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The Phylogeny and Ontogeny of Music: An Approach to Improve the Curriculum of Early Childhood and Primary Education

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Abstract
Music teaching in Early Childhood and Primary Education, according to the current regulatory framework in Spain, must be carried out from a competence-based, inclusive, and interdisciplinary approach, taking into account the degree of development of key competences. The basic knowledge it promotes is organized around learning areas which, in the case of Early Childhood Education, focus on dimensions of human development, while in Primary Education the focus is on essential musical skills. This study is based on the premise that the sequencing of content (ontogeny) should be in line with the evolution of the musical-historical phenomenon that are the basis of the discipline (phylogeny). Its aim is to analyze the friction between phylogeny and ontogeny in the teaching and learning of music through a qualitative study of the curriculum of Early Childhood and Primary Education in relation to the main musical-historical milestones. The results show discrepancies between phylogeny and ontogeny, as well as the absence of several historical musical milestones not reflected in the curriculum. It is concluded that music teaching should be better aligned with phylogenetic patterns, which would involve a reformulation of the curricula.

Keywords: ontogeny; phylogeny; Early Childhood Education; Primary Education; curriculum

[en] Filogenia y Ontogenia de la Música: Aproximación para la mejora curricular en Educación Infantil y Primaria

Resumen
La enseñanza de la Música en Educación Infantil y Primaria, según el marco normativo vigente en España, debe realizarse desde un enfoque competencial, inclusivo e interdisciplinar, atendiendo al

grado de desarrollo de las competencias clave. Los saberes básicos que promueve se organizan en torno a áreas de aprendizaje que, en el caso de Infantil, se centran en dimensiones del desarrollo humano, mientras que en Primaria se orienta hacia habilidades musicales fundamentales. El presente estudio parte de la premisa de que la secuenciación de contenidos (ontogenia) debería estar en consonancia con la evolución del hecho histórico-musical que es la base de la disciplina (filogenia). Su objetivo es analizar la tensión entre filogenia y ontogenia en la enseñanza-aprendizaje de la música mediante un estudio cualitativo del curriculum de Educación Infantil y Primaria en relación con los principales hitos históricos musicales. Los resultados muestran discrepancias entre la filogenia y la ontogenia, así como la ausencia de varios hitos musicales históricos no reflejados en el currículo. Se concluye que la enseñanza musical debería ajustarse mejor a los patrones filogenéticos, lo que implicaría una reformulación de los planes de estudio.

Palabras clave: ontogenia; filogenia; Educación Infantil; Educación Primaria; curriculum

1. Introduction

The terms ontogeny (from the Greek ontos, being, and genesis, origin) and phylogeny (from phylon, race or tribe) stem from 19th century evolutionary biology and are used to describe, respectively, the process of development of individual organisms and the evolutionary history of species (Gould, 1985; Mayr, 2001; Hall, 2003). In this context, the German biologist Haeckel (1866) proposed the so-called "Biogenetic Law," according to which the development of individuals (embryology) reflected the evolutionary stages of the species to which they belonged; in other words, ontogeny recapitulated phylogeny. This perspective, which offered a powerful explanation in its historical context, had a major influence on subsequent scientific and educational thought and was adopted by other disciplines as a conceptual and pedagogical tool. For example, in evolutionary psychology, Piaget (1977) referred to this analogy to explain how a child's cognitive development moves through different stages that reflect ways of thinking characteristic of human cultures at different moments in history. From an epistemological perspective, the ontogeny-phylogeny relationship offers a framework for understanding knowledge as a construction that unfolds on two simultaneous scales: the individual scale, linked to experiential and cognitive development, and the collective scale, linked to cultural accumulation, transmission, and transformation throughout history. This approach suggests that human learning processes are not only the result of personal experience (Vygotsky, 1978; Bruner, 1996), but are also conditioned by culturally inherited structures, patterns, and knowledge (Berger & Luckmann, 1968).

In the field of music education, the relationship between ontogeny and phylogeny can be used to design teaching strategies that follow a natural progression linked to evolutionary milestones such as the development of human sound. In this sense, Orff's (1963) didactic proposal is based on voice, body rhythm, and percussion with simple objects, in line with the primeval modes of musical expression present in the earliest stages of humanity. More recently, Gordon (2012) put forward theories on audiation and music learning based on the idea that individual musical development must follow stages that reconstruct intuitive musical elements before reaching abstract forms such as notation or formal analysis, in clear parallel with the way humanity learned music throughout history. From the perspective of ethnomusicology, Blacking (1973) argues that music is not only a cultural product, but also a universal human capacity rooted in the body and in social interaction. This perspective supports the idea that musical development in childhood has a biological-cultural basis shared with the musical evolution of our species. All of these contributions are based on the idea that individual musical experience (ontogeny) does not emerge from a void, but is instead grounded in a cumulative cultural heritage (phylogeny) and in biological predispositions that have shaped the way we perceive, produce, and understand music (Cross, 2003).

Thus, music, as a universal sonic phenomenon with the capacity to foster different types of learning (Swanwick, 1999; Hallam, 2010), has always been present in official school curricula, to a greater or lesser degree depending on the historical period. Within the Spanish educational context, the curriculum, understood as a way of systematizing knowledge produced throughout history (i.e., phylogeny) and organizing it across different educational levels (i.e., ontogeny), includes Music as part of the knowledge to be taught at all stages of compulsory education. National laws determine the sequence and pace at which musical knowledge is acquired and therefore constitute the structural framework on which the ontogeny of individual musical learning rests. These laws were designed to organize lifelong holistic education (Delors et al., 1996; Noddings, 2005; UNESCO, 2016). In this way, the ontogeny of musical knowledge, which includes the sequence of content that shapes the discipline, underwent different changes throughout the 20th century. Initially it was regarded as merely recreational, particularly under the LGE [Spanish acronym for General Law of Education] (1970), and generally more so in Early Childhood Education than in Primary Education (Sabbatella & del Barrio, 2021). The subject gradually acquired the status of an independent discipline, systematized through its own content and objectives and recurrently linked to Artistic Education together with plastic and visual expression (Pérez Prieto, 2009; Gelabert & Motilla, 2024; Montaraz & Morales, 2025). This occurred primarily because of the educational laws LOGSE [Spanish acronym for Organic Law on the General Organization of the Education System] (1990), LOE [Spanish acronym for Organic Law on Education] (2006), LOMCE [Spanish acronym for Organic Law for the Improvement of Educational Quality] (2013), and LOMLOE [Spanish acronym for Organic Law Amending Organic Law of Education] (2020).

The LGE (1970) did not establish organized content in a specific way to structure the ontogeny of music, although it did refer to the importance of musical activities for socialization in Early Childhood Education. In Primary Education, music education focused on singing and music listening, which are common activities in historical phylogeny. With the approval of the LOGSE (1990), procedural content was introduced in Early Childhood Education through songs, rhythms, and sounds as means of expression. In Primary Education, content was structured into three blocks: musical perception and listening, vocal and instrumental expression, and musical language and creation, seeking to offer a vision of the whole phylogeny, albeit in a summarized form. The LOE (2006), in turn, reinforced the competence-based approach in Primary Education and promoted creativity, aesthetic sensitivity, and knowledge of musical heritage, which, from a phylogenetic point of view, correspond to more recent periods. Under the LOMCE (2013), music lost curricular importance in Primary Education and teaching hours were reduced. During the LOMLOE (2020) period, the law currently in force, the objectives in Early Childhood Education focus on promoting the child's overall physical, emotional, social, affective, artistic, and sexual development (art. 4). By contrast, in Primary Education the focus is on consolidating key competences, critical thinking, and the formation of active citizenship, preparing students to exercise their rights (RD 157/2022, preamble).

These different laws constitute a fundamental basis of the academic ontogeny offered to Spanish students. Their content, like the other curricular elements, has been adjusted and (re)organized in accordance with phylogenetic milestones derived from political changes and transformations, from diverse social demands, and from other circumstances that have given education a strongly transnational character, such as globalization and membership in international organizations (the United Nations and the European Union, among others) (Valle & Sánchez-Urán, 2023). With regard to the ontogeny of music, the literature indicates that its curricular transformation also responds to pedagogical, cultural, and evolutionary development criteria aimed at balancing technical training, aesthetic appreciation, and student participation in musical experiences (Touriñán, 2016; Vernia, 2020). At the same time, the changes made, particularly the choice of specific content and the decision to retain or discard it as part of the formal curriculum, have been conditioned by the progressive incorporation of active methodologies and transversal competences (Vernia, 2020; Almunia & Casanova, 2024; Montaraz & Morales, 2025).

Given the above, this study aims to provide a new approach to the curricular organization of Music as a subject, using the phylogeny of music as the context or pattern for establishing its ontogeny, particularly with regard to content. To this end, an analysis of the parallelism between phylogeny and ontogeny is carried out, in which knowledge is understood as a process of progressive construction at both the individual and collective levels.

Consequently, this study is grounded on the premise that the sequencing of content (ontogeny) should be aligned with the evolution of the historical-musical elements that form the basis of the discipline (phylogeny). The main research objective is to analyze the tension between phylogeny and ontogeny in the teaching and learning of music in the early educational stages (the curricula of Early Childhood and Primary Education). This objective guides the documentary analysis carried out in the following sections.

2. Methodology

This study is framed within a qualitative documentary analysis design with an interpretive approach (Gibbs, 2018; Flick, 2023). It is aimed at critically examining the curricular organization of music education in Spain in the stages of Early Childhood Education (Royal Decree 95/2022, of 1 February) and Primary Education (Royal Decree 157/2022, of 1 March), in relation to the correspondence between ontogeny and phylogeny. The corpus of analysis therefore consists of the two official regulatory texts currently in force in the Spanish education system (N = 2). These documents were selected according to the following criteria: (1) thematic relevance, since they focus directly on the regulation of musical content; (2) representativeness, as they establish the minimum state-wide curriculum; (3) regulatory validity, since they are the legislation currently in force; and (4) accessibility and authenticity, as they are official sources published in the Spanish official state gazette. From this perspective, the documents are considered not merely as reflections of educational reality, but as social constructions that shape and regulate pedagogical practices (Bowen, 2009; Prior, 2003).

2.1. Phases of documentary analysis

The documentary analysis was structured in the following phases (Bowen, 2009):

1. Selection and delimitation of sources. The two aforementioned royal decrees (RD 95/2022 and RD 157/2022) were selected as the subject of study based on the criteria of relevance, authenticity, regulatory validity, representativeness, and accessibility set out in the previous section.
2. Organization and codification. After selecting the documents, they were organized and analyzed through a systematic coding process. This process was carried out in accordance with the principles of Grounded Theory, applied as a flexible analytical framework through the use of the Constant Comparative Method (Glaser & Strauss, 1967; Charmaz, 2014). The analysis began with an initial deductive theoretical category ("Correlation between the ontogeny of Early Childhood and Primary Education and historical-musical phases"), derived from the conceptual framework concerning the relationship between ontogeny and phylogeny in music education, which served as a preliminary axis for guiding the reading of the texts. On this basis, open coding was conducted in order to identify units of meaning present in the curricular content related to music education. Subsequently, through axial coding, these units were grouped into broader pedagogical-musical categories, according to their didactic function and their relationship to child development processes and to the internal structure of the curriculum. Specifically, the following categories were established: (1) Individualisation of basic skills, (2) Grouping of basic skills by thematic, pedagogical-musical categories, and (3) Correspondence between the ontogeny and phylogeny of music. Finally, theoretical coding made it possible to establish interpretive relationships between the ontogenetic sequencing of the curriculum and the milestones of historical-musical evolution defined as the phylogenetic framework. This iterative and comparative procedure facilitated a systematic and relational analysis of the documents, strengthening the coherence between the analytical process and the overall research objective.
3. Data analysis. The data analysis was carried out in accordance with the principles of Grounded Theory (Birks & Mills, 2015), applying the Constant Comparative Method throughout all phases of the process (Carrero et al., 2012). The analytical process included internal triangulation procedures, contrasting the categories generated from the theoretical framework related to ontogeny with the musicological criteria established for historical periodization (phylogeny). Likewise, strategies of content reduction and reorganization were applied, ensuring that the final categories were conceptually robust and representative of the documents analyzed. Theoretical saturation was reached when the incorporation of new text fragments no longer provided relevant additional information for category construction (Segovia, 2014). This process ensured the internal consistency of the analysis and the interpretive validity of the results obtained.

4. Musical-historical discrimination criteria. In order to study the third subcategory mentioned above, clear and fundamental musicological parameters had to be established to determine phylo-ontogenetic correspondence. To this end, the criteria for historical periodization proposed by authoritative musicological sources (Latham, 2011; Kennedy et al., 2013) were followed in order to define an evolutionary sequence of sound and music to be used as a framework for phylogenetic analysis. This sequence comprises four major moments:

- Sound origins (prehistory and early civilizations): The most elementary skills, such as sound recognition, body rhythms, and use of the voice, linked to the first musical manifestations of humankind, understood as ritual, expressive, and communicative practices related to the body and the surrounding environment (Wallin et al., 2000).
- Medieval systematization: Beginning in the Middle Ages, a process of musical codification was consolidated through graphical symbols, notation, and the first theoretical treatises, making it possible to organize and transmit musical knowledge in a written and structured manner.
- Renaissance and Baroque formalization: These periods stand out for the development of musical language, the emergence of complex compositional forms, and the link between music, the body, and the stage through musical theatre, court dances, and the first operas.
- Contemporary expansion (20th and 21st centuries): At present, music incorporates new digital technologies, expanded social roles, intermedial forms of performance, unconventional exploration of sound, and an expansion of the concept of music itself, all of which are reflected in the latest pedagogical practices (Small, 1998).

It should be noted that the degree of experimentation and didactic development of musical content establishes a certain phylogenetic selection that may vary in each case depending on particular teaching and learning considerations. Since this was a theoretical study, the data analysis could not take into account variables related to the development of teaching or to students' musical skills. Therefore, in order to establish a specific basic phylogenetic correlation, legislative considerations regarding appropriate pedagogical development for each of the two educational stages under study were taken into account.

2.2. Data collection instrument

An *ad hoc* record table (see Table 1), including variables used to analyze the two royal decrees under study, served as the data collection instrument.

Table 1

Sources of study (RD 95/2022 and 157/2022). Analysis of basic typological and documentary criteria

STAGE/YEAR	TYPE OF DOCUMENT	SOURCE	DATE	AREA/BASIC SKILLS
Early Childhood Education Year 1 Year 2	Royal Decree 95/2022	BOE	2.02.2022	Area 3 - Communication and Representation of Reality F. Musical language and expression
Primary Education Year 1 and 2 Year 3 and 4 Year 5 and 6	Royal Decree 157/2022	BOE	3.03.2022	Artistic Education Area D. Music and Performing Arts

Note. This study focused only on the areas and basic skills directly and exclusively related to music. Basic skills and areas shared with, or potentially related to, other fields were not taken into account.

2.3. Reliability and validity strategies

Moreover, to ensure the qualitative validity and reliability of the content (Yardley, 2017), the following criteria were taken into account: (a) internal validity by means of procedural data triangulation; (b) external validity through content transferability; (c) reliability through possible "auditability" of the conclusions and (d) objectivity thanks to the possibility of the "confirmability" of the data. Subsequently, in the assessment of the theory built following the analysis, identification of three specific criteria, i.e. (a) "data fit", (b) "relevance of the explanation" and (c) "modificability", in order to demonstrate that the result was the description and explanation of the documents' basic foundations (Gaete, 2014, p. 169).

2.4. Methodological limitations

This study presents a series of limitations inherent to qualitative documentary analyses. First, as it is based exclusively on legislative texts, the interpretation of the curricular content depends on the researcher's analytical reading, without incorporating empirical evidence regarding its actual implementation in educational contexts. This characteristic is inherent to studies that work with normative sources and does not constitute a methodological bias, but rather a restriction derived from the object of analysis. Second, although systematic coding procedures and constant comparison were applied, the construction of categories and the identification of phylogenetic-ontogenetic correspondences involve an unavoidable interpretive component in this type of qualitative approach. Likewise, the historical-musical periodization used as the phylogenetic framework is based on widely accepted musicological criteria, although these are not exempt from academic debate, which may influence the delimitation of evolutionary milestones. These limitations, inherent to the approach and to the type of sources analyzed, do not invalidate the results, but they should be taken into account when assessing the scope and transferability of the study.

3. Results

The correspondence between the ontogenetic sequencing of the curriculum and the milestones of musical phylogeny was established through a specific analytical procedure based on the triangulation of emerging categories and musicological criteria. First, each unit of meaning coded within the subcategories Individualisation of basic skills, Pedagogical-musical grouping, and Phylogenetic-ontogenetic correspondence was compared with the parameters of historical periodization defined in the methodology. Subsequently, conceptual alignment matrices were developed in which the didactic function of each basic skill, its level of cognitive complexity, and its position within the curricular progression were examined. These matrices made it possible to identify convergences and divergences between the evolution of curricular content and the historical evolution of musical systems. Finally, the results were integrated into a relational model showing how curricular content progresses ontogenetically and to what extent it reproduces —or departs from— the phylogenetic logic of musical evolution. This procedure ensures the traceability of the analytical reasoning and clarifies the methodological basis of the correspondences presented.

3.1. Correlation between the ontogeny of Early Childhood and Primary Education and the musical-historical periods

With regard to Early Childhood Education, Royal Decree 95/2022 establishes the basic knowledge for Music within the area Communication and Representation of Reality. Table 2 presents subcategory 1 of the analysis, with the specific basic knowledge for each of the two cycles (0–3 and 3–6 years of age) of this educational stage.

Table 2

Subcategory 1. Individualization of basic skills in Early Childhood Education. Area 3. Communication and Representation of Reality. Module [F]: Musical Language and Expression

Early Childhood Education. Area 3. Communication and representation of reality	
FIRST CYCLE (0-3 years of age) Concretion	SECOND CYCLE (3-6 years of age) Concretion

1. Recognition, evocation and reproduction of songs and other musical manifestations. Feelings and emotions they transmit. 2. The sound and expressive possibilities of the voice, the body, objects and instruments. 3. Listening as a means of discovery and enjoyment of the surrounding environment. 4. Sounds, intonation and rhythm.	1. The sound, expressive and creative possibilities of voice, the body, everyday objects in the immediate environment, and instruments. 2. Musical experiences and activities in different formats. 3. Sound, silence and their qualities. The musical code. 4. Expressive intention in musical productions. 5. Listening to music for enjoyment.

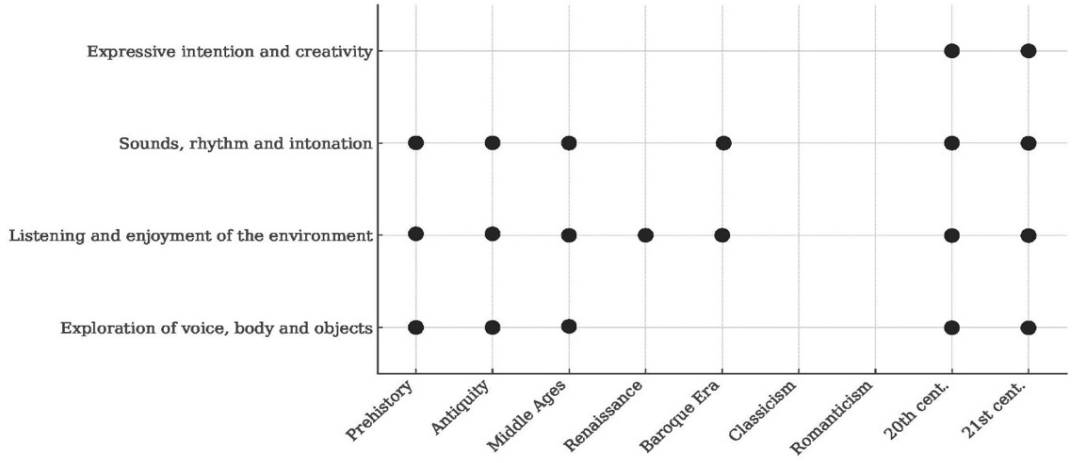
In order to establish subcategory 2, that is, the *Grouping of basic skills by pedagogical-musical thematic categories*, an evolutionary and functional approach was adopted, in line with ontogenetic processes (in children) and their phylogenetic connection (in the species). In other words, the pedagogical-musical thematic grouping of the basic skills of the two cycles of Early Childhood Education first combined spontaneous sound manifestations (1 and 2). Subsequently, an evolution toward more structured and symbolic musical activities (3 and 4) was considered, and four didactic-musical variables were obtained:

1. Vocal, bodily, and object exploration, referring to the primary means of sound production.
2. Listening to and enjoying the environment, centered on perception and attention to surrounding sounds.
3. Sounds, rhythm, and intonation, introducing basic elements of musical language.
4. Intentionality and expressive creativity, aimed at the development of symbolic expression.

Finally, in subcategory 3, based on *Ontogenetic and phylogenetic musical correspondence*, the musicological criteria set out in the methodology were applied to the variables established in category 2. This correspondence is shown in Graph 1 as the phylogenetic relationship between the ontogenetic content expressed in subcategory 2 and the historical moment in which it emerged.

Graph 1

Subcategory 3. Correspondence between the ontogeny and phylogeny of music in Early Childhood Education



Accordingly, with regard to the first cycle of this educational stage, the content appears to have an eminently procedural character and is mainly related to skills involving listening, vocal experimentation, and sound production. However, depending on what is established in the legislation, work with the voice could be placed in either the earliest or the latest historical periods. This can be explained by the fact that, on the one hand, at the dawn of civilization human beings became aware of their possibilities for expression and communication through sounds (Stein, 2000). On the other hand, with the development of the avant-garde at the beginning of the twentieth century,

vocal experimentation was explored in greater depth (Ramos, 2013), influenced by new artistic currents and by the break with traditional techniques (Pérez Castillo, 1998). Moreover, the recognition of the body's and sound-producing objects' possibilities for generating sound also seems to be related to the earliest stages of humanity, when the body and instruments served as sources of sound (Wallin et al., 2000). In turn, the use of song in Early Childhood Education may be compared to the collective and ritual singing of archaic cultures, which was fundamental to social cohesion and to the transmission of knowledge (Brown, 2000). As for content and skills related to listening, these precede vocal reproduction and constitute both an invariable element necessary in all musical evolution and a key aspect of human survival. The capacity to distinguish natural sounds evolved into an aesthetic and structured perception, which lies at the basis of musicality (Cross, 2003).

With respect to the second cycle of Early Childhood Education, there is clear continuity with the content of the previous cycle, while further developing the expressive and creative possibilities of the voice, as well as of the body, instruments, and everyday objects in the surrounding environment. This may also be related to the experimentation with and knowledge of sounds characteristic of both ends of the historical spectrum, together with content linked to the field of psychology, such as the expression of feelings and enjoyment (Cross, 2003; Campbell, 1998). However, it should be noted that there is also a resemblance to twentieth-century productions in terms of the variety of formats used for sound production. Once again, there appears to be a marked correlation between musical content and the early and late stages of historical-musical evolution, in line with what was observed in the previous cycle. In short, although music education at this educational stage does not focus on the formal teaching of music theory, the curriculum establishes a natural progression whereby children internalize basic musical structures through repeated experience and creative play. This process reflects the evolutionary progression from simple forms to more organized systems (Lawson et al., 1994), which appear in later educational stages.

With regard to Primary Education, and taking into account subcategory 1, *Individualization of Basic Skills*, Royal Decree 157/2022 establishes the content of the topic *Music and Performing Arts* for each of the three cycles. The documentary analysis of the legislative provisions shows that they cover the three cycles, with adjustments in detail and complexity according to age group and educational level. Specifically, the first cycle begins with simple sound discrimination, vocal and bodily exploration, assisted construction of instruments, basic dramatization, and the playful use of the body in movement. In the second cycle, musical experimentation is extended through graphical symbols, rhythm, guided improvisation, creative construction of instruments, and the incorporation of voice, movement, and elementary staging. Finally, the third cycle delves into improvisation, composition, digital recording, musical structure, more elaborate dramatization, stage roles, and the analysis of silence as an expressive resource. Table 3 shows the minimum curricular knowledge established for the third cycle of Primary Education, which is the only one presented here, since the previous cycles are introductory and progressively increase in complexity until the third cycle is reached.

Table 3

Basic skills of 3rd cycle of Primary Education. Artistic Education Area. [D]. Music and Performing Arts

Primary Education. 3rd cycle of Primary Education. Artistic Education Area
THIRD CYCLE (5th and 6th year Primary Education)
Concretion
1.Sound and its qualities: visual and auditory identification, classification, and representation of the diversity of rhythmic-melodic sounds and structures through different graphic symbols.
2. Voice and musical instruments. Families and groups. Classification. Visual and auditory identification. Digital and unconventional instruments. Found sound objects.
3. Character, tempo, pulse, musical genres, texture, harmony and form.
4. Instrument playing, singing and use of body: experimentation, creative exploration, improvisation and composition based on the possibilities of sound and expression.
5. Instrument making.
6. Musical languages: application of their fundamental concepts in the performance and

improvisation of musical, vocal, and instrumental proposals. Silence in music. 7. Computer applications for audio recording and editing, and score editing: use in the listening, knowledge, performance, recording, playback, improvisation, and creation of diverse musical works. 8. The body and its motor, dramatic and creative possibilities: interest in experimentation and exploration through individual and group performances linked to movement, dance, dramatization and theatrical performance as a means of expression and enjoyment. 9. Basic acting and dance techniques. Elementary notions of biomechanics. Expressive languages. Introduction to acting methods. Experimentation with performances. Guided and creative improvisation 10. Expressive and creative capacities of bodily and theatrical expression. 11. Elements of stage performance: roles, materials, and spaces. Theatricality. Basic dramatic structure. 12. Introduction to the genres of the performing arts. Appreciation of the importance of theatrical performance in the artistic process and of the heritage linked to the performing arts.

Note. Basic skills specification extracted from Royal Decree 157/2022.

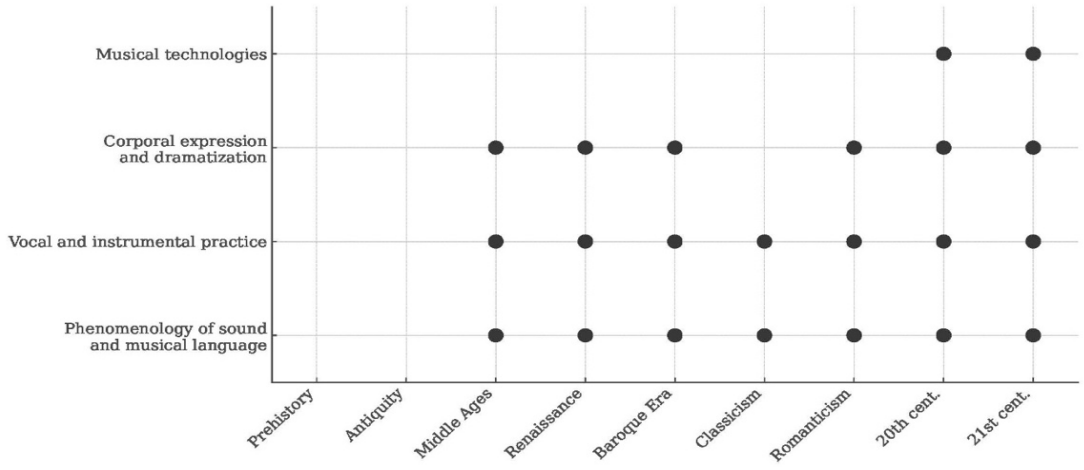
As for subcategory 2, *Grouping basic skills by pedagogical-musical thematic categories*, once again four variables were established, applying pedagogical-thematic criteria based on the similarity of musical procedures:

1. Musical technology: includes basic skills related to musical recording and editing through digital means.
2. Bodily expression and dramatization: refers to actions involving movement, gesture, and staging.
3. Vocal and instrumental activities: classroom activities using the voice and instruments.
4. Sound phenomenology and musical language: listening, the qualities of sound, silence, and basic musical codes are taken into account.

The third subcategory, *Correspondence between the ontogeny and phylogeny of music*, is shown in Graph 2, in which the previous variables are related to different moments in human history using the musicological criteria referred to in the methodology section.

Graphic 2

Subcategory 3. Correspondence between the ontogeny and phylogeny of music in Primary Education



In turn, and as established in the curriculum, Primary Education involves a transition from experience-based and sensory activities toward technical, symbolic, and culturally expanded activities. Thus, the phylogenetic relationship seems to establish a particularly strong reciprocity with the evolution of the elements characteristic of the different historical periods from the Middle Ages to the 20th century. Whereas Early Childhood Education mainly focuses on vocal and bodily expression, Primary

Education takes into account other general musical skills: (a) rudimentary instruments and sound exploration, which are particularly relevant to the Middle Ages (Treitler, 2007); (b) notation and formal organization, rooted in the Middle Ages and the Renaissance (Swanwick & Tillman, 1986); (c) the consolidation of musical styles, particularly evident from the Baroque period to Romanticism (Campbell, 1998); and (d) technological diversity and globalization with regard to the transformations that have taken place from the twentieth century to the present (Savage et al., 2015).

4. Discussion

The basic premise of this study is that there is a certain parallelism between the evolution of musical elements throughout history and the development of a person's musical competence acquired through learning, since both processes involve progressive construction (Piaget, 1977; Campbell, 1998). Our results show that, in current legislation, there is no general positive correlation between the sequencing of content in Early Childhood and Primary Education (considered here as a categorical measure of the ontogeny of music) and the chronology of periods in music history. Thus, insofar as the general and transversal pedagogical requirements of each educational phase are concerned (LOMLOE, 2022), Early Childhood Education mainly covers musical aspects related to the earliest and most recent periods of history. Primary Education, by contrast, focuses on the development of other aspects, particularly from the Renaissance to the present. The analysis also highlights a more pronounced overlap between the skills referring to the Middle Ages and those referring to the twentieth and twenty-first centuries and, to a lesser extent, to the Renaissance and the Baroque period, depending on the degree of development of the content being taught. However, a more exhaustive study than the present one, based either on educational cycles or school years, is needed to clarify why the legislation takes into account content that appears at the end of phylogenetic developments in Early Childhood Education (i.e., musical proposals in different formats), as well as in Primary Education. This could be due to the transversal role of technologies, which may no longer seem to require a deep understanding on the part of teachers.

There may be two reasons for this distribution of content across the two educational stages under study. On the one hand, the legislation does not take into account the relationship between the evolutionary periods of music and the degree of students' learning development, which, according to evolutionary theories of education in general (Vygotsky, 1978; Bruner, 1996) and of music education in particular (Cross, 2003; Blacking, 1973; Gordon, 2007), has previously been implemented with positive results. However, in this respect, the analysis would need to be extended to other educational stages, or at least to Secondary Education and the Baccalaureate, in order to obtain a general and unbiased view of this evolution.

These findings are also consistent with international research showing that curricular sequencing in music education is often shaped by political, economic, and cultural priorities rather than by the internal logic of musical development. Comparative studies such as Pardàs (2016) reveal that many countries face similar inconsistencies in the progression of music curricula, often resulting in fragmented learning pathways. Likewise, Zamorano-Valenzuela et al. (2023) show how political and economic rationales influence music teacher education in Spain, thereby affecting curricular orientations and the emphasis placed on different musical competences. Recent international reviews, such as Martín-Sanz et al. (2025), also highlight the need for curricular frameworks that integrate historical, cultural, and expressive dimensions more coherently in order to support key competences. This international evidence reinforces the relevance of examining the alignment between curricular sequencing and the evolutionary development of musical knowledge, as undertaken in the present study.

On the other hand, the lack of specificity in the curriculum is evident, particularly at the conceptual level, with regard to all the basic knowledge established in the legislation, as previously highlighted by various experts (Casanova & Serrano, 2018; Mateu-Luján, 2020; López Melgarejo & López Núñez, 2021). This lack of unambiguous conceptualization of the basic knowledge outlined could mean that the official curriculum is taught differently, and with varying degrees of depth, even though the basic regulations are the same. It has to be recognized that teachers are able to determine the degree of development and experimentation they consider appropriate for each part of the curriculum content according to their teaching possibilities and their students' cognitive, physical, and motor skills. This may also occur with other legally established didactic-pedagogical elements

(Cardona, 2003). Nevertheless, a certain degree of uniformity is generally necessary in the application of the curriculum. At the same time, this points to the need for future research analyzing, through interviews or surveys, the degree of curriculum specification implemented by teachers in the classroom, in order to determine and interpret the curriculum and the correlation between ontogeny and phylogeny through real and concrete pedagogical actions and examples.

The results obtained in this study highlight the importance of understanding the criteria followed by the educational administrations in organizing basic knowledge, in order to determine why, in some cases, content is repeated across different cycles, or why other content that could be considered essential for ensuring progression in later stages is not included. Moreover, it would be useful to have a national and regional handbook specifying how teachers should implement the elements of the curriculum so that all students in Spain acquire at least a common core of basic knowledge. Otherwise, there is a risk that students may be affected by a discrepancy or bias between the phylogenetic and ontogenetic dimensions.

5. Conclusions

The relationship between ontogeny and phylogeny involves that music teaching can be designed on the basis of an order of increasing complexity throughout the stages of compulsory education. It would begin with elementary forms of expression and progress toward more structured musical languages, including, among other aspects, harmony, polyphony, and formal analysis, so that individual learning is aligned with the historical and cultural development of music.

The main contribution of this study lies in applying the phylogeny-ontogeny relationship as an analytical framework for examining curricular content, a perspective that has not previously been used in research on Music Education in Early Childhood and Primary Education. While earlier studies have addressed developmental aspects of musical learning or explored historical-musical evolution, none have systematically connected both dimensions in order to evaluate how the official curriculum reflects, or fails to reflect, the evolutionary milestones of music. This approach makes it possible to identify gaps, asymmetries, and missing stages in curricular sequencing, thus offering a new theoretical and methodological basis for reconsidering how musical learning is structured in compulsory education.

This study offers a conceptual framework that transcends its biological origin to become a tool for analysis in the field of music education. This reflection is useful for assessing the evolution of music teaching within the framework of Spanish legislation and for analyzing how educational laws have incorporated this phylogenetic progression into their curricular approaches. Incorporating these concepts into educational curricula would make it possible to justify a progressive organization of music learning that begins with sensory and affective elements and gradually moves toward conceptual and abstract ones, just as human musical evolution has done.

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