

# Systematic review of creativity didactic tools and resources developed in spanish

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## Abstract

**Introduction:** Creativity is a capacity that is present in all human beings and that is characterized by generating original solutions to a certain conflict. **Objective:** This systematic review aims to identify both the instruments to measure creativity and the different resources that can be used to improve it in Spanish. **Method:** For this, two searches have been carried out: one for instruments and another for resources in the Web of Science, Scopus, Dialnet Plus and Ebsco databases using certain search formulas, from which a total of 34 studies have been obtained from among both searches. **Results:** The results show a diversity of instruments and resources, techniques or activities existing in the Spanish language with which creativity can be enhanced. **Discussion:** This work can help other researches to identify which instruments or resources are best adapted to their studies to be carried out.

**Keywords:** creativity; measuring instruments; open educational resources; educational programmes; spanish.

## Revisión sistemática de los instrumentos y recursos didácticos de creatividad desarrollados en habla hispana

### Resumen

**Introducción:** La creatividad es una capacidad que está presente en todos los seres humanos y se caracteriza por generar soluciones originales ante un determinado conflicto. **Objetivo:** Esta revisión sistemática tiene como objetivo identificar tanto los instrumentos para medir la creatividad como los distintos recursos que pueden ser utilizados para su mejora en habla hispana. **Método:** Para ello se han realizado dos búsquedas: una para instrumentos y otra para recursos, en las bases de datos Web of Science, Scopus, Dialnet Plus y Ebsco, mediante unas determinadas fórmulas de búsqueda, de las cuales se han obtenido un total de 34 estudios. **Resultados:** Los resultados muestran una diversidad de instrumentos y de recursos, técnicas o actividades existentes en habla hispana con los que se puede potenciar la creatividad. **Discusión:** Este trabajo puede ayudar a otras investigaciones a identificar cuáles son los instrumentos o recursos que mejor se adaptan a sus estudios por realizar.

**Palabras clave:** creatividad; instrumento de medida; recursos educativos abiertos; programas de educación; español.

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## Introduction

The concept of creativity is so complex that is difficult to define, as there is no general definition for the term (Al-Ababneh, 2020). Even so, creativity can be understood as the ability that, through imagination, builds something new and has transcendence in the physical world, as well as any process that involves decision-making in order to meet a specific goal (Cuetos et al., 2020).

Some researchers, such as Castillo-Delgado et al. (2016) and Bonilla (2015), indicate that creativity is related to social transformation and human potential. This idea is in line with the stance of Fernández et al. (2019) on creativity as an ability to solve problems through the proposition of hypotheses and the discussion of results.

Creativity is a characteristic of human beings that, since its beginnings, has always been present to a greater or lesser extent. In recent years—specifically in the last decade—this word has captured the interest of researchers in a significant way (Fernández et al., 2019; Morales-Valiente, 2017). Some of the studies explain how learning strategies and creativity favor information processing (Hurtado et al., 2018); how creativity is shown at the earliest ages and how it can be fostered through various educational strategies (Medina-Sánchez et al., 2017); how those students with creative attitudes have higher academic grades (creativity directly influences academic performance) (Chiecher et al., 2018); how creativity can be fostered through different pedagogical tools and is significantly related to learning (Bernabeu & Goldstein, 2016; Rodríguez, 2018); and how creativity is a didactic alternative that can enhance human talent in different disciplines (Acosta et al., 2016).

All of these studies are just a few examples of the vast amount of research that can be found today on creativity.

Most of these studies are conducted in educational contexts; although, as Elisondo (2015) comments, creativity is a capacity within all people and therefore can be deployed in any situation and/or context.

The assessment of creativity is a difficult task due to the ambiguity of this term, which implies

different personality and cognitive traits. This issue is discussed by different authors, as some indicate that creativity is not a construct that can be measured, while others point out that it can be measured and that it should be done in order to improve it through an intervention (Arévalo et al., 2015; Sánchez et al., 2019).

It should be added that subjectivity and experience play a relevant role in the process of assessing a person's creative capacity (González et al., 2020). One aspect to bear in mind is that experimental and/or empirical studies carried out by researchers can be negatively affected or altered by different variables, such as the environment or the intention of the researcher, which can jeopardize the validity of the data obtained (Ricci, 2020; Rodríguez & Luzardo, 2020). It is understood that the ability to be creative can be modified according to a variety of factors (social, psychological, environmental, or biological) (Díaz & Justel, 2019).

There are different methods to measure creativity, among which the most common are the divergent thinking tests that measure creativity as an ability to create new ideas in the face of a given problem (Guilford, 1950; Torrance, 1966).

The dimensions for the evaluation of creativity vary according to the field to be evaluated or even depend on the point of view of each researcher. Most tests agree that fluency, originality, and flexibility are the three dimensions that should be taken into account when measuring creativity, so the higher the subject's score in these dimensions, the greater their creative capacity (Soto et al., 2015). On the other hand, other authors, specifically Kim et al. (2006) disagree with this idea, since, for them, these three dimensions are related to each other, and, therefore, a person does not necessarily need to score in all three dimensions to be considered creative. Martínez (2016) indicates that, in order to know if a person is creative, one must look at the result and/or product and its usefulness; and not so much at the process of how that person has reached that result. Taking into account the large number of types of creativity that may exist depending on the context to which reference is made, Ayala-Pérez (2013) shows that, in graphic design, the dimensions that should be taken

into account are novelty, communication and aesthetics, which form the construct of creativity in this area and, therefore, with them it is possible to know whether a person is creative or not.

In view of the above, the main objective of this systematic review is to identify the existing instruments or adaptations that serve to measure creativity, as well as different resources or programs developed for its improvement in Spanish-speaking countries.

## Methodology

The principles of the PRISMA statement (Urrútia & Bonfil, 2010) and the methodological guidelines offered for the preparation of quality systematic reviews (Alexander, 2020) were taken into account in the development of this work.

### **Established Databases, Descriptors, and Search Formulas**

For the present systematic review, the databases Web of Science, Scopus, Dialnet Plus, and Ebsco were consulted in the search engine Google Scholar. This report, according to its main objective, has been developed through two different searches: a first search focused on the instruments that measure creativity and a second independent search aimed at identifying different resources or existing intervention programs on creativity.

In the first search (hereinafter, search 1), *creatividad* and *español* were used as descriptors. These terms have been subsequently translated into English in order to be used in the search formulas (creativity AND Spanish). This translation is due to the fact that the databases consulted have an international character, so a search in English will always be more effective, although the search has been carried out in English and Spanish. The search formulas used included the Boolean operator AND in order to enrich the search. Therefore, the search was carried out using the following formulas: *creatividad* AND *español*; creativity AND Spanish.

With the second search (search 2), which focused on studies related to creativity intervention

programs or resources, the descriptors *programa*, *intervención*, and *creatividad* were used. These descriptors were later translated into English in order to establish a series of appropriate search formulas. Thus, the search formulas used for this second research were in Spanish: *programa* AND *creatividad*; *intervención* AND *creatividad*; and in English: program AND creativity; intervention AND creativity.

For both searches, a number of filters, such as the type of document or language used, have been used in order to increase the efficiency of the search. No time limit has been set.

Table 1 shows the number of documents found in each of the databases used for this systematic review. This table is organized into two types of searches: instruments (search 1) and intervention programs or resources (search 2); each of these searches was carried out in English and Spanish using the different search formulas mentioned above. After carrying out the initial search, inclusion and exclusion criteria were proposed in order to select those studies that best fit the objectives of the present review. In both searches (search 1 and search 2) the same selection criteria were used, but always adapted to their subject matter.

To begin with, for the proposed inclusion criteria, the documents with the following aspects studies that have been categorized as journal papers; (c) language of publication: Spanish or English; (d) empirical studies; (e) studies focused on the Spanish-speaking population. On the other hand, a series of exclusion criteria have been established to decide whether or not they form part of the systematic review; these criteria were: (a) works catalogued as books, book chapters, theses and/or Final Year Projects; (b) qualitative or theoretical studies; (c) research focused on a population other than Spanish speakers.

### **Categorization of Publications**

In reference to the above criteria, a total of 34 papers were included in this systematic review between the two searches.

On the one hand, in search 1, a total of 4,535 results were initially found. These results, after the application of the selection criteria, were reduced

**Table 1**

*Summary of the Results Obtained in each Database According to the Search Carried Out*

Databases	Search 1.- Instruments that measure creativity			
	English		Spanish	
	Initial search	Search with filters	Initial search	Search with filters
Web of Science	539	172	15	7
Scopus	368	93	1	1
Dialnet Plus	311	209	2373	709
Ebsco	850	230	59	37

Databases	Búsqueda 2.- Recursos o programas para trabajar la creatividad			
	English		Spanish	
	Initial search	Search with filters	Initial search	Search with filters
Web of Science	10756	5683	82	65
Scopus	7668	4653	10	8
Dialnet Plus	619	463	3070	1629
Ebsco	20623	12288	54	291

to 2,849. This figure decreased considerably after reviewing the subject and the content of the studies, resulting in the eight papers finally included in the review with respect to the search focused on creativity measurement instruments.

As for search 2, focused on resources that enhance creativity, the total number of results found in the initial search was 43,376. Once the exclusion criteria were applied, this figure was reduced to 25,080, of which, after prior review of abstracts and titles, a total of 26 papers were selected (Figure 1). Two researchers carried out the document search process and were responsible for the individual analysis of both the titles and the abstracts in order to select only those studies that met the proposed objective. The discrepancies that may have arisen have been resolved by consensus, without need to resort to the participation of third parties.

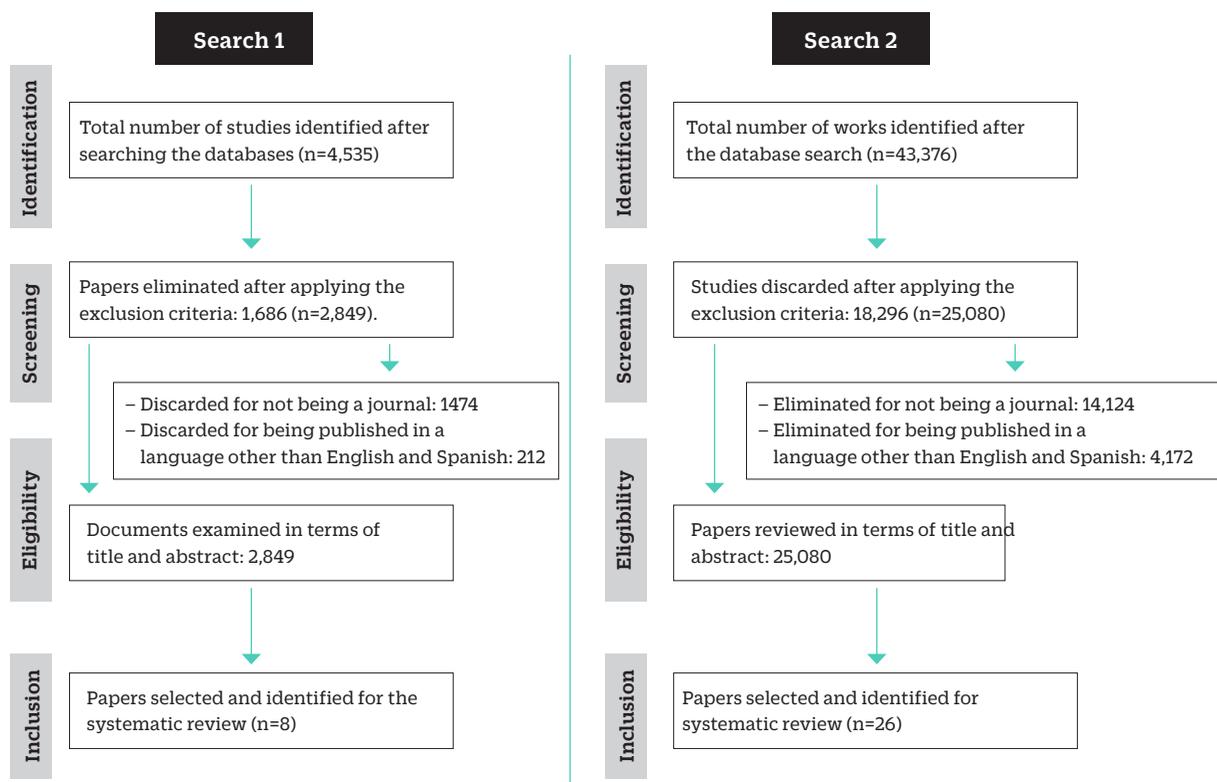
## Results

In keeping with the purpose of this systematic review, the results section will be divided into two parts. On the one hand, the existing

instruments in Spanish that measure creativity will be shown, and, on the other hand, the programs or didactic resources that have been implemented to improve it.

The following table (Table 2) shows some of the main characteristics of the selected studies related to the measurement of creativity. In these studies, the fact that the predominant type of measurement consists of a Likert-type scale with several response options can be highlighted. The Creative Actions Scale (Elisondo, 2020) assesses the number of creative actions performed by the subjects in seven defined domains (everyday creativity, social participation, music, performing arts, science and technology, visual arts and crafts, and, finally, literature). This scale is intended for students, just as the one developed by Soroa et al. (2015), called the Shortened Emotional Creativity Inventory, which aims to assess the ability to express and experience emotions through three dimensions (preparedness, novelty, and effectiveness). Another instrument that can be applied to subjects of these ages is the Villa and Auzmendi Creativity Test (Auzmendi et al. 1996), also known as VAT (Villa and Auzmendi Creativity

**Figure 1**  
Flowchart of the Sample Selection Process



Note: The figure on the left (Search 1) refers to the flowchart related to the search for tools, while the figure on the right (Search 2) indicates the search related to educational resources.

Test). This instrument requires subjects to describe themselves using 20 adjectives on a five-point Likert scale.

On the other hand, focused on lower ages, specifically on elementary school students (6-12 years old), we find the Child Creativity Test (TCI), elaborated by Romo et al. (2016), which assesses creativity by means of two tasks focused on the process through which the final product is obtained, and not only on the result.

One of the scales that has been developed to evaluate creativity at all possible ages is the CREA instrument (Martínez-Zaragoza & Corbalán, 2002). This test comprises a total of three slides (A, B, and C) and their corresponding answer sheets. Slides A and B are designed for subjects over 16 years of age, meaning they can be used together.

On the other hand, slide C is designed for children between 6 and 16 years.

For adults, we can find the Creative Imagination Test for Adults (PIC-A) (Barraca et al., 2011), which aims to identify the narrative and graphic creativity of the subjects. For this purpose, the instrument consists of four tasks: three of a narrative nature and one of graphic nature. In the first of these tasks, the subjects must write down their ideas about what may be happening in a drawing that is presented to them; in task two, they have to comment on all the uses that can be given to a rubber tube; task three consists of coming up with all the possible responses to an inconceivable situation; finally, task four consists of completing some drawings that are presented incomplete and thinking of a possible title.

Finally, also aimed at adults, there are two instruments that have been adapted to Spanish. First, the Creative Environment Perception Scale (CEP) (Boada-Grau et al., 2014b) is based on knowing the perceptions that employees have regarding creativity at work through three scales: support for creativity, job characteristics, and creativity blocks. On the other hand, there is the Creative

Potential and Practised Creativity Scale (CPPC-17) (Boada-Grau et al., 2014a), which is made up of three factors: creative potential, practised creativity, and perception of organizational support.

As the papers related to instruments measuring creativity have been presented, we are moving on to those works related to programs or resources elaborated to enhance creativity.

**Table 2**  
*Main Characteristics of Instrument Studies*

Author(s) and year	Instrument name	Sample Size	Nº of items	Type of measurement
Elisondo (2020)	Creative Actions Scale	1,604 women and men (M= 37.75)	42 items with six items for each domain	Likert scale with 5 answer options
Romo et al. (2016)	Child Creativity Test (TCI)	1,488 primary school students	-	Free drawing
Soroa et al. (2015)	Inventory of Emotional Creativity - Shortened Spanish version (ECI-S)	1,145 higher education students (M= 21.70)	17 items	6-point Likert scale (1= strongly disagree - 6= strongly agree)
Boada-Grau et al. (2014)	Creative Environment Perception Scale (CEP) – Spanish Adaptation	975 employed adults (M= 42.49)	9 items	Likert scale with 5 answer options (1= completely disagree - 5= completely agree)
Boada-Grau et al. (2014)	Creative Potential and Practised Creativity scale (CPPC-17) - Spanish Adaptation	975 Spanish employees (M= 42.49)	17 items	Likert scale with 5 answer options (1= completely disagree - 5= completely agree)
Barraca et al. (2011)	Creative Imagination Test for Adults (PIC-A)	488 adults (M= 25.7)	13 items	4 tasks: 3 of a narrative nature and a graphic one
Martínez-Zaragoza y Corbalán (2002)	CREA Instrument	2,223 subjects: 1,075 Spaniards and 1,148 Argentinians	-	3 slides (A, B, and C) according to the age of the subjects
Auzmendi et al. (1996)	Villa and Auzmendi Creativity Test	2,270 students (M= 14.2)	20 items	Likert scale with 5 answer options (1= not at all - 5= very much)

The following table (Table 3) shows the results found in this systematic review of those courses, materials, and/or programs that can be carried out with the aim of enhancing creativity in the educational context or in any other field.

One aspect to highlight is how most of these studies are focused on enhancing creativity through elements related to intelligence and cognitive processes; therefore, tasks or activities are carried out that involve the proposition of new ideas, the resolution of conflicts (Alfonso-Benlliure et al., 2013; Allueva, 2002; López & Navarro-Lozano, 2010; Prieto et al., 2002; Larraz & Allueva, 2012), or the use of educational resources oriented to the construction of products such as the Tangram (Piraquive-Peña et al., 2015). The aim of these tasks is not only to foster creativity

as such, but also to develop appropriate creative skills, such as fluency, originality, and flexibility.

Another resource that is often used, especially with young children, is play. Through play or ludic activities based on experimentation, children not only experience significant learning, but also enhance certain skills that lead to an improvement in graphic, narrative, and mental creativity (Aranda, 2012; Castillo et al., 2018; Chávez et al. 2009; Garaigordobil, 2006; Garaigordobil & Bruno, 2011; Justo & Franco, 2008; Ocampo et al., 2019). For this reason, certain studies focus on enhancing creativity through physical education sessions or certain related activities that encourage movement, such as different types of motion (Martínez & Díaz, 2006; Salinas-López et al., 2015).

**Table 3**  
*Studies Focused on Programs or Resources to Enhance Creativity*

Author/s and year	Variables to work with	Resources used	Educational stage
Núñez-Gómez et al. (2020)	Creativity	Children's short films	Elementary
Segundo et al. (2020)	Creative thinking and academic performance	Reading and writing activities	Elementary
Ocampo et al. (2019)	Creative skills	Eight modified children's games to promote creative skills	Elementary
Jenaro-Río et al. (2019)	Graphic and narrative creativity	Visual arts workshop	Elementary
Castillo et al. (2018)	Creativity	Program: Do you dare to create? -Ludic and collective activities	Children's
Arazola-Ruano (2017)	Motor creativity	Activities based on creative relaxation	Children's
Salinas-López et al. (2015)	Motor creativity	Didactic unit focused on the area of physical education	Elementary
Piraquive-Peña et al. (2015)	Creativity, multiple intelligences, and motivation	Tangram	High school
Olivos et al. (2013)	Graphic and narrative creativity	"I learn and I undertake" Program	High school

Alfonso-Benlliure et al. (2013)	Creativity	Activities focused on the promotion of cognitive processes.	Children's
Aranda (2012)	Creativity	EDFI Program - Game-based activities	Children's
Larraz y Allueva (2012)	Creative skills	Activities based on idea generation and problem-solving.	High school
Garaigordobil y Berrueco (2011)	Graphic and verbal creativity	Cooperative-creative play sessions	Children's
Barrena y Molina (2010)	Creativity and education in values	Creative techniques and storytelling	High school
López y Navarro-Lozano (2010)	Creative skills	Task-based activities	Elementary
Franco y Justo (2010)	Graphic and verbal creativity	Chapters of the children's series Sesame Street	Children's
Chávez et al. (2009)	Verbal and graphic creativity	Play-based educational activities	Elementary
Franco y Justo (2009)	Verbal, graphic and, motor creativity	Relaxation-based activities	Children's
Franco et al. (2009)	Verbal creativity	Relaxation-based activities	Children's
Justo y Franco (2008)	Motor creativity	Several sessions oriented to the experimentation through play	Children's
Martínez y Díaz (2006)	Motor creativity	Exercises based on the technique of systematic variation of movement	Adults
Garaigordobil (2006)	Verbal and graphic creativity	Intervention based on cooperative games	Elementary
Franco (2004)	Verbal and graphic creativity	Activities based on five traditional tales	Children's
Prieto et al. (2002)	Creative skills	Activities aimed at encouraging divergent thinking	Children's and Elementary
Allueva (2002)	Creativity	Sessions based on the presentation of a problem that requires improvement or solutions	University
Garaigordobil y Pérez (2002)	Verbal and graphic creativity	Activities based on artistic language	Elementary

On the other hand, other techniques that are very useful for the development of creativity are those related to the visual arts, such as painting on a canvas or building different structures using materials like plasticine and clay (Garaigordobil & Pérez, 2002; Jenaro-Río et al., 2019). From such techniques of a technical and visual nature, the subjects work on certain variables such as perception or imagination, which help to stimulate creativity. The latter variables can also be represented in those resources that involve activities related to reading or writing stories (Barrena & Molina, 2010; Franco, 2004; Segundo et al., 2020), watching short films or children's series (Franco & Justo, 2010; Núñez-Gómez et al., 2020), or those exercises aimed at creative relaxation (Arazola-Ruano, 2017; Franco et al., 2009; Franco & Justo, 2009), since, as mentioned above, creativity can be positively enhanced through these variables.

Finally, it is necessary to highlight the existence of programs aiming to contribute to the training and development of young people through the acquisition of certain skills such as creativity (Olivos et al., 2013).

## Discussion

Creativity, although it does not have an exhaustive definition, is understood as the decision-making process that is carried out with a specific purpose through imagination and that has observable results in the physical world (Al Ababneh, 2020; Cuetos et al., 2020).

Although creativity has always been present in our lives, there are many researchers who, in recent years, have been attracted by this construct (Fernández et al., 2019; Morales-Valiente, 2017), since, as stated by Bonilla (2015) and Castillo-Delgado et al. (2016), creativity is related to human potential and, therefore, to the ability to solve problems (Fernández et al., 2019). For that reason, many studies can be found in recent years on creativity and its relationship with other variables, such as information processing (Hurtado et al., 2018); age (Medina-Sánchez et al., 2017); academic

performance (Chiecher et al., 2018); learning (Bernabeu & Goldstein, 2016; Rodríguez, 2018); human talent (Acosta et al., 2016); among others, due to the fact that creativity can be expressed in any field and/or context (Elisondo, 2015).

Certain researchers have focused their work on measuring creativity in a series of individuals through the use of different tests. This task is quite complex due to the fact that this term presents different cognitive and personality traits. Therefore, this topic involves some controversy, and several authors indicate that creativity is a construct that cannot be measured, unlike others, who claim that creativity can be measured and can be enhanced through an intervention (Arévalo et al., 2015; Sánchez et al., 2019). Before assessing a person's creativity, it is necessary to take into account a series of details, such as subjectivity and experience; how research can be negatively affected by different variables, such as the environment; and how it is possible to modify creativity depending on certain factors (Díaz & Justel, 2019; González et al., 2020; Ricci, 2020; Rodríguez & Luzardo, 2020).

This systematic review has corroborated the great variety of existing instruments that measure creativity and of resources or programs that are used with the purpose of enhancing it in different contexts. Although the methods focused on assessing creativity are diverse, most of them focus on evaluating creativity through problem-solving (Guilford, 1950; Romo et al., 2016; Torrance, 1966), the creative actions implemented (Elison, 2020), as well as the perception of one's own creative aptitude (Auzmendi et al., 1996). Some authors point out that the higher the score obtained in the dimensions of creativity, the higher the subject's creative ability (Soto et al., 2015), while other authors state that all the dimensions of creativity are related to each other (Kim et al., 2006) and that it is only necessary to focus on the final result (Martínez, 2016) or on the sequence of tasks used up to the obtention of the creative element (Barraca et al., 2011; Martínez-Zaragoza & Corbalán, 2002).

It should be taken into account that, depending on the context to be evaluated, the dimensions may vary, as Ayala-Pérez (2013) exemplify, who

shows that to measure creativity in graphic design, the dimensions to be evaluated are: novelty, communication, and aesthetics. Likewise, as is the case with the scale developed by Soroa et al. (2015), which focuses on the dimensions of preparedness, novelty, and effectiveness in order to know the ability of the evaluated subjects to express and experience emotions. To measure creativity in the work context, there are two scales that aim to determine the perceptions of employees regarding the creativity displayed at work (Boada-Grau et al., 2014b), as well as to perceive the creative potential of employees at work (Boada-Grau et al., 2014a).

Considering the diversity of resources available aimed at enhancing creativity, it is worth highlighting how most of them are carried out in an educational context and with young subjects, i.e., students of early childhood or elementary education. The existence of programs through which certain creative skills are developed is necessary in order to enhance the training of students (Olivos et al., 2013). Many researchers have opted to include involving intelligence and cognitive processes, such as the development of new products or problem-solving (Alfonso Benlliure et al., 2013; Allueva, 2002; López & Navarro-Lozano, 2010; Piraquive-Peña et al., 2015; Larraz & Allueva, 2012).

On the other hand, other studies have opted to use play and/or other activities that involve movement on the part of the participants. Although most of these studies are focused on enhancing motor creativity (Justo & Franco, 2008; Martínez & Díaz, 2006; Salinas-López et al., 2015), benefits in graphic and narrative creativity have also been obtained (Aranda, 2012; Castillo et al., 2018; Chávez et al., 2009; Garaigordobil, 2006; Garaigordobil & Berruero, 2011; Ocampo et al., 2019). In addition, certain techniques related to artistic and literary creation have also been relevant when it comes to enhancing creativity, since these resources stimulate variables such as imagination, which is closely related to creativity. Some of these techniques may be the creation of structures using natural materials (Garaigordobil & Pérez, 2002; Jenaro-Río et al., 2019), activities involving relaxation (Arazola-Ruano, 2017; Franco

et al., 2009; Franco & Justo, 2009), as well as reading, writing, or even watching stories (Barrena & Molina, 2010; Franco, 2004; Franco & Justo, 2010; Segundo et al., 2020; Núñez-Gómez et al., 2020).

In short, it is necessary to highlight the variety of existing instruments to measure creativity and of resources, techniques, and/or activities focused on enhancing creativity in order to—to a greater or lesser extent—foster this construct in the subjects. Considering the practical implications that this work may have for future research, we could claim that this systematic review would be useful for other researchers to know which are the instruments that best adapt to the study to be carried out, as well as which are the most appropriate resources or techniques for an intervention. As for the limitations encountered when conducting this work, they are due to the fact that some studies had to be discarded because we have could not access the full text of the study. On the other hand, it is considered of interest for future lines of research to pay specific attention to characteristics that are considered relevant for the analysis of the instruments identified in this review, such as their validity or reliability. Even so, this review has a wide variety of instruments with which creativity can be measured and resources that have obtained a significant score when it comes to enhancing creativity in Spanish-speaking subjects.

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