

Applications for Use in Music Teaching: Characterization and Description

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Abstract

Educational technology has been constantly evolving, which can currently be found within the various types of cell phones, in order to assist in pedagogical practices. Thus, the present study aims to characterize and describe the applications available for use in teaching music theory in Basic Education. For that, a search was carried out with the term “musical theory”, with the segmentation of free applications, in an application store for cell phones. The results were then categorized by app name, available languages, purpose, file size, and user ratings within the app store. When carrying out the query, on the application access platform, 18 applications were found for teaching music theory. Most of the applications had the Portuguese language option, file sizes from 1 to 342.2 MB and evaluation grade variation from 1 to 5. As for the purposes, applications were found for specific teaching of instruments (guitar, piano and drums), sheet music reading, rhythm and melody teaching, in addition to auditory training. Therefore, the free applications found inside cell phones seem to be an excellent alternative to help teaching music theory to students within Basic Education.

Keywords: Application, music theory and basic education.

Introduction

Research on the use of technology in teaching music has been highlighted in educational research on aspects of learning [1]. In the field of music education, this theme has been investigated in research related to different ways of learning music mediated by technology, as well as ways of experiencing music and its transformations throughout the evolution, mainly of electronic devices [2].

The use of new technologies in the educational process as a whole and, in particular, in the musical area can become a resource for improving the learning process. Using specific programs (software or applications) for music education, it is possible to

obtain notions of music theory, compose, arrange, edit scores, record audio and other related activities [3].

The use in the classroom has increased students' interest in the content to be learned. Thus, the teacher's work should consist of inserting technological tools to facilitate and reduce the child's learning difficulties at school. They help teachers by helping in the school education of students in the classroom, facilitating the complicated life of those inserted consciously and making them feel less difficult to acquire knowledge [4].

The study of technologies in music teaching, as a method of integrative review of investigations carried out in Brazil and Portugal, was carried out by [5]. This article presents the results of master's dissertations and doctoral theses carried out in Portugal and Brazil between the years 2001 and 2013. According to the authors, the results show that the different technological tools in music can be the guiding principle for the development of new competences and multiple learning opportunities, although there is still much to explore with regard to the teaching and learning of music at different levels and levels of education.

Another study, proposed by Duarte and Martins [6], was carried out with the objective of investigating the possibilities of using applications for tablets and smartphones in music teaching, as well as understanding how these tools can be used. According to the authors, several possibilities of using these devices in music teaching were presented. After this study, some points could be clarified, such as, for example, in which situations these resources should be used, or suggestions on how to implement such tools in music classes. The research could conclude that these devices can be important tools in music education, but they should not be used alone, nor replace regular music classes. Thus, the objective of the present study was to analyze the characterization and description of applications for use in teaching music in basic education, seeking to identify applications for use on cell phones that can be used to aid teaching in music classes, in addition to describing the basic characteristics of the applications as a tool that can be used, types of functionality and gratuity.

Methodology

In the present research, the method of quantitative and qualitative approach was used, being an applied research, with the objective of descriptive research and in the form of a data collection procedure [7] [8]. Thus, the phenomenon studied has a measurement of the amount of data with its consequent quality analysis, in addition

to the description of each data found. Additionally, the survey demonstrates a survey of all data available at the time of the assessment.

To meet the objective of the research, the search for the term "music theory" was carried out in a mobile application store in the "smartphone" mode. The search was carried out in May 2021, within an app store that provides options for purchase and also free access. As a criterion for inclusion of the applications for the analysis of the research, those that were related to the learning of music theory such as instruments, teaching of sheet music reading, teaching of rhythm and melody, as well as auditory training were considered. Only applications that had a free version were also considered. Next, as an exclusion criterion, all applications that resulted from the search and that were not related to the teaching of music theory, such as audio execution applications, audio editing, quiz games, metronomes, tuners and social media were subtracted from the analysis. In addition, those that were exclusively obtained by payment or subscription were excluded.

The categorization of the applications found was carried out as follows: name of the application as it appears in the list of results, purpose for which the application is intended, languages that can be used, application file size and result of the evaluation of store users of apps. The data were described in table form, and below, the main information of each application is detailed.

Results and Discussion

The result of the search for the term "Music Theory" within a cell phone application store is shown in Table 1. According to the data visualization, 18 applications were found, the majority having the option of the Portuguese language to access the content, sizes of file ranging from 1 to 342.2 MB, in addition to an evaluation score range of 1 to 5. As for the purposes, applications were found for specific teaching of instruments such as guitar, guitar, piano and drums. Applications were also found for teaching reading scores, teaching rhythm and melody, in addition to auditory training.

Table 1. Results in the app store with the term “music theory”.

App	Purposes	Language	File Size	Assessment (Average/number of reviews)
Music Tutor	Music theory teaching	English	8 MB	4,6 (54)
Ouvindo absoluto musical	Auditory training	Portuguese	31,4 MB	4,5 (56)
Percepção Musical	Auditory, melodic and rhythmic training	Portuguese	57,4MB	4,8 (11)
ScoreSkills	Music theory teaching	Portuguese	136,1 MB	4,1 (16)
MuseScore	Score Reading	Portuguese	75,4 MB	4,7 (2300)
Métrica Musical 1: o tempo	Rhythm training	Portuguese	43,5 MB	4,8 (51)
Curso de Teoria de la Música	Music theory teaching	Spanish	24,1 MB	5,0 (2)
Earpeggio	Auditory training, melodic e rhythmic	English	40,8MB	4,9 (81)
Notes Teacher	Learning notes score reading	Portuguese	56,9MB	4,9 (302)
Real Drum	Rhythm training drum learning	Portuguese	57,9 MB	4,6 (13000)
Guitarra Companheiro	Guitar learning	Portuguese	68,7MB	5,0 (2)
Score Creator	Musical composition	Portuguese	201MB	3,7 (29)
Piano - Jogos para teclado	Piano learning	Portuguese	342,2MB	4,5 (19000)
Ear trainer lite	Auditory training	English	95,4 MB	4,8 (106)
Piano Virtual	Piano learning	Portuguese	42,6MB	4,4 (80)
DrumKnee 3D	Rhythm training drum learning	Portuguese	150 MB	4,8 (2300)
Ear Wizard	Auditory training	Portuguese	177,6MB	3,0 (4)
Baixo	Bass guitar learning	Portuguese	12,9MB	1,0 (1)

The choice of analysis categories presents basic information for interpreting the use of applications and helps in choosing which of them are best suited to teaching music theory, in its various forms. In the first category, which is the name of the application, most applications, the title or name is written in Portuguese such as Absolute Musical Ear, Musical Perception, Musical Metric 1: Time, Guitar Companion, Piano – Keyboard Games, Virtual Piano and Bass. The first visualization of the application's name in Portuguese helps to encourage the student's curiosity to discover the purpose of those applications, as familiarity with the language does not interfere with the initial understanding of the application's idea. Other applications require, at first, basic knowledge of the English language such as ScoreSkills, MuseScore, Score Creator,

Earpeggio, Notes Teacher, Real Drum, Ear Trainer Lite, DrumKnee and Ear Wizard. In addition, there is the Curso de Theory of Music application, which is very close to the Portuguese language, however, the language is Spanish. Therefore, the use of these applications promotes users with the possibility of studying a new foreign language, in the same way as it is done with other activities such as entertainment in electronic games [9].

Another category to be considered for using the application in the school environment, for teaching music theory, is the option of translating the content into Portuguese. Among the 18 applications that were obtained in the results, 14 had a translation into Portuguese, 3 are only in English and 1 in Spanish. Thus, it is believed that the first ones that could be useful for use in the classroom would be those with the Portuguese language version, as it would facilitate students' understanding due to their knowledge of the language. In a progression of learning, applications that only have the English language could be inserted, so that the knowledge of music theory would be worked in an interdisciplinary way with the learning of another language, both with English and Spanish. According to Rodrigues and Rodrigues [10], they point out some characteristics that applications must have to help the acquisition of a foreign language, such as being intuitive, so that the student is stimulated to curiosity, through the introduction of new words in the vocabulary, in addition to stimulating concentration, in the sense that the student must be attentive to the words heard and read.

The evaluation of the application's file size is a factor to be considered in the practice of teaching music theory with cell phone technology, because depending on each application, the access time can be increased or decreased. Larger files, such as Piano - Keyboard Games with 342.2MB, Ear Wizard with 177.6MB, DrumKnee 3D with 150 MB and ScoreSkills with 136 MB, can be difficult to access in cases of connection limitations with the internet, in the school environment or even for the student himself on his cell phone. Smaller-sized applications would be more suitable due to the shorter time to be downloaded from the internet, in addition to occupying less space in the device's memory and, in theory, having better performance in the application's activities. Therefore, applications for mobile devices with large file sizes may present some barriers to use, as they have lower download speeds, which indicate a longer delay in accessing the application [11].

User evaluation criteria is another important aspect when choosing applications for use in educational situations. According to the result in Table 1, the applications found range in scores from 1 to 5, with some close to 1, with few evaluations, and others

close to 5, with many evaluations. In this way, the results show the diversity of the evaluated quality of the applications, many with good evaluation (above 4, in addition to several evaluations), and that can present more interesting contents for the teaching of music theory. Regarding application quality, one of the most important attributes is usability, which is defined as the ability of the application to be understood, learned, operated and attractive to the user, when used under specific conditions [12]. As a result, applications developed with better levels of usability may have higher grades, be more accessed and probably have better applications in music teaching.

Finally, the evaluation of the purpose of the applications showed the variety of possible applications in the teaching of music theory. The objectives of teaching musical instruments such as piano, guitar, drums and bass are possible due to the evolution of technology that made it possible to reproduce these instruments on a cell phone, with good reliability. Moreover, the main aspect of these applications would be the aid in teaching the musical language, with its notes and positions on the staff. Another interesting factor would be the inclusion within the auditory training applications, with the experimentation of the heights of the notes and combined with the experience of controlling time, it is possible to have an excellent rhythmic training for the student. The main benefits of using mobile devices for learning include: portability, mobility: being available anytime and anywhere, flexible access to different resources in real time, time savings, speed of communication, training and student engagement [13].

Conclusion

When carrying out the query, on the application access platform, 18 applications for music theory teaching were found. Most of the applications had the option of the Portuguese language, file sizes from 1 to 342.2 MB and evaluation grade variation from 1 to 5. As for the purposes, applications were found for specific teaching of instruments (guitar, piano and drums), teaching reading sheet music, teaching rhythm and melody, in addition to auditory training. Therefore, the free applications found inside cell phones seem to be an excellent alternative to help teach music theory to students in Basic Education.

References

- [1] SCHRAMM, R. Tecnologias aplicadas à educação musical. *RENTE-Revista Novas Tecnologias na Educação*, v. 7, n. 2, 2009.

- [2] CHAGAS, A. S.; ARALDI, J. Elaboração e utilização de aplicativos para aulas de música: primeiras ações do projeto de extensão tecnologias digitais e educação musical. Anais do XIII Encontro de Extensão da UFPB, 2011.
- [3] PINTO, M. C. Tecnologia e ensino-aprendizagem musical na escola: uma abordagem construtivista interdisciplinar mediada pelo software Encore versão 4.5. Dissertação de mestrado do Programa de Pós-Graduação da Escola de Música da UFMG, 2007.
- [4] SOUZA, I. M. A.; SOUZA, L. V. A. O uso da tecnologia como facilitadora da aprendizagem do aluno na escola. Revista Fórum Identidades, v.8, n. 4, 2010.
- [5] COUTINHO, C. P.; FERNANDES, S. G. Tecnologias no ensino da música: revisão integrativa de investigações realizadas no Brasil e em Portugal. Educação, Formação & Tecnologias, 7 (2), 94-109. 2014.
- [6] DUARTE, A.; MARTINS, P. R. A. Um estudo sobre a utilização de aplicativos para tablets e smartphones no ensino da música. Anais do XXII Congresso Nacional da Associação Brasileira de Educação Musical, 2015.
- [7] MARCONI, M. A.; LAKATOS, E. M. Fundamentos de metodologia científica. 5. ed. São Paulo: Atlas, 2003.
- [8] GERHARDT, T. E.; SILVEIRA, D. T. Métodos de pesquisa. Porto Alegre: Editora da UFRGS, 2009.
- [9] BORGES, Kleiton. O aprimoramento da aquisição de vocabulário de alunos de língua inglesa através do uso de aplicativos. Blucher education proceedings, v. 2, p. 411-430, 2017.
- [10] RODRIGUES, P. R.; RODRIGUES, R. R.. Design de um aplicativo para o ensino de inglês para crianças. SBC – Proceedings of SBGames, p. 1-388–416, 2016.
- [11] KRIMBERG, L.; SONEGO, A. H. S.; RIBEIRO, A. C. R.; BEHAR, P. A. Construção de aplicativos educacionais na formação de professores: critérios pedagógicos, técnicos e interativos. Nuevas Ideas en Informática Educativa. v. 13, 2017.
- [12] VALENTIM, N. M. C. V.; RABELO, J.; SILVA, W.; COUTINHO, W.; MOTA, A.; CONTE, T. Avaliando a qualidade de um aplicativo web móvel através de um teste de usabilidade: um relato de experiência. Anais do Simpósio Brasileiro de Qualidade De Software (SBQS), 13. 2014.
- [13] OLIVEIRA, R. C.; SILVA, D.; FERNANDES, F. G.; OLIVEIRA, L. C.; OLIVEIRA, Eduardo Chagas. Aplicativo de aprendizagem móvel utilizando realidade aumentada para ensino de língua inglesa. Anais dos Workshops do Congresso Brasileiro de Informática na Educação. v. 5, n. 1, 2016.