

Music education at the infant level through educational technology

La enseñanza musical en el nivel infantil mediante la tecnología educativa

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Abstract

The teaching of music at children's levels is enriched using playful didactic tools to encourage interaction between students and teachers, which has traditionally been carried out in person. However, the global health situation has forced teachers to make use of technology to continue exercising the beautiful art of teaching. The objective of this research is to expose the experience obtained in the planning of instructional design in the music class with the use of Educational Technology for the children's level, where motivation, teaching through games, as well as elements and technological resources available, both the teacher and the student, plays a very important role in the development of the class. Aspects of instructional design are offered, particularized to the teaching of music at the children's level with the use of Educational Technology that can be a useful complement to the face-to-face class, without replacing the necessary communication and face-to-face interaction of the teaching model that is developed in the classroom.

Resumen

La enseñanza de la música en niveles infantiles se enriquece con el uso de herramientas de la didáctica lúdica para fomentar la interacción entre alumnos y docente, que tradicionalmente se ha realizado de manera presencial. No obstante, la situación sanitaria mundial ha obligado a los maestros a hacer uso de la tecnología para seguir ejerciendo el bello arte de la enseñanza. El objetivo de esta investigación es exponer la experiencia obtenida en la planeación del diseño instruccional en la clase de música con la utilización de la Tecnología Educativa para el nivel infantil, donde en el desarrollo de la clase juega un papel muy importante la motivación, la enseñanza mediante juegos, así como, elementos y recursos tecnológicos al alcance, tanto del docente como del alumno. Se ofrecen aspectos del diseño instruccional particularizado a la enseñanza de la música en el nivel infantil con el empleo de la Tecnología Educativa que puede constituirse en un complemento útil para la clase presencial, sin sustituir la necesaria comunicación e interacción cara a cara del modelo de enseñanza que se desarrolla en el salón de clases.

Educational technology, Instructional design, Teaching music at the children's level

Tecnología educativa, Diseño instruccional, Enseñanza de la música en el nivel infantil

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Introduction

The educational path presents as the first phase the early childhood education, where the main objective is the physical, emotional development, the social, behavioral and intellectual exchange of the children and that goes hand in hand with the education at home.

Within the school planning, the different areas of knowledge that comprise the dissimilar contents to be developed at this stage are reflected, according to Pascual (2006), these areas are: identity and personal autonomy, discovery of the physical and social environment, and communication and representation; the latter being, par excellence, where music education is framed.

Worldwide and in a generalized way, music education, unfairly, plays a secondary role in education, this even though in the period understood as children, music plays a fundamental role in the teaching-learning process...

... music can be the basis for developing all the objectives, contents and activities of the teaching-learning process that take place in school, given that learning in early childhood education is developed in a globalized and interdisciplinary way and is aimed at all students, the most musically gifted. (pág. 51)

Similarly, dissimilar research carried out in fields such as biology, philosophy and education refer to the importance of incorporating musical education into the formation of the human being because of the contribution it perpetrates in the cognitive-social-physical-affective process.

Music education has a positive influence on each of the evolutionary spheres of the child's formation; as for psychomotor development has a very close relationship with music, which works mainly the knowledge of the sound possibilities and movement of the body, understanding that musical education would be difficult to evolve without movement and the body, meanwhile psychomotor education requires music, voice and musical instruments.

On the other hand, in terms of linguistic capacity, musical stimulation plays a relevant role if it is a question of increasing neural connections, which favors the development of comprehensive and expressive language; specifically, songs are powerful tools that help increase vocabulary, expression, intonation, articulation, vocalization and in the consolidation of definitions and concepts.

If it is about cognitive development, Calvo and Bernal (2000), cited in (2006)Pascual, express that, thanks to the interaction of the individual with music, general intelligence and musical intelligence progress, at the same time; music education deploys improvisation and imitation taking as a starting point previous perceptions, the latter is of vital importance in the appropriation of symbols in the late part of the preoperative and sensory-motor phase. It should not be forgotten that silence and inner concentration are essential for the assimilation of cognitive skills and aptitudes, music values silence very much and disapproves of the excessive use of noise.

The emotional part also presents a close relationship with music education. It is not denied that, in terms of school, the activities that are carried out inside and outside the classroom instill in the student good study habits in terms of reading, memorization and solving mathematical problems, however, equal importance presents social development, work in the community, the expression of emotions and the achievement of inner peace, skills that can be improved by listening to music and working on music education.

In this same sense, the United Nations Educational, Scientific and Cultural Organization [UNESCO] (2006) emphasizes that giving greater priority to art in educational systems is useful in the acquisition of cultural experiences, creates students of knowledge, values and prepared to raise more peaceful, solid and sustainable societies, which can be translated into that, Art Education (in this case musical) in schools is required, not to train artists, but to breed better human beings.

Two aspects of musical education are recognized, the professionalizing one, taught in the conservatories whose objective "is the technical and artistic training of future professionals", (Carrera, 2017, pág. 3) and the general one which is within the curricula in compulsory education and in Early Childhood Education; that is, of the researchers Juan-Carvajal and Vdovina, (2020) there is a thin margin that delimits one from the other in the institutions of primary levels in Latin America, since the infants in this phase come to estimate, enjoy, communicate and express the music or to play some musical instrument as a game.

Everything expressed so far confirms Pascual's (2006) argument, which establishes that music education should be a right of every individual, being necessary to work with the seriousness and rigor that is handled in other areas of knowledge from Early Childhood Education; for which the teacher of this educational level must have musical and pedagogical skills, as well as the materials, means and resources required in the teaching-learning process.

The following aspects are presented as characteristics of children's musical education, in musical pedagogy (Pascual, 2006, pág. 12):

- Consider musical and non-musical sound (noise, ambient sounds).
- The integration of all types of music (contemporary, classical or cultured, modern popular and folkloric).
- The global work of musical perception and expression (vocal, instrumental and body).
- Prioritization of procedures and attitudes.

Taking as a flag the characteristics listed above, it is recognized the existence of institutions that present a musical training specialized in instrumental performance for children, that although, as Juan-Carvajal and Vdovina (2020) propose, it is not known for sure if in the future they will dedicate themselves to music professionally, in these schools they are prepared for that purpose; thus a series of pedagogical-musical methods are also identified, among which can be mentioned the *Dalcroze Method*, the *Orff*, the *Suzuky*, the *Willems*, the *Martenot*, the *Kodaly* and the *Ward method*.

To comply with the objectives set in music education, the reproduction of traditional, folkloric songs, especially children's themes, is used very frequently, which in this cycle are very easy for children to learn and fulfill the task of introducing the theoretical-practical content in subjects such as solfeggio and technique for instrumental interpretation.

In Gardner's words, the Suzuki method is the prototype for the progress of musical intelligence, however, according to Hardgreaves this method has had too much publicity in recent years but presents more limitations than those of Orff and Kodaly in its scope and objectives, since it focused mainly on the skills of execution and focused on the violin.

Suzuki speaks of the ability of children to learn their mother tongue easily and quickly at an early age can also be exploited for the teaching of instrumental skills from an early age (Hardgreaves (1988) cited in Pascual (2006)), however, there are methods that better develop musical intelligence.

As for musical talent, the existence of child prodigies in the world of musical art, such as Mozart, is recognized, but reference is made to the talent and practice going hand in hand for the development of the art professional.

An important part of Music Education plays the psychology of music, which has attracted the interest of various researchers and presents many approaches to its study. The topics that receive the most attention from Early Childhood Education teachers are:

... the development of musical abilities, the psychology of musical behavior (which investigates the mental processes that are put into play when listening to or performing music), evaluation and psychometric approaches, the various variables of the educational situation, theories about the relationship between music and the brain, as well as its influence on learning and especially the studies of evolutionary development. (Pascual, 2006, pág. 66)

Of the fields that have been investigated the most, we can talk about the rhythmic sense, this because of the relevance it presents in education. Rhythm manifests itself in the first years of life through movement and speech; in the face of certain stimuli, which, when lacking, must be interpreted as a sign of irregularity in the baby's development, the rhythm is a motor response of the infant.

Similarly, psychology applied to music conducts research in the field of brain-music connections, where it is presented as the main task to establish how music stimulates the intellect and favors the teaching-learning process, if there is within the brain any area that is related to musical activity and creativity, as well as whether there is a difference between the brain of a musician and the rest of the people. Nowadays and from the pedagogical it is recognized that the teacher adopts different teaching strategies, which, in addition, are subordinated to the learning style of children, this is because modern theories indicate that a well-balanced entity makes both cerebral hemispheres work indistinctly and that the left side is more related to linguistic functions, meanwhile, law is more linked to creativity and emotions.

On the other hand, the question has also been raised whether musical skills and attitudes have any direct relationship with the sex of children; there are two conflicting opinions, the first defended by Bentley who argues that it does not directly influence the sex of a child, from the psychological point of view, to determine musical abilities, while Despina (1984) states that this aspect determines the domain of the hemispheres of the brain and that therefore if it conditions musical learning, "... girls have greater dominance of the left hemisphere, so they work the musical works in a more methodical and meticulous way at the technical level..." (Pascual, 2006, pág. 70)

The development of musical abilities can be enlisted in different stages of the infant cycle, which are not exempt from the complexities of learning and the social situations in which the infant develops. The stages are:

- Cycle I: from 0 to 1 year, at this stage the child reacts to sounds. From 1 to 2 years old, he makes music spontaneously; from 2 to 3 years begins the playback of phrases from songs you listen to.
- Cycle II: from 3 to 4 years, conceives the general plan of a melody; he could develop the absolute ear if he studied an instrument. From 4 to 5 years old, he begins to distinguish height registers and to reproduce simple rhythms by imitation; from 5 to 6 years old, understands strong/soft and understands simple melodic patterns.

It is necessary that in each of these stages the psych pedagogical characteristics presented by the infant are visualized and taken advantage of by the teacher for a greater benefit in instruction.

In the last century, relevant changes were recorded in all social spheres of human life; technology, which also evolved by leaps and bounds, impacted every aspect such as religion, culture, philosophy and the arts just to name a few.

Of course, these changes brought about by technology also affected the way education was conceived. During the year 2020 and so far in 2021, Educational Technology (TE) has become present for the development of the teaching-learning process, all this caused by the health situation that the world is experiencing due to the COVID-19 pandemic.

When performing a search on the conceptualization of, what is Educational Technology? There are different opinions, however, one with which those who subscribe identify is the proposal by González and Flores (2020) who state that "... is the evolution that integrates means of communication and methods of instruction that are used in the educational field to provide practical tools that are useful for learning". (pág. 15).

It is not simply the use of certain technological tools within a class, but it requires a design, an analysis, a methodological approach and the correct use of learning theories, which according to Cabrero (2003), the most related to the use of TE is the behaviorist.

As a science, Educational Technology presents a design that contains a methodological training and is aimed at solving problems by offering tools for the development of quality learning and its usefulness is observed in the same way in the commitment and actions that are carried out in a period of time where the fulfillment of an objective is carried out, technology being a determining factor; In the words of the pedagogue Sosa, (2020) the irruption of the TE in the teaching-learning process modifies the pedagogical processes and the role played by the teacher.

New models of teaching and learning have been born thanks to Educational Technology, being during the health situation of the last year the e-learning used by teachers to carry out such commendable work, which is why there is an evolution in digital communicative, pedagogical and research skills.

The pedagogue Barroso (2006) conceptualizes about educational modality and exposes that it is the way in which an educational product is presented that requires administrative processes, planning of learning strategies and didactics. In this sense, he comments that e-learning, also known as "distance learning", is a model based on self-taught training where most of the responsibility falls on the student and whose main characteristic is the use of ICT inserted in high quality pedagogical designs, generally through virtual learning environments, which allows the academic improvement of all those people who wish or require it.

A fundamental aspect in the good performance of the educational process through-learning is the Instructional Design (ID) being a fundamental part, this helps the planning of the course and recommends the direction, actions and tools that can be used in the development of the lessons having as a central axis the learner and the forms of teaching.

For the development of the DI, the ASSURE model (for its acronym in English, *Analyze learners; State Objectives; Select media and materials; Use media and materials; Require learner participation and Evaluate and revise*); it should be considered that we work with children and one of the benefits of this model is its ability to adapt to the needs of the course taking as a central axis the students.

The development of the course begins by analyzing the students, who are studying the infant level of the Bachelor of Music with emphasis on instrument offered in the Academic Unit of Arts of the Autonomous University of Zacatecas (UAAUAZ) and present the corresponding ages between eight and ten years, they are students who come from a municipality where traditional and folk music is very present.

It is necessary to take advantage of for the good evolution of the course all the skills and abilities that the infant presents, as well as the knowledge that he demonstrates to possess with respect to music, this will facilitate the understanding, obtaining and improvement of the competences that must be achieved during the semester.

To achieve the goals set by the teacher it is necessary to know the learning styles of the students, as already mentioned above and highlight Becerra, Martín & Bethencourt (2021), children learn better through play, this facilitates the equal coverage of styles such as: auditory, kinesthetic, visual and reading writing, covering all the learning abilities offered by the student.

It is time to establish the objectives to be achieved during the course. According to Pascual (2006), during children's musical teaching it is necessary to work on the contrast of registers, treble-bass, knowing how to identify voices, objects and instruments that can emit sounds in the registers already mentioned "... Musically, the timbre gives rise to various formal arrangements in which timbral, vocal and instrumental contrasts can be observed." (pág. 18) Another knowledge that must be acquired at this stage are the rhythmic elements such as pulse, accent, rhythmic cells, duration, among others, the difference between fast and slow, short and long or strong and weak.

Once the competences to be achieved during the semester have been established, the materials, resources and means with which to work are established, for which three fundamental elements are considered: the choice of available materials, the need to edit or modify existing materials and / or resources, as well as the creation of new ones.

It does not stop insisting on the importance of the game in the teaching-learning process during Early Childhood Education and naturally in the teaching of music at this stage should not be the exception, so the materials and resources used during the process must have a playful approach, looking at it from the didactics; it is recommended to use videos that contain musical games, which are stories where theoretical knowledge is taught; music game books accompanied by podcasts and audios, among others. The complicity of parents, guardians or any family member is necessary for the development of the class or home study, this will motivate the infant to learn and will feel sheltered during the process.

One of the resources that were used by the teacher is the software "Gcompris", in its demo version, which allowed the transmission of knowledge and the development of activities in a playful way during the distance course.

Once the search and discrimination of materials and resources has been completed, it is necessary to plan the activities to be carried out by the learners in practice and in which the means previously established will be used.

In this phase is where the means and materials previously prepared are used, which once again must be specified, must be as clear as possible and always with a playful didactic, Pitt and Clark cited in Williams, Schrum, Sangrà, and Guàrdia (2004) expose that in the first instance it would be appropriate to take strategies that are used in the face-to-face class and that can be easily adapted to online instruction.

Also, a fundamental part during this process is the programming and realization of dissimilar types of activities that encourage the participation of students as the center of the process. Activities that are recommended to be carried out in the eight- to ten-year stage may include the following:

1. The reproduction of classical, children's, traditional or folk music, and the expression through drawing and the use of the imagination of what the child feels while listening.
2. Walk in circles or clap marking the pulse or accent of the music being heard.
3. Recognize the strong and weak (dynamic) contrasts of the song being played. This exercise can be performed by guiding yourself by stretching wanting to touch the sky or ceiling if the sound is loud and bending down if the sound is weak.
4. Recognize timbres and identify musical instruments; for this you can make use of games such as the musical lottery, accompanied by sounds of musical instruments for the infant to recognize which instrument sounds by selecting it on his board.
5. Recognize the different musical signs such as the key of G in the second line and the key of F in the fourth line, the musical figures, the silences, the musical notes in the keys, among others. A game through which the appropriation of musical signs is achieved is the so-called "Musical Domino" where chips or cards containing musical symbols are distributed, no more than ten cards per player, and each of these is placing the token that appears on the game board.
6. Another activity is the improvisation of rhythms with and without lyrics, making use of the metronome; to this activity can be added the elaboration of rhymes to make the game more interesting and, in addition, for the infant to relate words with the musical figures or combinations of these, making it easier to practice rhythms.
7. Recognize musical records: in a table, which may be in the student's notebook or proposed by the teacher on the board, place two columns one that is called high registry and the other low registry, and with the support of sounds, can be through audios and / or podcast, the register to which they belong must be identified.

It is necessary to emphasize that the previously proposed exercises were carried out both in classes synchronously through videoconferences and at home in the hours of practice and study of the students and with the complicity of a relative, which could be verified through videos that were delivered to the teacher.

Also, to the activities are added the intonation of scales, songs and simple musical readings, all performed synchronously and asynchronously, with the support of materials and resources such as audios and videos, where tuning and rhythmic were practiced.

To finalize the INSTRUCTIONAL DESIGN MODEL, ASSURE, in its last phase, proposes the evaluation and review, where the entire course is valued, from the planning, its application, how effective or not the process, the means, materials and resources that were used were. "(E) Evaluate and review: Evaluate complete instruction with the application of instruments; objectives, methods, means and technology, use of materials, use of feedback." (De La Torre & Sosa, 2018, pág. 7)

In general, the evaluation process is only applied to establish the academic progress obtained by the apprentices, which according to Tapia (2020), causes the students to fall on the deficiencies and obstacles that arise during the teaching-learning process; it is worth clarifying that in early childhood music education the assessment of the course design is considered more important, which allows the teacher to improve it taking into account the moments where there was greater complexity for its development.

From the methodological point of view, the evaluation can be carried out in three parts: the performance of the students, the evaluation of the means and materials, and the evaluation of the teacher. It is recommended to consider during all phases the assessment of the process.

Regarding the evaluation of the performance of the students, it is necessary to emphasize once again that the methodological and didactic work with the students of the infant level must be carried out from and through the game, so it is proposed the use of some activities such as those described above to evaluate.

On the other hand, during the development of the course, systematic evaluations were made whose usefulness provided significant data to assess the appropriation of knowledge and skills by the students.

As for the assessment of the application of the course was made through a session of questions to the students, carried out synchronously, where with the use of images of a happy face and a sad one, they expressed how they felt during the course; In the same way, through an online form those who supported the students during the process were involved, they expressed their opinion on the development of the semester, their strengths and weaknesses, to conclude, and through another form, the teachers of the students were included who explained how effective the teaching-learning process was in the subject of Solfeggio for the student and how it impacted on the development of the instrument class.

Conclusions

Those who subscribe have concluded that music education at the infant level has proven to be fundamental for the progress of children, positively influencing their social, intellectual and psychomotor development, which have shown, in general, greater capacity for learning and concentration in their academic procedure.

A series of adjustments were made to the instructional design, taking into account the level to be taught and the exhaustion that can be generated by taking distance classes in the infant cycle, in order to preserve the health of the infants and that they spent the least amount of time possible fixing their eyes on a computer or a cell phone in synchronous activities such as videoconferencing and that in turn the asynchronous activities served to continue the academic evolution of children.

The opinions and feelings of the students, those who supported them and the instrument teachers who worked with the members of the group to improve and refine the subsequent courses, resources, tools and means used during the instruction will be considered.

The TE has been a great ally in the teaching-learning process during the pandemic caused by COVID-19; which allowed to continue with the process in children's music education, served to solve an emergency situation, however, it is reflected that despite the advantages shown in other areas of education the distance model should not replace the face-to-face model in the Early Childhood Music Education class, moreover, it is considered that a mixed model would be much more profitable.

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