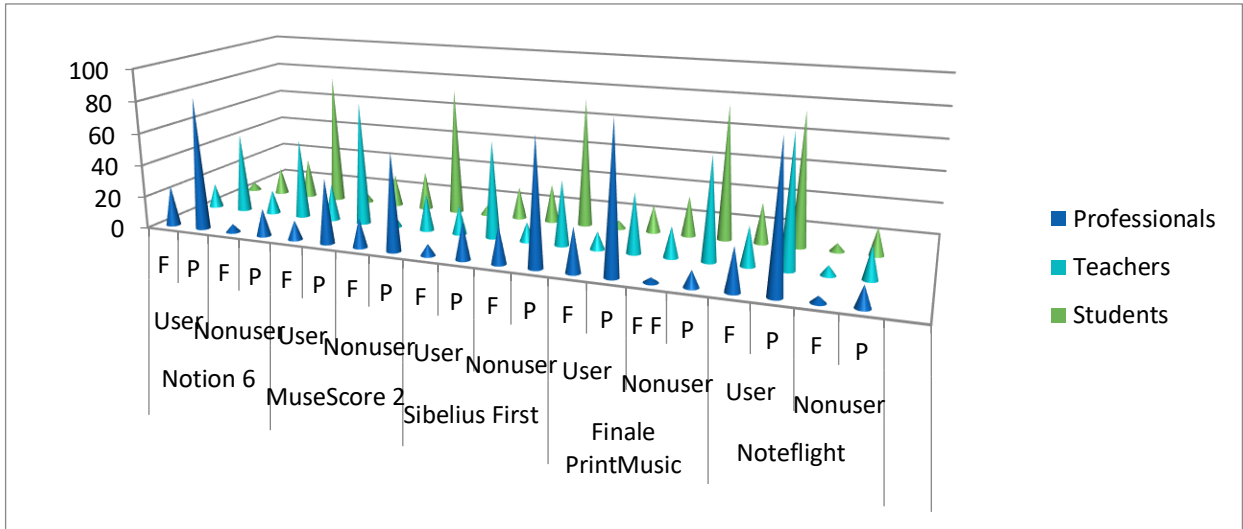


Figure 3: Software used by the musicians in the solution of compositional problems (F: frequency, P: percentage).

Significance of the results was elaborated in table 4. Classic music noted with 23.6534 and 0.00001, folk music with 07.3678 and 0.00235, rock music with 25.8746 and 0.00021, soul music with 63.2514 and 0.03001, hip hop music with 23.4518 and 0.17814, pitch orientation with 41.2369 and 0.02001, rhythmic orientation with 14.0569 and 0.06727, timbre orientation with 01.000 and 0.00094, Notion 6 with 05.3614 and 0.6525, Musescore 2 with 56.1235 and 0.0001, sibelius first with 45.1236 and 0.00653, finale print music with 01.2365 and 0.13870, Noteflight with 00.2635 and 0.00390 chi square and P value respectively at $P \leq 0.05$.

Table.4. Chi square values of different variables for the musicians.

Variables	Chi-square value	P-value
Classic music	23.6534	0.00001*
Folk music	07.3678	0.00235*
Rock music	25.8746	0.00021*
Soul music	63.2514	0.03001*
Hip hop music	23.4518	0.17814*
Pitch orientation	41.2369	0.02001*
Rhythmic orientation	14.0569	0.06727*
Timbre orientation	01.000	0.00094 ^{NS}
Notion 6	05.3614	0.6525*
Musescore 2	56.1235	0.0001*
Sibelius first	45.1236	0.00653*
Finale printmusic	01.2365	0.13870*
Noteflight	00.2635	0.00390 ^{NS}

* Significant at $P \leq 0.05$

Discussions

Computer has changed the way of scientific investigation especially in the music industry. It not only resolves the musical composition problems but also changes musical production, view and behavior of the listeners (Enders, 2000). The use of programming softwares flourishes about the quality and amount of progress achieved by music innovation in the creation and absolutely in

the utilization of music. The use of computer software in editing, recording and preserving results in an advancement of digital technology in music industry. These softwares enable the composition of the music for those people who have little knowledge about the traditional musical compositions and are unable to access the institutions where music composition is taught (Roberts, 2000). The problems of poor design in the research of music industry are elaborated by the Higgins (1992). The more advancement in the technology was favoured by Seddon & O'Neill (2003), Baurer et al. (2003) and Addressi & Pachet (2005). Reese (2001) reported the use of technology in the composition and forwarding of the concept like thinking in the sound. The study elaborated the softwares used to achieve the compositional problems and different software assisted teaching strategies. Fautley (2002) elaborated the scope of band experience in the institutions by exploring technology in home computers. He reported the use of email for the exchange of audio file with commentary, mp3 files for home practices and recordings as an assignment submission. Reid & Petocz (2001) used multimedia programs for ensemble playing. Recorders were supported with five present day compositions. It was observed that text, notation, graphic and video based multimedia presentations assisted in ensemble performance of the recorders. Hopkins (2002) utilized music programming to research the adequacy of two instructional methodologies on the capacity to perceive various sorts of topic and variety classifications. The researcher made two renditions of a similar programming program and shifted the instructional substance. The expository methodology introduced the meanings of the distinctive variety like tempo, figural, modal and ornamental. The discovery approach retained the name of the variety class and urged the learners to differentiate between example and explanation. The study showed significant improvement in learning through programming softwares. Walker (2001) reported the coordinated effort for the investigation and evaluation of music and its compositions. It was observed that PC based communication was gainful to learning and that such methodologies can assume an important function in graduate training. Quesnel (2002) assessed the viability of music programming to improve memory for tone, affectability to tone change, and trained hearable consideration and effectiveness. He reported that students who used computer aided software and coaching in music outperformed than the experts. Smith (2002) studied the use of computer aided instructions in learning of rhythm reading skills using the software *Music Ace*. Post-test scores did not exhibit the a significant difference between groups in learning rhythm skills but showed difference in pre to post-test. Moreover, positive attitude was observed in the students in using computer aided softwares. Benson (2002) observed the role of video, audio and multimedia in learning musical compositions. He elaborated no difference in tempos and note accuracy across the group. Stauffer (2001) described the qualitative research of elaborating the role of computer in the composition. She pointed out the importance of softwares in the manipulation of texture, pitch, tempo and timbres. Seddon and O'Neill (2003) reported the use of computer aided composition by the students. They evaluated the students on the basis of rhythmic and melodic repetition. The students used simple sequence program in the musical composition. It was observed that technology helped in composition analysis. Powerful tools are provided by the computer softwares in developing musical ideas for the beginners (Nilsson & Folkestad, 2005). Savage & Challis (2001) reported the use of computer softwares in mutitracking and digital audio recording in the formation of original music by the students. Musial composition was formed by introducing short sound pieces by the collaboration. Researcher reported strong confidence and sense of ownership among the students.

References

- Addressi, A., & Pachet, F. (2005). Experiments with a musical machine: Musical style replication in 3 to 5 year old children. *British Journal of Music Education*, 22(1), 21-46.
- Baurer, W., McAllister, P., & Reese, S. (2003). Transforming music teaching via technology: The role of professional development. *Journal of Research in Music Education*, 51(4), 289-301.
- Benson, C. (2002). The effects of instructional media on group piano student performance and attitude. *Journal of Technology in Music Learning*, 1(2), 38-55.
- Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, 6(1): 97-113.
- Carlisle, K. (2014). Handheld Technology as a Supplemental Tool for Elementary General Music Education. *General Music Today*, 27(2), 12–17. <http://doi.org/10.1177/1048371313505590>.
- Cayari, C. (2014). Using Informal Education Through Music Video Creation. *General Music Today*, 27(3), 17–22. <http://doi.org/10.1177/1048371313492537>.
- Crawford, R. (2014). The evolution of technology: Landmarking Australian secondary school music. *Australian Journal of Music Education*, (2), 77.
- Enders, B. (2000). Musical education and the new media: The current situation and perspectives for the future. In H. Braun (Ed.), *Music and technology in the twentieth century* (pp. 223-238). Baltimore: The Johns Hopkins University Press.
- Fautley, J. (2002). Band online: The what, why, whether, when, where, who, how, what if and what else. *Canadian Music Educator*, 43(3), 33-35.
- Heath-Reynolds, J., & VanWeelden, K. (2015). Integrating Apps With the Core Arts Standards in the 21st-Century Elementary Music Classroom. *General Music Today*, 29(1), 24–27. <http://doi.org/10.1177/1048371315589127>.
- Higgins, W. (1992). Technology. In R. Colwell (Ed.), *Handbook of research on music teaching and learning* (pp. 480-497). New York: Schirmer Books.
- Hopkins, M. (2002). The effects of computer-based expository and discovery methods of instruction on aural recognition of music concepts. *Journal of Research in Music Education*, 50(2), 131-144.
- Khusainova, G.A., & Chegishcheva, O. P. (2013). Aspects of Kazakhstan's higher musical and pedagogical education development at the present stage. *Vocational Training: Modernization Aspects: Collective Monograph*, in 9 Volumes, "Scientific Cooperation" Research Centre, Rostov-on-Don, 1(189), 13–17.
- Kilic, D. (2015). Music teachers computer anxiety and self-efficacy. *Educational Research and Reviews*, 10(11), 1547–1559. <http://doi.org/10.5897/ERR2015.2235>.
- Ko, C.-H., & Chou, M.-J. (2013). Aesthetics in Young Children's Lives: From Music Technology Curriculum Perspective. *SSRN Electronic Journal*, 2(4), 265 – 273. <http://doi.org/10.2139/ssrn.2368783>.
- Nielsen, L. D. (2013). Developing Musical Creativity: Student and Teacher Perceptions of a High School Music Technology Curriculum. *Update: Applications of Research in Music Education*, 31(2), 54–62. <http://doi.org/10.1177/8755123312473610>.
- Nilsson, B., & Folkestad, G. (2005). Children's practice of computer-based composition. *Music Education Research*, 7(1), 21-37.

- Portowitz, A., Peppler, K. A., & Downton, M. (2014). In Harmony: A technology-based music education model to enhance musical understanding and general learning skills. *International Journal of Music Education*, 32(2), 242–260. <http://doi.org/10.1177/0255761413517056>.
- Quesnel, R. (2002). A computer-assisted method for training and researching timbre memory and evaluation skills. *Dissertation Abstracts International*, 64 (04), 1128. (University Microfilms Order No. AAT NQ78756).
- Reese, S. (2001). Tools for thinking in sound. *Music Educators Journal*, 88(1), 42-45, 53.
- Reid, A., & Petocz, P. (2001). Developing multimedia materials for creating ensemble. *Journal of Technology in Music Learning*, 1(1), 47-55.
- Roberts, B. A. (2000). Editorial. In B. Hanley & B. Roberts (Eds.), *Looking forward: Challenges to Canadian music education* (pp. 5-10). Toronto: The Canadian Music Educations Association.
- Sakai, W. (2014). Music Cultural Pedagogy in the “Network Society.” *Journal of Education and Training Studies*, 2(2), 1–8. <http://doi.org/10.11114/jets.v2i2.233>.
- Savage, J., & Challis, M. (2001). Dunwich revisited: Collaborative composition and performance with new technologies. *British Journal of Music Education*, 18(2), 139-149.
- Seddon, F., & O'Neill, S. (2003). Creative thinking processes in adolescent computer-based compositions: An analysis of strategies adopted and the influence of instrumental music training. *Music Education Research*, 5(2), 125-135.
- Sepp, A., Ruokonen, I., & Ruismäki, H. (2015). Musical practices and methods in music lessons: a comparative study of Estonian and Finnish general music education. *Music Education Research*, 17(3), 340–358. <http://doi.org/10.1080/14613808.2014.902433>.
- Smith, K. (2002). The effectiveness of computer-assisted instruction on the development of rhythm reading skills among middle school instrumental students. *Dissertation Abstracts International*, 63 (11), 3891. (University Microfilms Order No. AAT 3070051).
- Stauffer, S. (2001). Composing with computers: Meg makes music. *Bulletin of the Council for Research in Music Education*, 150(Fall), 1-20
- Stowell, D., Dixon, S., Emerson, R. M., Fretz, R. I., Shaw, L. L., Folkestad, G., ... Kanellopoulos, P. (2014). Integration of informal music technologies in secondary school music lessons. *British Journal of Music Education*, 31(1), 19–39. <http://doi.org/10.1017/S026505171300020X>.
- Volynskiy, V. P., Krasovsky, A. S., Chernous, O. V., & Yakushina, T. V. (2011). Electronic textbooks designing with educational-informative and operational material content. *Journal Social science section of Computer in School and Family*, (2), 44–49.
- Walker, D. (2001). Computer-aided collaboration in a graduate-level music analysis course: An exploration of legitimate peripheral participation. *Dissertation Abstracts International*, 62 (04), 1386. (University Microfilms Order No. AAT NQ58954).



License [Pakistan Journal of Society, Education and Language \(PJSEL\)](#). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) 4.0 International.