Dissertations on Higher or Professional Arts Education in Spanish Universities: A Bibliometric Analysis

Marina Arnal-Ferrándiz [1], Miguel Ernesto Villarraga-Rico [2],
David Gutiérrez-Rubio [1], María Rodríguez-Baiget [1]

[1] *University of Córdoba, Avda. San Alberto Magno s/n, 14004 Córdoba, Spain*
[2] *University of Tolima, Barrio Santa Helena Parte Alta, Ibagué, Colombia*

Abstract – The aim of this study is to characterise the scientific production in higher arts education, to identify the universities with the highest production, the most researched topics, the directors of the theses, as well as the gender distribution of authors and directors. The production of doctoral theses in the period 1987-2021 was analysed from the TESEO database, identifying 387 doctoral theses, their distribution by university, number of directors and co-directors, and gender distribution of authors and directors. In addition, the Bradford areas of production by university were identified. The University Complutense of Madrid is the institution with the highest production of theses in higher arts education, being in general larger universities the ones with the highest production. Theses predominantly centered on music and performing arts, with less attention to plastic and visual arts. Women are more present than men as authors and directors. The importance of higher arts education as a field of research in Spain is highlighted and the need to promote thematic diversity and equal gender participation in scientific production is evident. The observed decrease in production since 2015 suggests the need to continue fostering research in higher arts education and to support researchers in this area.

1. Introduction

Doctoral studies are a fundamental step in the scientific training of new researchers and this process culminates with the completion of the dissertation (also called doctoral thesis) [1]. During the writing process, various techniques and methodologies are learned and the doctoral student acquires a series of skills that allow them to develop fundamental competences in the whole research process.

As Archbald [2] states, the doctoral thesis is a specific form of socialisation and training, the dissertation having a developmental function for a specific purpose: academic work. While the elaboration of the doctoral thesis offers scientific and academic training for its author, it is in itself a product from which the academic community benefits in that it increases the scientific corpus, in such a way that the doctorate is a guarantee of quality and indicates that a researcher has reached the pinnacle of university education.

In Spain, the evolution of the PhD in the last fifty years is marked by four features: growth in the number of students pursuing doctoral studies; importance given to the prior training of PhDs; linkage with research, which is given increasing value in the university and in society; and accreditation of quality within the European Higher Education Area (EHEA) [3].

There are many articles in the scientific literature that deal with the processes involved in the production of doctoral theses. Some analyse the supervisory activity [4], others the writing process [5], [6], others focus on the dissertation evaluation procedures [7], [8], or on the examining boards [9]. The study and analysis of doctoral theses carried out on specific subjects in a country or university allows us to know to a certain extent the degree of consolidation of these disciplines in scientific training.

At the international level, studies on doctoral theses have been carried out for more than a century. Thus, we find the first descriptive study of American doctoral theses on classical philology [10]. More recently, they have been a repeated topic of study, focusing on subject areas such as mathematics [11], biology [12] information sciences [13], [14], engineering [15], media and health [16].

In Spain, studies on doctoral theses in various fields of knowledge are also frequent. For example, Fernández-Guerrero [17] analysed 347 theses on medical scientific information. Machan and Portero [18] studied 1036 doctoral theses in radiodiagnosis carried out from 1976 to 2011. Rodríguez-Faneca et al. [19] studied Translation and Interpreting theses in Spain between 1997 and 2018, focusing the analysis on the directors and the tribunals in charge of their evaluation. Theses on Sports Science [20], Psychiatry [21], Education [22], Photography [23], Handball [24] and Mathematics Education [25], [26] among other fields have also been studied.

In different doctoral programmes at Spanish universities, doctoral theses are carried out that address aspects related to art education and therefore interest arises in finding out how this type of research is carried out.

When we talk about research in arts education, we refer to a field that is increasingly able to interact with other disciplines and addresses issues in which research on the arts, education or social sciences converge [27]. It is an emerging discipline, which does not have its own space within UNESCO's international nomenclature for the fields of Science and Technology. Finding its own space for it presents a great complexity as it is not closed in itself. The term "arts education" can have different connotations depending on the place and context in which it is used. In arts education research, problems and debates specific to arts education converge with those of educational research and social science research [28].

In general, it usually refers to any training process in the field of the arts (general education centres, conservatories, art schools, etc.). In the context of formal education, it is common to think of Arts Education as a specific area in school curricula referring to the teaching of different artistic disciplines: music, dance, theatre, visual arts, film, etc. These disciplines, especially in school curricula, are often combined, the most common is arts education area comprising music and visual arts.

However, we can also find Arts Education linked to non-formal education processes or to refer to activities and research in which the arts are combined with the formation of new audiences or with interdisciplinary work with fields such as psychology, aesthetics or sociology, or to very diverse experiences in which the artistic action itself promotes different forms of learning [29].

At the international level, we can find some studies related to doctoral theses in arts education. Thus, Burton [30] in a research with 332 educators who are members of the National Art Education Association (NAEA) and the Seminar for Research in Art Education found that 60 doctoral theses on art education had been carried out. Of these, 78% were in the categories "concepts", "contexts", and "student learning".

Jokela et al. [31] reported that from 1997 to 2017, 37 doctoral theses have been completed in the area of arts education at the University of Art and Design in Helsinki. Yücesoy et al. [32] analysed 106 theses on arts education and found that 29 corresponded to doctoral theses in arts education carried out in Turkey between 2003 and 2010, and indexed in the National Thesis Centre.

Cañizares [34] made an analysis of 15 doctoral theses carried out at the University of Cordoba within the Doctor of Arts programme of this university, between 2002 and 2018. Of these 10 belong to research in arts education and all the authors had higher degrees in music.

Garcia-Torrel and Sánchez-Franco [35] analysed 43 doctoral theses in the area of arts education carried out in Cuba between 1995 and 2019, finding that the research topics were oriented to different educational levels, from early childhood education to university education, and that the themes of music and arts education were the most prevalent.

In the present study we want to contribute to the development of research on arts education by focusing our interest on the analysis of theses read in Spanish universities and collected in the TESEO database (TESEO, n.d.). In this way, we will obtain a map of the institutions where research on arts education leading to a doctoral thesis is carried out, as well as the most common topics addressed.

2. Methodology

This chapter outlines the objectives and methodology used to obtain the results.

This study aims to analyse the current situation of research in arts education in Spain, based on the analysis of the production of doctoral theses. Specifically, the doctoral theses produced between 1997 and 2018 and indexed in the TESEO database have been analysed. This analysis will provide insight into the evolution of this field of study.

The specific objectives that were proposed are:
1. To elaborate the time series of Spanish theses indexed in the TESEO database related to arts education from 1997 to 2018.

2. To analyse the production of doctoral theses on arts education by institutions.
3. To describe the production by directors of doctoral theses on arts education.
4. To carry out a gender analysis in relation to the authorship and direction of theses in Arts Education.

This is a descriptive and inferential, census-type, exploratory research on arts education and research carried out through doctoral theses.

To obtain the data, a search was carried out on the TESEO platform [36] in order to locate the theses on art education in Spanish universities in the period analysed (1997-2018). In order to compile the sample, a general search was carried out by entering the descriptor "art education" (in Spanish: Educación Artística) in the title or abstract.

In order to download the information, a computer application was developed in visual basic to automate the consultation of the information of all the doctoral theses. The search and download was carried out in October 2022. All the fields offered by TESEO were imported for each dissertation (title, author, university, date, doctoral programme, examining board, descriptors, and abstract). This resulted in 693 records.

The extraction of theses was done per academic year as follows:
- From 1976 to 1985 there is no record of theses with the descriptor "art education".
- From 1984/85 to 1999/2000 there are 32 records.
- From 2000/01 to 2009/10 there are 96 records.
- From 2010/11 to 2014/15 there are 214 records.
- From 2015/16 to 2016/17, 234 records appear.
- From 2017/18 to 2019/20, 83 records appear.
- From 2020/21 to 2021/22, 34 records appear.

Once the information was downloaded, it was dumped into an ad hoc template in which all the relevant information provided in TESEO about each of the theses was incorporated. Subsequently, a manual filtering was carried out by three experts in the field who reviewed the summaries of each dissertation to eliminate those that were not about higher or professional arts education, even though they had that descriptor.

Since the aim was to study higher or professional arts education, those corresponding to ICT and training, teachers, social aspects, and related areas such as Drawing, Architectural Graphic Expression or Architectural Composition were discarded. This manual filtering left 387 doctoral theses that were analysed.

In this matrix, fields were included to specify their date of reading, title, author, director, co-director/s, members of the tribunal (president, secretary and member/s), and related descriptors. The process is schematically described in Figure 1.
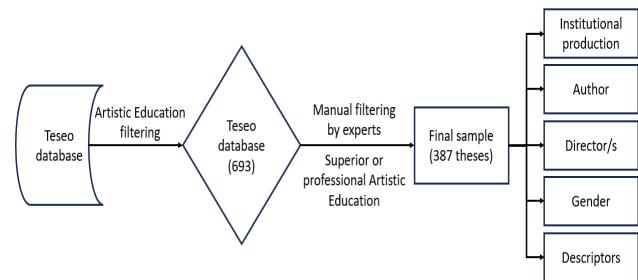

Figure 1. Sample selection process and analysis criteria (Source: Prepared by the authors)

The names of the authors, editors, and members of the panel were standardised, as several names were found within the TESEO platform itself with slight formal differences when referring to the same person. These errors in the TESEO database have already been pointed out by other researchers [36], [37]. This avoids duplicate entries or misleading information from directors, both in terms of subsequent counting and computer processing. Subsequently, a manual search was carried out for each author and director in order to find out their gender and professional affiliation. These searches were carried out on the Google Scholar, Dialnet, and Worldcat platforms. In this way it was possible to assign the biological sex to each of the actors involved in the completion and defence of the dissertation. SPSS statistical software was used to carry out a descriptive and inferential statistical analysis.

3. Results

In this chapter, we present a summary of the key findings from the conducted analysis. In sections 3.1 and 3.2, examination of the production trends across years and universities was conducted. The study validates the adherence to Bradford's Law and identifies the universities comprising the core of the Bradford zones (Complutense Univ. of Madrid and Univ. of Granada). Section 3.3 focuses on dissertation supervision, highlighting the gender distribution of both leadership and authorship. In section 3.4, the thematic aspects addressed in the theses through their descriptors were examined. Using cluster analysis, eight distinct thematic clusters within the theses analysed were identified. Lastly, taking into account the descriptors, we explore differences in thematic production between the two universities forming the Bradford core.

3.1. Diachronic Productivity

During the period analysed, 387 doctoral theses related to arts education were produced in Spanish universities. The first one was produced in 1987 at the Complutense University of Madrid and was supervised by Dr. Juan Fernando de la Iglesia. It is observed that the increase in the production of doctoral theses in AE does not have a continuous and constant behaviour, but 5 periods of increase and decrease can be distinguished: 1987-1994; 1995-1999; 2000-2007; 2008-2017 and 2018-2021 (Figure 2). The majority of the theses were carried out in the period between 2008 and 2017, which is not only the longest period, but also represents 67.92% of the total number of theses for the whole period (Figure 2).
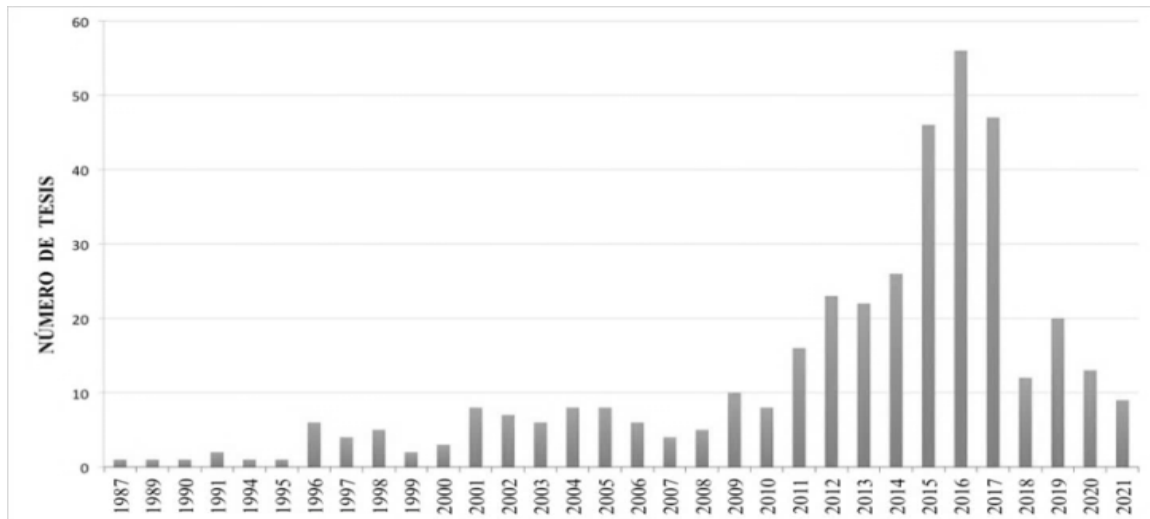

Figure 2. Diachronic production of doctoral theses on doctoral theses in the sample EA
(Source: Own elaboration)

3.2. Distribution of p=Production by University

Doctoral theses in arts education (AE) in Spain have been carried out in 47 universities, of which 43 are public and 4 are private.

The Complutense University has produced the highest number of doctoral theses in arts education in the 34 years analysed, with 19.1%, followed by the University of Granada, with 10.6% (Table 1). The first five universities in terms of production account for 56.4% of all the theses produced in Spain. Only two doctoral theses have been produced in private universities.

Table 1. Institutional production of n≥4 doctoral theses in Arts Education

University	N.º	%
Complutense Univ. of Madrid	74	19.1
Univ. of Granada	41	10.6
Univ. of Barcelona	34	8.8
Univ. of Sevilla	33	8.5
Univ. of Valladolid	17	4.4
Polytechnic Univ. of Valencia	13	3.4
Univ. of Valencia (Estudi General)	12	3.1
Univ. of Murcia	11	2.8
Univ. del País Vasco	11	2.8
National Univ. of Distance Education	10	2.6
Autonomous Univ. of Madrid	8	2.1
Univ. of Extremadura	7	1.8
Univ. of La Laguna	7	1.8
Univ. of Málaga	7	1.8
Univ. of Zaragoza	7	1.8
Univ. of Alicante	6	1.6
Univ. of Córdoba	6	1.6
Univ. of Santiago of Compostela	6	1.6
Autonomous Univ. of Barcelona	5	1.3
Catholic Univ. of Valencia San Vicente Martir	5	1.3
Univ. of Salamanca	5	1.3
Univ. of Vigo	5	1.3
Univ. of Jaén	4	1.0
Univ. of Las Palmas de Gran Canaria	4	1.0
Univ. of León	4	1.0
Univ. of Oviedo	4	1.0
Univ. Jaume I of Castellón	4	1.0
Univ. of Navarra	4	1.0

The universities can be sorted into zones of decreasing productivity of doctoral theses in arts education to determine the core of university production in this field (Table 2).

Table 2. Distribution of universities by doctoral theses production

Univ. $= a$	Tesis $= b$	$a \cdot b$	Cumulative number of universities $= c$	$Ln(c)$	Cumulative number of theses
1	74	74	1	0.0000	74
1	41	41	2	0.6931	115
1	34	34	3	1.0986	149
1	33	33	4	1.3863	182
1	17	17	5	1.6094	199
1	13	13	6	1.7918	212
1	12	12	7	1.9459	224
2	11	22	9	2.1972	246
1	10	10	10	2.3026	256
1	8	8	11	2.3979	264
4	7	28	15	2.7081	292
3	6	18	18	2.8904	310
4	5	20	22	3.0910	330
6	4	24	28	3.3322	354
3	3	9	31	3.4340	363
8	2	16	39	3.6636	379
8	1	8	47	3.8501	387

Figure 3 illustrates Bradford's law (1948). The horizontal axis in logarithmic scale represents the number of universities in descending order of productivity and the vertical axis represents the number of dissertations completed. As can be seen, the resulting curve $R(r)$ is monoatomically ascending.
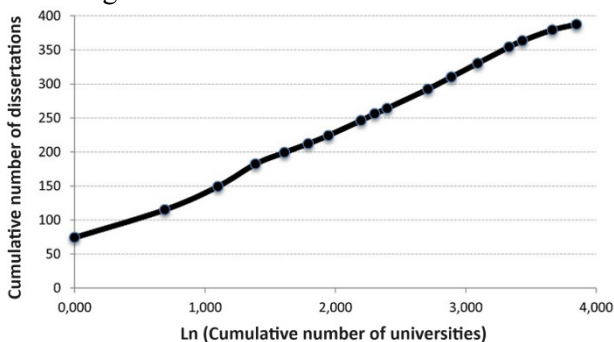

Figure 3. Dispersion of the production of dissertations in AE according to Bradford's law

We will use the law of Leimkuhler`s (1967) who expressed the Bradford law in mathematical terms as follows: $R(r) = a \cdot Ln(1 - b\ r)$. To find the different parameters we are going to use Egghe's (1986) proposal, which has already been used in recent bibliometric studies [38], [39].

It is considered that:

r_0 is the number of journals in the first Bradford zone.

y_0 is the number of articles in each Bradford zone (each zone must be of equal size).

K is the Bradford multiplier.

$R(r)$ is the cumulative number of articles published by journals.

a and b are the constants of the Leimkuhler formula: $R(r) = a \cdot Ln(1 + br)$.

According to Egghe [40] the values of the constants a and b are:

$$a = \frac{y_0}{\ln k} \quad \text{y} \quad b = \frac{k - 1}{r_0}$$

First, we determine the number of Bradford zones we want to find, so $p = 3$. Now we can find the value of k, following Egghe (1986):

$$k = (e^\gamma \cdot y_m)^{1/p}$$

as γ=Euler's constant=0.5772, then $e^\gamma = 1.781$, so the value of $k = (1.781 \cdot y_m)^{1/p} = (1.781 \cdot 74)^{1/3} = 5.0889$. We have that

$$r_0 = \frac{T}{1 + k + k^2 + \cdots + k^p - 1} = \frac{T(k - 1)}{k^p - 1},$$

where T is the total number of universities, so

$$r_0 = \frac{T(k - 1)}{k^p - 1} = \frac{47 \cdot (5.0889 - 1)}{(5.0889)^3 - 1} = \frac{192.1826}{130.794}$$
$$= 1.4694$$

Having obtained the values of k and r_0, we proceed to find a and b.

$$a = \frac{281/3}{Ln\ 5.0889} = 57.567, \quad b = \frac{5.0889 - 1}{1.4694}$$
$$= 2.782$$

Now we replace the values in the formula of Leimkuhler's law

$$R(r) = a \cdot Ln(1 + br)$$
$$= 57.567 \cdot Ln(1 + 2.782 \cdot 47)$$
$$= 57.567 \cdot 4.8812 = 280.996$$

The distribution of all universities in the three Bradford zones [41] is presented in Table 3. The core is formed by 2 universities accumulating 115 theses. This core is formed by the Complutense University of Madrid and the University of Granada.

Table 3. Distribution of the universities producing doctoral theses in arts education in Bradford areas

Zones	Universities	Theses	K
Core	2	115	---
1st zone	7	131	3.50
2nd zone	38	141	5.42
Total	47	387	

3.3. Direction of Doctoral Theses

In the role of supervising these 246 theses, 371 different researchers from Spain and abroad have participated.

The most productive supervisor is Fernando Hernández of the University of Barcelona who has supervised 17 theses, followed by Ricardo Marín of the UGR with 16 and Manuel Hernández of the Complutense University of Madrid with 11 (Table 4).

Table 4. List of the most productive directors in EA (n≥4)

Director	Number of theses	% of 246	University
Hernández Hernández, Fernando	17	4.39	Univ. of Barcelona
Marín Viadel, Ricardo	16	4.13	Univ. of Granada
Hernández Belver, Manuel	11	2.84	Complutense Univ. of Madrid
Acaso López Bosch, María	9	2.33	Complutense Univ. of Madrid
Araño Gisbert, Juan Carlos	9	2.33	Univ. of Sevilla
Ávila Valdés, Noemí	7	1.81	Complutense Univ. of Madrid
Fontal Merillas, Olaia	7	1.81	Univ. Valladolid
Moreno Sáez, María Del Carmen	7	1.81	Complutense Univ. of Madrid
López Fernández Cao, María Ángeles	6	1.55	Complutense Univ. of Madrid
Antúnez Del Cerro, Noelia	5	1.29	Complutense Univ. of Madrid
Huerta Ramon, Ricard Vicent	5	1.29	Univ. of Valencia
Roldan Ramírez, Joaquín	5	1.29	Univ. of Granada
Agra Pardiñas, María Jesús	4	1.03	Univ. of S. de Compostela
Aguirre Arriaga, Imanol	4	1.03	Univ. of Navarra
Gutiérrez Pérez, María Del Rosario	4	1.03	Univ. of Málaga
Juanola Tarradellas, Roser	4	1.03	Univ. of Girona
Ullán De La Fuente, Ana María	4	1.03	Univ. of Salamanca

In terms of productivity levels (PL) these directors are the only major producers in Bradford terms $(Ln(n) \geq 1)$. There are 198 transient supervisors $(0 < Ln(n) < 1)$ and 303 occasional supervisors who have only supervised one dissertation $(Ln(n) = 0)$ (Figure 4).
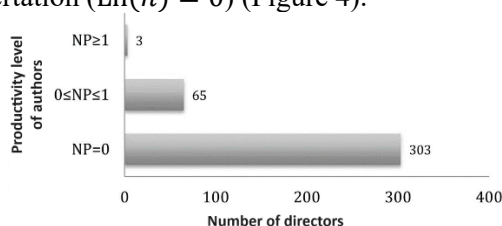

Figure 4. Levels of productivity of arts education dissertation supervisors

In terms of gender in the authorship of the theses, it can be seen that women are the ones who have written more theses in arts education, almost in a 2:1 ratio with respect to men (Table 5). From the year 2000 onwards, it stands out that in 2010 all the theses were written by women.

However, when we analyse the gender of those who have supervised (there may be more than one supervisor in a dissertation), in this case there is almost parity, finding that 53.26% of the supervisors have been men and 46.74% are women (Table 5).

Table 5. Authorship and direction of theses in arts education according to gender

	Male (%)	Female (%)	Total
Author	134 (34.63)	253 (65.37)	387
Director	245 (53.26)	215 (46.74)	460

When analysing gender according to direction, it can be seen that the proportion of theses directed by men only (regardless of the number of directors) is 43.67%, higher than that of theses directed by women only (40.32%) or mixed directions (two directors, one man and one woman) (Table 6). By universities, the Complutense University of Madrid has the highest number of theses supervised by women with 40, and the highest number supervised by men is at the University of Granada and the Complutense University of Madrid with 26 each.

Table 6. Correspondence between authorship vs. leadership by gender

Author	Male only (%)	Female only (%)	Mixed (%)	Total
Hombre	65 (48.51)	40 (29.85)	29 (21.64)	134
Mujer	104 (41.11)	102 (40.32)	47 (18.58)	253
Total	169 (43.67)	142 (37.69)	76 (19.64)	387

If we apply the chi-square independence test to the values in Table 6, we obtain a p-value of 0.12, so there is no statistically significant evidence of any relationship between the gender of the doctoral student and the gender of the director(s).

3.4. Subject Classification

The 387 theses generate 153 different descriptors, with pedagogy appearing the most frequently in the theses analysed with a percentage of 16% (Table 7).

There is a high representation of descriptors associated with theoretical aspects and education.

Figure 5 shows a map of co-occurrences of these filtered descriptors, and Table 7 shows a grouping by clusters of at least 6 elements, together with the descriptors of each one and the main themes that made the formation of the clusters possible.

These themes were deduced from the analysis of the different descriptors of each cluster. There is a certain dependence on arts education, which is the dominant line in the theses with theoretical and methodological perspectives that are not necessarily related to the arts.

Table 7. Descriptors of doctoral theses in arts education (n ≥ 10)

Descriptor	N	% of 387 theses
Pedagogy	62	16.0
Music and musicology	56	14.5
Sciences of arts and letters	55	14.2
Theory, analysis and criticism of the fine arts	55	14.2
Educational theory and methods	40	10.3
Pedagogical methods	39	10.1
Education sector	39	10.1
Aesthetics of the fine arts	35	9.0
Basic education	31	8.0
Organisation and planning of education	29	7.5
Experimental pedagogy	26	6.7
Creativity	20	5.2
Drawing and printmaking	18	4.7
Curricula	18	4.7
Sociology of art	18	4.7
Teacher preparation	17	4.4
Art history	16	4.1
Audiovisual methods in pedagogy	16	4.1
Higher education	15	3.9
History of education	13	3.4
Museology	13	3.4
History of music	12	3.1
Dance and choreography	12	3.1
Teacher training and employment	12	3.1
Educational theories	12	3.1
Photography	10	2.6
Educational methods	10	2,6

One aspect to be taken into account with regard to the descriptors is that the UNESCO thesaurus is used in the TESEO database. This thesaurus has substantial limitations for certain fields of education such as specific didactics, where it seems that a high number of thesis are analysed in the light of the general descriptors found but which are not specific to art education, such as: pedagogy, experimental pedagogy, organisation and planning of education, educational theories, etc.

Some of these and other shortcomings of this thesaurus in serving as a source of descriptors for certain fields and areas have already been pointed out by other researchers [33].

Figure 5. Comparison network of descriptors in art education theses

Table 8. Clusters of at least 6 elements for the descriptors included in the theses.

Cluster	Descriptors	Topics
Cluster 1 (13 items)	Social Change and Development, Basic Education, Higher Education, Computer Aided Instruction, Programmed Instruction, Technological Innovation, Audiovisual Methods in Pedagogy, Social Research Methods, Motivation, Music and Musicology, Comparative Pedagogy, Educational Policy, Profession and Status of Teachers.	Educational innovation approaches
Cluster 2 (13 items)	Drawing and Printmaking, Sculpture, Fine Art Aesthetics, Teacher Training and Employment, Photography, 19th and 20th Century Art History, Methodology, Educational Methods, Museology, Teacher Training, Cultural Relations, Interethnic Cultural Relations, Education Sector, Sociology of Art.	Extension of knowledge in arts education and fine arts didactics.
Cluster 3 (9 items)	Creativity, Personality Development, Pupil Assessment, Personality Measurement, Personality, Personality, Psychology, Child Psychology, School Psychology, Developmental Psychology.	Components of human cognition and divergent thinking.
Cluster 4 (9 items)	Discrimination, History of Music, Organisation and Planning of Education, Organisation and Management of Educational Institutions, Painting, Curricula, Planning and Financing of Education, Sociology of Education, Theatre.	Education policy in Arts Education
Cluster 5 (8 items)	Adult Education, History, History of Education, History of Art, History of Art, Specialised Histories, Pedagogical Methods, Pedagogy, Educational Theories	History of Arts Education
Cluster 6 (7 items)	Sciences of Arts and Letters, Philosophy, General Philosophy, Metaphysics and Ontology, Experimental Pedagogy, Theory, Analysis and Critique of the Fine Arts, Educational Theory and Methods.	Aesthetic Education
Cluster 7 (6 items)	Cultural Anthropology, Cinematography, Dance and Choreography, Special Education, Vocational Training, Cultural Sociology.	Social Integration in the Performing Arts
Cluster 8 (1 item)	Psychopedagogy	Psychopedagogy

If we look at the descriptors of the two universities that make up the core of the production of doctoral theses in arts education in Spain, we can see that for the UCM the main descriptor is "Sciences of arts and letters" followed by "Theory, analysis and critique of the fine arts" and at the UGR "Pedagogy" and "Theory, analysis and critique of the fine arts" (Table 9).

Table 9. Descriptors of the dissertations that form the core of the EA production

Complutense Univ. of Madrid

Descriptor	N
Sciences of arts and letters	21
Theory, analysis and criticism of the fine arts	19
Aesthetics of the fine arts	13
Educational theory and methods	8
Pedagogy	6
Experimental pedagogy	6
Pedagogical methods	4
Teacher training and employment	3
Cinematography	2
Drawing and engraving	2

Univ. of Granada

Descriptor	N
Pedagogy	8
Theory, analysis and criticism of the fine arts	7
Education sector	7
Photography	6
Pedagogical methods	5
Basic education	4
Music and musicology	4
Sociology of art	4
Educational theory and methods	4
Social change and development	3

4. Conclusion

The present study has shown that doctoral research in arts education in Spain has increased in the period from 2000 to 2016 and since then a decrease is evident. This pattern aligns with analogous trends observed in various social science disciplines in Spain, in fields such as Translation and Interpreting or Psychology.

The Complutense University of Madrid is the institution that leads the production of doctoral theses in this field in Spain and together with the University of Granada they form the core of the production in Bradford terms, together producing 19.7% of all theses.

78.29% of the supervisors are transient, i.e., they have only supervised one doctoral thesis. In the authorship of doctoral theses, it becomes visible that it is a feminised field, because they practically double the number of men who have written a doctoral thesis. On the other hand, in the role of dissertation supervisor, no bias is evident; there are minimal gender differences (6.56%).

Female doctoral students have greater tendency than male doctoral students to be supervised by a team of female supervisors. However, overall, male-only doctoral directorships are the most frequent, with mixed co-directorships being the least frequent.

An important contribution of this study is the connections between the descriptors, as they could be useful for researchers in the field. In particular, they show how the descriptors connect arts education with other aspects that have traditionally been the subject of interest, reflection, and research, but more associated with teaching or learning processes.

References:

[1]. Rodríguez-Faneca, C., Pedrosa-Jesús, C., y Cuida, A. (2021). Educación matemática en Iberoamérica: Un estudio bibliométrico en SSCI. *Matemáticas, Educación y Sociedad*, *4*(2), 40-5

[2]. Archbald, D. (2008). Research versus problem solving for the education leadership doctoral thesis: Implications for form and function. *Educational Administration Quarterly*, *44*(5), 704-739.

[3]. Jiménez-Ramírez, M. (2017), Los nuevos estudios de doctorado en España: avances y retos para su convergencia con Europa. *Revista de Investigación en Educación* Superior, *8*(21),123-137.

[4]. Gray, M. A., & Crosta, L. (2019). New perspectives in online doctoral supervision: A systematic literature review. *Studies in Continuing Education*, *41*(2), 173-190.

[5]. Starke-Meyerring, D., Paré, A., Sun, K. Y., & El-Bezre, N. (2014). Probing normalized institutional discourses about writing: The case of the doctoral thesis. *Journal of Academic Language and Learning*, *8*(2).

[6]. Guerin, C. (2016). Connecting the dots: Writing a doctoral thesis by publication. In *Research literacies and writing pedagogies for masters and doctoral writers*, 31-50. Brill.

[7]. Starfield, S., Paltridge, B., McMurtrie, R., Holbrook, A., Bourke, S., Fairbairn, H., ... & Lovat, T. (2015). Understanding the language of evaluation in examiners' reports on doctoral theses. *Linguistics and Education*, *31*, 130-144.

[8]. de-Miguel, M. (2010). THE EVALUATION OF DOCTORAL THESIS. A MODEL PROPOSAL. *Electronic Journal of Educational Research, Assessment & Evaluation*, *15*(2).

[9]. Johnston, S. (1997). Examining the examiners: An analysis of examiners' reports on doctoral theses. *Studies in higher education*, *22*(3), 333-347.

[10]. Heidel, W. A. (1907). American Doctoral Dissertations in Classical Philology. *The Classical Quarterly*, *1*, 242-247.

[11]. Gayan, M. A., y Singh, S. K. (2018). Citation Analysis of Doctoral theses of Mathematics, Tripura University: A Scientometrics study. *International Journal of Library Information Network and Knowledge*, *3*(2), 107.

[12]. Roos, D. H., Calabró, L., de Jesús, S. L., Souza, D. O., Barbosa, N. V., y da Rocha, J. B. T. (2014). Brazilian scientific production in areas of biological sciences: a comparative study on the modalities of full doctorate in Brazil or abroad. *Scientometrics*, *98*, 415-427.

[13]. Zong, Q. J., Shen, H. Z., Yuan, Q. J., Hu, X. W., Hou, Z. P., y Deng, S. G. (2013). Doctoral dissertations of Library and Information Science in China: A co-word analysis. *Scientometrics*, *94*, 781-799.

[14]. Mundhial, S., Sahoo, J., Dash, N. K., y Mohanty, B. (2022). Indian Doctoral Research in the Field of Library and Information Science: An Empirical Analysis. *International Information & Library Review*, *54*(1), 1-16.

[15]. Mulla, K. R., Dhanamjaya, M., y Talawar, V. G. (2013). Citations in Engineering Doctoral Dissertations: An Obsolescence Study. *DESIDOC Journal of Library y Information Technology*, *33*(6).

[16]. Cambronero-Saiz, B., y Segarra-Saavedra, J. (2022). Tendencias temáticas y redes sociales en tesis doctorales españolas sobre medios de comunicación y salud (1979/2020). *Revista Española de Documentación Científica, 45(*4).

[17]. Fernández-Guerrero, I. M., Callejas, Z., Griol, D., y Fernández-Cano, A. (2020). Longitudinal patterns in Spanish doctoral theses on scientific medical information: a tertiary study. *Scientometrics*, *124*(2), 1241-1260.

[18]. Machan, K., y Portero, F. S. (2018). Doctoral theses in diagnostic imaging: a study of Spanish production between 1976 and 2011. *Radiología (English Edition), 60*(5), 394-403.

[19]. Rodríguez-Faneca, C., Maz-Machado, A., y Gutiérrez-Rubio, D. (2021). Análisis de la composición de los tribunales de tesis doctorales españolas en Traducción e Interpretación. *Revista Española De Documentación Científica*, *44*(3).

[20]. Olmedilla, A., Abenza, L., Serrano, A., y Muñoz, A. M., García-Angulo, F., y Ortega, E. (2017). Estudio bibliométrico de tesis doctorales sobre psicología del deporte. *Cuadernos de Psicología del Deporte*, *17*(2), 121-130.

[21]. Moyano, M., Domínguez, C. J. D., Casal, G. B. (2006). Análisis de la productividad científica de la psiquiatría Española a través de las tesis doctorales en la base de datos TESEO (1993-2002). *International Journal of Psychology and Psychological Therapy*, *6*(1), 111-120.

[22]. Moreno-Fernández, O., y Moreno-Crespo, P. (2016). Análisis bibliométrico de las tesis doctorales españolas indexadas con el descriptor "Sector de la educación" (1976/2014). *Revista Española de Documentación* Científica, 39 (3).

[23]. Sánchez-Vigil, J. M., Marcos-Recio, J. C., y Olivera-Zaldúa, M. (2014). Tesis doctorales sobre fotografía en la universidad española. Análisis de la producción y dirección (1976-2012). *Revista Española De Documentación Científica*, *37*(1).

[24]. Antúnez, A., Ibáñez, S. J., y Feu, S. (2021). Analysis of the research methodology in Spanish doctoral theses on handball. A systematic review. *International Journal of Environmental Research and Public Health*, *18*(20), 10579.

[25]. Vallejo, M., Torralbo, M., y Fernández-Cano, A. (2016). Gender bias in higher education: Spanish doctoral dissertations in mathematics education. *Journal of Hispanic Higher Education*, *15*(3), 205-220.

[26]. Maz-Machado, A., Rodríguez, M., & de los Ángeles Hidalgo-Méndez, M. (2022). Una mirada de género a la gestión de la investigación en Educación matemática en las universidades andaluzas. *Matemáticas, educación y sociedad*, *5*(3), 1-9.

[27]. Aguirre, I. (2011). Retos y oportunidades para la investigación en educación artística en Latinoamérica. Revista *Internacional Magisterio,* 49, 22-27.

[28]. Mason, R. (2008). Problems of Interdisciplinarity: Evidence-Based and/or Artist-Led Research? *Journal of Art and Design Education, 27*(3), 279-292.

[29]. Giráldez-Hayes, A. (2007). *La competencia* cultural *y artística*. Madrid: Alianza.

[30]. Burton, D. (1998). Survey of Current Research in Art Education. Studies *in Art Education*, *39*(2), 183–186. Doi: 10.2307/1320468

[31]. Jokela, T., Kallio-Tavin, M., & Hiltunen, M. (2017). An Overview on the Past: Art Education Doctoral Research in Finland. *Experimenting fads: Finnish Art-Education Doctoral Studies*, 22.

[32]. Yücesoy, Y., Demir, B., & Bağlama, B. (2021). A Review of Graduate Theses Related to Art Education in Turkey: A Content Analysis Study. *International Journal of Education, Technology and Science*, *1*(1), 1-13.

[33]. Castelló-Cogollos, L., Cañigral, F. J. B., y Zurián, J. C. V. (2018). Análisis de redes sociales y bibliométrico de las tesis españolas sobre drogodependencias en la base de datos TESEO. *adicciones*, *31*(4), 309-323.

[34]. Cañizares, A. B. (2019). Las enseñanzas artísticas musicales en la investigación en el ámbito de la UCO. *Nº Extra, 13*, 13-24.

[35]. García-Torrel, I., & Sánchez-Franco, M.A. (2021). Sistematización de los principales resultados científicos de tesis doctorales en el área de la educación artística para el Sistema Nacional de Educación en Cuba. *REDISED Revista Diálogo* Interdisciplinario *sobre Educación*, *2*(1), 56-89.

[36]. Ministry of Universities. (n.d.). *Doctoral theses: TESEO.* Ministry of Universities. Retrieved from: https://www.educacion.gob.es/Teseo [accessed: 29 September 2023].

[37]. Díaz-Campo, J. (2014). La investigación sobre Internet en las facultades de Comunicación españolas. Análisis bibliométrico de tesis doctorales (1997-2012).

[38]. Marcos Recio, J. C., Martínez Pestaña, M. J., & Blasco López, M. F. (2012). Producción y dirección de tesis doctorales sobre publicidad en la universidad española (1971-2010). *Documentación de las Ciencias de la Información*, (37), 305-320.

[39]. Maz-Machado, A., Rodríguez-Faneca, C., Gutiérrez-Rubio, D. & Jiménez-Fanjul, N. (2020). Análisis bibliométrico de la producción de tesis doctorales sobre traducción e interpretación en las universidades españolas (1997-2018). *Tonos Digital: Revista de estudios filológicos*, (39), 25.

[40]. Egghe, L. (1986). The dual of Bradford's law. Journal of the American Society for Information Science, 37(4), 246-255.

[41]. Bradford, B. C. (1948). *Documentation.* London: Crosby, Lockwood Sons.