Analysis of the Evolution of Creative Skills in Graphic Design Students

Análisis de la evolución de las habilidades creativas en estudiantes de Diseño Gráfico

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Abstract

Creativity plays a fundamental role in graphic design, where the ability to generate innovative ideas and express them effectively is essential for professional success. Understanding how students' creative skills evolve throughout their academic training is of utmost importance for improving the quality of education. This study aims to conduct a comparative analysis of the creative skills of a group of graphic design students at two points in their academic career: in their first semester and in the sixth of a total of eight semesters. To this end, a documentary review of the concept of creativity was carried out, enabling a clear delimitation of the topic and the enhancement of the research instrument. A quantitative methodological design with descriptive-correlational scope was employed, using a creative skills instrument specifically designed for this purpose. The initial phase included the participation of 19 students, with follow-up involving 10 of them. The findings of this study revealed significant changes in the students' creative skills and indicated a correlation between these skills, emphasizing the development of those that were enhanced to a greater extent. This study offers a valuable resource to educators seeking to promote creativity in their classrooms.

Palabras clave: Creatividad, Diseño Gráfico, evaluación, habilidades creativas

Resumen

La creatividad desempeña un papel fundamental en el Diseño Gráfico, donde la capacidad de generar ideas innovadoras y expresarlas de manera efectiva es esencial para el éxito profesional. Comprender cómo evolucionan las habilidades creativas de los estudiantes a lo largo de su formación académica es de suma importancia para mejorar la calidad de la educación. El presente estudio tiene como objetivo realizar un análisis comparativo de las habilidades creativas de un grupo de estudiantes de Diseño Gráfico en dos puntos de su trayectoria escolar: en el primer semestre y en el sexto de ocho semestres totales. Para lograrlo, se realizó una revisión documental del concepto creatividad, que permitió delimitar el tema y nutrir el instrumento. Se empleó un diseño metodológico cuantitativo con alcance descriptivo correlacional, mediante un instrumento de habilidades creativas diseñado específicamente para este fin. Se contó con la participación inicial de 19 estudiantes y un seguimiento con 10 de ellos. Los resultados revelan los cambios en los estudiantes en relación con dichas habilidades e indican la correlación de las habilidades creativas y cuáles de ellas se desarrollaron en mayor grado. El presente estudio puede servir a cualquier docente interesado en fomentar la creatividad en el aula.

Keywords: Creativity, Graphic Design, assessment, creative skills

Introduction

Creativity is an essential attribute in the field of graphic design, as it involves the ability to generate innovative ideas and original solutions. Higher education institutions have the responsibility of preparing students to face the challenges of the professional world and to make significant contributions to their respective disciplines (Rivera Díaz, 2023).

In the domain of graphic design, creativity stands as a pivotal factor in distinguishing oneself in a highly competitive and perpetually evolving environment. The professional competencies required of graphic design students include the ability to generate original ideas, explore new perspectives, and approach problems in innovative ways (Calvillo Martínez *et al.,* 2019; Campi, 2020; Rivera Díaz, 2018).

Creativity, defined as the capacity to generate novel and beneficial ideas, and creative skills, which include aspects such as cognitive flexibility, fluency in idea generation, originality in thought, and the capacity to devise innovative solutions, are competencies that not only drive professional excellence in graphic design but also promote innovative problem-solving in various contexts (Ballbè, 2019; Nielsen & Thurber, 2018).

In the domain of design education, it is imperative to comprehend the evolution of these competencies in students throughout their academic training. The education of designers is not merely the transmission of technical knowledge and practical instruments; it must also nurture students' creative capacities to equip them to effectively confront the challenges of the professional realm.

Consequently, an analysis of the evolution of creative skills in students throughout their academic journey will facilitate improvements in the quality of graphic design education. Furthermore, this analysis will assist in preparing future professionals to adapt to a constantly changing and highly demanding creative work environment.

Theoretical Framework

This research is supported by a multidisciplinary theoretical framework that addresses various concepts related to creativity, graphic design, and education, with a specific focus on the creative skills to be explored in this study.

Creativity

The concept of creativity has experienced an evolution over time, as discussed by Kettler et al. (2021) in their book *Developing Creativity in the Classroom*. Initially regarded as a mystical process, creativity has been redefined as an intentional act of divergent cognition, subject to refinement through analysis and experience.

The authors take as a point of departure the premise that, in ancient Greek and Roman civilizations, creativity was associated with the divine. In these civilizations, human beings were considered instruments of the gods for carrying out creative acts. However, during the Renaissance, a shift in perspective occurred, with greater emphasis placed on technique and the role of the human creator being recognized. Consequently, the Renaissance creator was conceptualized as an innovator, inventor, and generator of ideas.

This transition persisted with the Enlightenment, a period that witnessed a harmonization of creativity between rationalist and romantic ideations. Toward the close of the nineteenth century, Poincaré's theories concerning the interplay between conscious and unconscious endeavors signaled a pivotal juncture in the conceptualization of creativity. This seminal work, in conjunction with the contributions of Gestalt psychology, laid the foundation for a novel conceptualization of creativity as a dynamic process shaped by the interplay between conscious and subconscious faculties.

Walia (2019) proposes a dynamic definition of creativity as an act that arises from a perception of the environment and recognizes a certain imbalance, resulting in a productive activity that challenges thought processes and established norms, giving rise to something new in the form of a physical object, a mental construct, or an emotional creation.

In his book *Anatomy of Creativity* (2011), Guilera presents a definition of creativity from the perspective of creative psychology. This definition comprises four facets that, according to the author, are present in the creative process. These facets include the individual's aptitudes and attitudes, the process of creation itself, the characteristics of the desired outcome, and the evaluation carried out by the society in which it unfolds. Guilera (2011) further elucidates creativity as "the state of consciousness that enables the generation of a network of mental relationships and connections to identify, formulate, and solve problems in a relevant and divergent way" (p. 32).

Graphic Design and Creativity

Design is a professional and intellectual activity involving the conceptualization, development, and fabrication of objects, products, visual

communications, and artificial environments prior to their physical production or construction. It encompasses a creative and abstract process preceding the materialization of a tangible entity. Designers, as experts in their field, are tasked with the responsibility of shaping the objects, communications, and environments that surround us. In doing so, they aim to address both the practical and aesthetic needs of users.

Design, therefore, is a pivotal intellectual process in shaping the contemporary artificial and industrialized world. The entirety of human creations can be considered the result of a design process. This discipline entails the application of creativity to address visual challenges and ensure effective communication. As Campi (2020) asserts, "design is a creative discipline and, therefore, a 'mental' one, and although tools modify it, they do not alter its essence" (p. 9).

The author expounds on the distinction between the verb "to design," which denotes the act of planning or strategizing prior to the execution of tangible objects, and the noun "design," which signifies the outcome of this planning or strategizing process. Additionally, she underscores the significance of comprehending the verb "to design" as a multifaceted intellectual and practical creative activity, one that is both abstract and tangible in its application.

Consequently, the designer must cultivate a range of skills and abilities, including "being a creative person, able to imagine new solutions to the problems that arise" (Campi, 2020, p. 31). Within the creative context, the author alludes to "the capacity to comprehend matters from alternative perspectives and to metamorphose concepts and materials, thereby bestowing upon them a novel form" (Campi, 2020, p. 31).

Education in Graphic Design

The purpose of education in graphic design is twofold: first, to cultivate students' technical and conceptual skills, and second, to nurture their creative ability, critical thinking, and innovation. To this end, it is imperative that the educational environment fosters an ATosphere conducive to experimentation, exploration, collaboration, reflection, imagination, and creation (Klimenko, 2008).

Furthermore, Rivera Díaz (2018) asserts that educational programs ought to cultivate critical thinking and creative problem-solving skills, in addition to fostering active student participation in the learning process, conducting research, articulating ideas, and promoting collaborative learning.

Development of Creative Skills

Contrary to the prevailing notion of creativity as an innate talent, recent theorizing posits that it is, in fact, the result of an open mind and a set of skills that can be cultivated and developed. This shift in perspective

has significant implications for the dissemination of creativity, as it suggests that creativity can be acquired and imparted, thereby becoming accessible to a broader population.

The present research focuses on various creative skills and aptitudes, based on the theories of authors such as Guilera (2011), Cerda (2000), Ariza (2011), and Nielsen and Thurber (2018). The following skills are emphasized: perceptual sensitivity, problem detection and delimitation, intuitive capacity, rationalization, flexibility, fluency, self-awareness, autonomy, innovation, originality, elaboration, criticism, synthesis, curiosity, and analysis.

Firstly, perceptual sensitivity enables the capture of environmental details and nuances, thereby facilitating the development of novel concepts. Similarly, the capacity to identify and define pertinent problems is imperative, and it is derived from this sensitivity and the intuition to conceptualize alternatives.

The ability to analyze a problem involves a set of skills, including pattern recognition, logical reasoning, and mental flexibility to restructure concepts. Similarly, mental fluency enables the spontaneous generation of high-quality ideas. Once the problem is analyzed, it is essential to develop objective self-awareness to enhance strengths and mitigate weaknesses.

In the stage of solution planning, inventive capacity based on productive imagination is a hallmark of the process of creating or adapting objects and methods. Innovation is closely related to this capacity, and it involves the application of knowledge to new circumstances to create new solutions. Originality seeks infrequent and ingenious answers through novel associations. Finally, elaboration enables the transformation of ideas into the concrete realization of products or services through rational and systematic processes.

Methodology

In this context, the present study aims to analyze the evolution of creative skills in a group of graphic design students at two key points in their academic trajectory: the first semester and the sixth semester, considering a total of eight semesters in their training.

In order to achieve the objective of the study, a quantitative methodological design with a descriptive correlational scope was adopted. This methodological approach is used to establish associations between variables through a predictable pattern, thereby determining the degree of relationship or association between two or more concepts, categories, or variables in a specific sample or context (Hernández Sampieri *et al.,* 2014).

In the correlational scope procedure, the measurement of each relevant variable is initially conducted. Subsequently, these variables are quantified, analyzed, and the possible connections between them are established. The process performed is summarized in Figure 1 below.

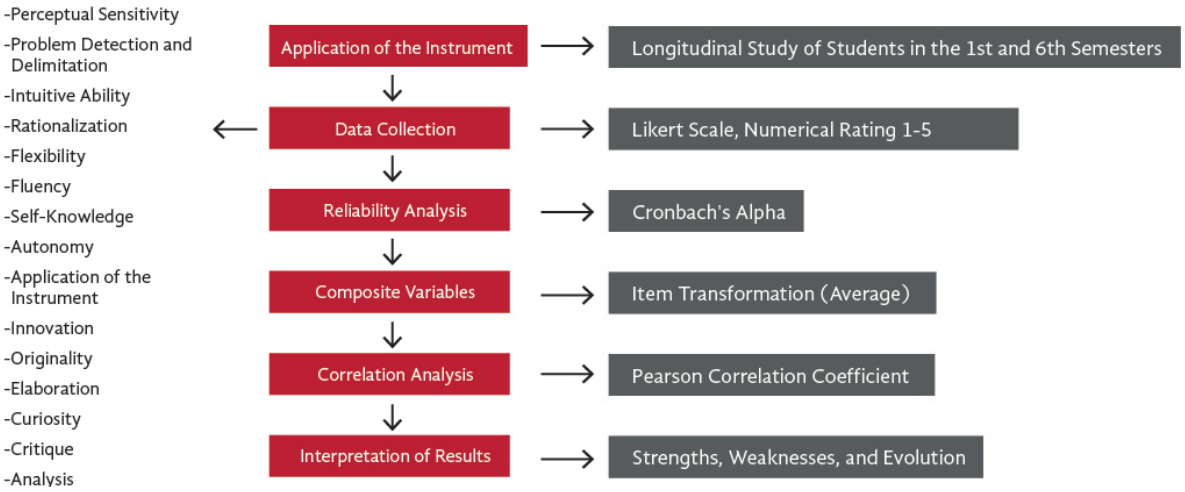

Figure 1. *Diagram of the Creative Skills Evaluation Process. Source: Self-made.*

Population and Sample

The study population comprised graphic design students who were enrolled in the first semester of August 2021 at the Universidad Autónoma de Coahuila. A non-probabilistic convenience sampling method was employed to select the participants. Of the 33 students initially enrolled, 19 participated in the initial evaluation, and 10 participated in the follow-up evaluation in January 2024.

Instrument

A creative skills assessment questionnaire was developed based on a thorough review of the extant literature and the creative skills. The reliability of the questionnaire has been previously established through rigorous research (Calvillo Martínez, 2019). The questionnaire was administered in a self-administered digital format to a selected group of students via the Microsoft Forms platform, accessible through their institutional account (see Figure 2).

6. **For the following statements, select the response that best relates to you.** *

	Always	Almost always	Sometimes	Almost never	Never
I perceive details and nuances that not everyone notices	○	○	○	○	○
I quickly propose reasonable courses of action	○	○	○	○	○
I distinguish insignificant problems from truly important ones	○	○	○	○	○
I identify important problems where most people see normality or insignificant issues	○	○	○	○	○
I spontaneously compare new situations with accumulated experiences	○	○	○	○	○

Figure 2. *View of a part of the questionnaire*
Source: Self-made.

The instrument is composed of two sections. The initial section gathers general information regarding the participants, while the subsequent section contains 80 items that address the following 15 creative skills: Perceptual Sensitivity (PS), Problem Detection and Delimitation (PDD), Intuitive Ability (IA), Rationalization (RZ), Flexibility (FLX), Fluency (FLZ), Self-knowledge (SK), Autonomy (AT), Innovation (INN), Originality (ORI), Elaboration (EL), Critique (CR), Synthesis (SYN), Curiosity (CUR), and Analysis (AN).

The measurement of student identification with each statement is achieved through the implementation of a 5-point Likert scale, ranging from "Never" to "Always." The scale's range is intended to assess the frequency with which students align with each statement. For instance, an item designed to gauge "Originality" (ORI) is as follows: "I seek to generate atypical responses, outside the usual and uncommon, to the situations that arise."

The items related to each creative skill are grouped to form composite variables (see Table 1). The average of responses to the items for each variable is used to determine the level of development of that skill in students. This approach is used when multiple questions are required to verify response consistency.

Table 1. Examples of Composite Variables

Variable	Items
Perceptual Sensitivity (PS)	I perceive details and nuances that not everyone notices. I identify opportunities in the environment before others do.
Problem Detection and Delimitation (PDD)	I distinguish insignificant problems from truly important ones. I delineate important problems where most people see normality or insignificant issues. I go directly to the core of a problem.
Intuitive Ability (IA)	I quickly propose reasonable courses of action. I spontaneously compare new situations with accumulated experiences. In a new conflict situation, I instantly seek patterns of similarity with previous experiences to urgently determine ways to address it.
Rationalization (RZ)	I optimize resources. I simplify processes.
lexibility (FLX)	I shift focus easily. I restructure concepts with ease.
Fluency (FLZ)	I generate ideas and alternative solutions quickly, both in quantity and quality, in a consistent and spontaneous manner. When faced with a specific problem, I seek alternative solutions. I establish new actions for new problems.

Source: Author's own work.

The Cronbach's alpha coefficient was employed to ascertain the internal consistency of the instrument. A high value close to 1 (in this case, 0.946 for the first semester and 0.977 for the sixth semester) indicates that the items reliably measure the creative skills (Hernández Sampieri *et al.,* 2014).

Procedure

In September 2021, during the students' first semester, the creative skills assessment instrument was administered. The participants completed the questionnaire individually and voluntarily. Subsequently, in January 2024, during the sixth semester, the same instrument was applied again to evaluate the evolution of their creative skills.

In addition to the implementation of the instrument, an evaluation of the students' status within the cohort was conducted. Their grade point averages were taken into consideration, and data concerning dropout and failure rates was gathered. This procedure was undertaken to augment the contextual data of the participating students. In subsequent research, the objective is to ascertain whether a direct relationship exists between creative skills and academic performance, which could result in the development of a predictive model.

Data Analysis

The quantitative data were analyzed using both descriptive and inferential statistical techniques to determine the relationship between variables. Descriptive statistical techniques, such as the calculation of means, and inferential statistical techniques, such as Pearson's correlation, were employed to this end. The Pearson r coefficient, also known as the product-moment coefficient, is a parametric statistical analysis that measures the linear relationship between two variables in a sample. The values of the Pearson r coefficient range from -1.00 to +1.00, where 0 indicates no correlation, the sign (+ or -) indicates the direction (positive or negative), and the numerical value represents the strength of the association between the variables (Hernández Sampieri *et al.,* 2014).

The variables were classified as interval-level measurement due to the fact that they not only present order and hierarchy but also indicate equal intervals in the measurement. This allows for the application of basic arithmetic operations and various statistical methods.

Ethical Considerations

Prior to their participation in the research, informed consent was obtained from all subjects. The protection of participants' identities and the confidentiality of the collected data were ensured. The study was conducted in strict adherence to the ethical principles governing research with human subjects.

Results

The results are presented in two sections: the first describes the context of the sample, and the second focuses on the analysis of creative skills.

The first section of the instrument provided insight into the context in which the study was conducted: in 2021, 19 students participated, of which 63% were female and 37% male. The age range of the sample was from 16 to 23 years, with the majority falling between 16 and 19 years of age. Finally, 84% of the participants self-identified as creative individuals.

The second component of the instrument was designed to assess the extent of the development of the students' creative skills.

To accomplish this objective, a numerical value was assigned to each response on the Likert scale, where "Always" equaled 5 (maximum score) and "Never" equaled 1 (minimum score). Utilizing this data matrix, the reliability of the instrument was analyzed employing Cronbach's alpha coefficient, yielding a value of 0.946, which indicated a high internal consistency.

Subsequently, the items were grouped into composite variables by averaging the corresponding item scores. The average of the scores for each creative skill was used to identify the strengths and weaknesses of the student group. As indicated in Table 2, the skill that demonstrated the highest level of development, according to the findings, was self-awareness, with an average score of 4.39. In contrast, perceptual sensitivity exhibited the lowest level of development, with an average score of 3.32. It is important to note that the scale used to assess the development of skills ranged from 1 to 5, with 1 representing the minimum level of development and 5 representing the maximum level.

Table 2. Level of Development of Creative Skills, First Semester 2021

Creative Skill	Average Development
SK	4.39
CR	4.03
CUR	3.96
AT	3.95
SYN	3.88
IA	3.86
PDD	3.77
AN	3.74
FLZ	3.72
FLX	3.71
RZ	3.66
INN	3.63
ORI	3.45
EL	3.43
PS	3.32

Note. SK= Self-knowledge, CR= critique, CUR= curiosity, AT= autonomy, SYN= synthesis, IA= intuitive ability, PDD= problem detection and delimitation, AN= analysis, FLZ= fluency, FLX= flexibility, RZ= rationalization, INN= innovation, ORI= originality, EL= elaboration, PS= perceptual sensitivity.

Source: Own elaboration.

Following the establishment of these variables, a Pearson correlation analysis was conducted to examine the relationships between the different creative skills. This analysis yielded 35 correlations. The variables and their correlations are displayed in Table 3, with the correlations listed in order from highest to lowest magnitude. It is evident that the highest correlation is observed between fluency and autonomy, with a coefficient r of .833. Additionally, it is noteworthy that seven out of the 15 variables correlate with the skill of analysis.

Table 3. Correlation of Creative Skills, First Semester 2021

Variable 1	Variable 1	Coefficient r
FLZ	AT	0.833
PDD	ORI	0.658
PDD	AN	0.655
IA	AN	0.655
PDD	FLZ	0.642
EL	AN	0.637
INN	SYN	0.616
FLZ	ORI	0.611
ORI	AN	0.610
FLX	CUR	0.609
PDD	AT	0.607
SYN	AN	0.603
PS	AN	0.601
PDD	SK	0.598
ORI	SYN	0.595
FLZ	SYN	0.586
RZ	INN	0.571
IA	FLX	0.566
IA	EL	0.566
INN	ORI	0.566
PDD	IA	0.565
FLZ	INN	0.553
SK	SYN	0.552
INN	CR	0.549

Variable 1	Variable 1	Coefficient r
SK	AN	0.545
INN	CUR	0.542
CR	SYN	0.542
PS	PDD	0.528
AT	INN	0.506
PS	ORI	0.503
EL	SYN	0.486
SK	AT	0.481
AT	SYN	0.466
IA	ORI	0.461
IA	CUR	0.459

Note. SK= Self-knowledge, CR= critique, CUR= curiosity, AT= autonomy, SYN= synthesis, IA= intuitive ability, PDD= problem detection and delimitation, AN= analysis, FLZ= fluency, FLX= flexibility, RZ= rationalization, INN= innovation, ORI= originality, EL= elaboration, PS= perceptual sensitivity.

Source: Own elaboration.

By January 2024, at the commencement of the sixth semester of the 19 students who participated in the study, five had dropped out due to economic, family, or work-related reasons; one had been dismissed due to failing; and one more rejoined the group after a temporary leave, now positioned in the fourth semester. Of the remaining students (12), only seven chose to participate in the follow-up survey, and three additional students from the group who had not participated initially also joined, resulting in a total of 10 students who responded to the 2024 survey. The sample population was 50% female and 50% male, with an age range of 19 to 26 years, the majority falling between the ages of 19 and 20 years, and 100% of the sample considered themselves creative individuals.

A reliability analysis was conducted on the data using the procedure previously outlined. This analysis resulted in a Cronbach's alpha coefficient of .977, indicating high reliability.

Concerning the average development of the group's skills, as illustrated in Table 4, the skill that demonstrated the highest level of development, according to the findings, is critique, with a score of 4.13. Conversely, the skill that exhibited the lowest level of development is originality, with a score of 3.20.

Table 4. Level of Development of Creative Skills, Sixth Semester 2024

Creativity Skill	Average Development
CR	4.13
SK	4.10
SYN	3.90
IA	3.80
AN	3.80
CUR	3.78
AT	3.77
FLZ	3.73
RZ	3.70
FLX	3.70
PDD	3.70
EL	3.52
PS	3.50
INN	3.50
ORI	3.20

Note. SK= Self-knowledge, CR= critique, CUR= curiosity, AT= autonomy, SYN= synthesis, IA= intuitive ability, PDD= problem detection and delimitation, AN= analysis, FLZ= fluency, FLX= flexibility, RZ= rationalization, INN= innovation, ORI= originality, EL= elaboration, PS= perceptual sensitivity.

Source: Own elaboration.

As illustrated in Table 5, a comparison has been made of the levels of development of creative skills reported in 2021 and the current level in 2024.

Table 5. Comparison of the Level of Development of Creative Skills

Creativity Skill	Average Development 2021	Average Development 2024
SK	4.39	4.10↓
CR	4.03	4.13↑
CUR	3.96	3.78↓
AT	3.95	3.77↓
SYN	3.88	3.90↑
IA	3.86	3.80↓
PDD	3.77	3.70↓
AN	3.74	3.80↑
FLZ	3.72	3.73↑
FLX	3.71	3.70↓

Creativity Skill	Average Development 2021	Average Development 2024
RZ	3.66	3.70↑
INN	3.63	3.50↓
ORI	3.45	3.20↓
EL	3.43	3.52↑
PS	3.32	3.50↑

Note. This table shows the creative skills that increased ↑ and those that decreased ↑ in relation to the results from 2021.

SK= Self-knowledge, CR= critique, CUR= curiosity, AT= autonomy, SYN= synthesis, IA= intuitive ability, PDD= problem detection and delimitation, AN= analysis, FLZ= fluency, FLX= flexibility, RZ= rationalization, INN= innovation, ORI= originality, EL= elaboration, PS= perceptual sensitivity.

Source: Own elaboration.

In regard to the Pearson correlation coefficient, a total of 47 correlations between variables were identified. The variables and their respective correlations are presented in Table 6, with the correlations arranged in order from highest to lowest magnitude. It is evident that the strongest correlation is observed between autonomy and critique, with a coefficient r of .909. Additionally, it is noteworthy that 10 out of the 15 variables correlate with perceptual sensitivity skills.

Table 6. Correlation of Creative Skills, Sixth Semester 2024

Variable 1	Variable 2	Coefficient r
AT	CR	0.909
FLZ	SK	0.903
INN	ORI	0.884
PS	FLZ	0.866
PS	CR	0.857
ORI	AN	0.849
INN	SYN	0.838
PS	IA	0.835
PDD	AT	0.834
PS	AT	0.832
PS	INN	0.830
PS	CUR	0.826
INN	AN	0.816
PS	PDD	0.815

Variable 1	Variable 2	Coefficient r
CR	CUR	0.811
FLZ	INN	0.799
IA	CUR	0.795
PDD	INN	0.783
AT	INN	0.777
INN	CR	0.771
ORI	EL	0.767
AT	CUR	0.765
IA	SYN	0.757
IA	INN	0.754
PDD	AN	0.753
PDD	FLZ	0.750
FLZ	CR	0.743
AT	ORI	0.735
PS	SK	0.730
FLZ	AT	0.727
FLZ	CUR	0.719
IA	CR	0.716
PDD	ORI	0.714
PS	AN	0.713
FLZ	AN	0.713
INN	CUR	0.712
FLZ	ORI	0.700
ORI	SYN	0.694
AT	EL	0.679
PS	ORI	0.678
IA	AN	0.675
ORI	CR	0.671
PDD	SK	0.659
SYN	AN	0.659
IA	AT	0.657
SK	AN	0.657
PDD	CR	0.649
AT	AN	0.641

Note. SK= Self-knowledge, CR= critique, CUR= curiosity, AT= autonomy, SYN= synthesis, IA= intuitive ability, PDD= problem detection and delimitation, AN= analysis, FLZ= fluency, FLX= flexibility, RZ= rationalization, INN= innovation, ORI= originality, EL= elaboration, PS= perceptual sensitivity.

Source: Own elaboration.

Discussions

The findings of this study are consistent with the extant literature on creativity and education in graphic design. Several authors have emphasized the importance of developing skills such as flexibility, fluency, originality, and critical thinking in design students (Klimenko, 2008; Rivera Díaz, 2018). Additionally, the observed correlation between autonomy and critical capacity suggests that as students gain more independence in their creative process, they also develop a greater ability to evaluate and improve their own ideas.

It is imperative to acknowledge the limitations of this study, which was conducted among a particular group of graphic design students. Consequently, the findings may not be universally applicable to other populations. Notwithstanding these limitations, the study offers significant insights into the evolution of creative skills during this phase of academic training. These findings lay the foundation for future research in this field.

Furthermore, it is imperative to interrogate the measurement instruments employed in this context. Do these instruments evaluate the creative skills themselves or the students' self-perception of these skills? This is of particular relevance given the potential influence of self-confidence on learning outcomes. It is essential to acknowledge that these instruments do not consistently address the subjective aspects that ought to inform the design of pedagogical strategies within the classroom setting. The efficacy of these strategies is contingent upon their alignment with the outcomes observed and the objectives of the curricular content and pedagogical practices employed in the training of graphic designers.

In terms of the implications for teaching practice, the present study posits that educational programs in graphic design should comprise activities and projects that foster the development of the creative skills assessed by the instrument. Moreover, educators should promote students' autonomy and critical thinking by providing opportunities for them to make creative decisions and reflect on their own design process.

Conclusions

This study offers pertinent data concerning the creative skills of graphic design students, in addition to observations regarding the correlation between these skills and their presence at various stages of academic training. These findings carry substantial implications for educators interested in fostering creativity in the classroom and for the design of curriculum programs aimed at the holistic development of graphic design students.

An analysis of the creative skills of graphic design students reveals a shift between the first and sixth semesters. Some skills demonstrate improvement, including critical thinking, synthesis, analysis, fluency, and elaboration. In contrast, self-knowledge, curiosity, autonomy, and intuitive ability exhibit a slight decrease.

In the sixth semester, the most developed creative skills were critical thinking, self-knowledge, and synthesis. This suggests that students acquire a greater ability to evaluate, reflect, and combine ideas as they progress in their education.

The strongest correlation identified in the sixth semester involved autonomy and critical thinking ability, suggesting that as students become more independent and autonomous, they concomitantly develop a greater capacity for critical analysis.

The skills of perceptual sensitivity, innovation, and originality demonstrated less development in comparison to other creative skills, indicating the necessity to fortify these domains in the training of graphic design students. This outcome prompts the inquiry of whether this phenomenon is attributable to alterations in the students' self-perception concerning these variables. Subsequent studies are requisite to ascertain whether this is a persistent tendency or a phenomenon exclusive to this group.

The findings of the study can be useful for educators interested in fostering creativity in the classroom and for the curricular design of degree programs. The study identifies specific creative skills that require greater attention and development throughout the academic trajectory of graphic design students. This allows for the development of individualized strategies as needed. Likewise, this work is useful for students in terms of improving their self-knowledge. This is because identifying areas of opportunity and strengths allows them to take actions and make better decisions regarding their professional preparation.

It is imperative to underscore that, despite a modest decline in specific abilities, students exhibited a marked enhancement in their creative aptitudes. This finding underscores the pivotal role of academic instruction in cultivating creativity.

These conclusions, derived from the results presented, could serve as a point of departure for future research and actions aimed at enhancing education in graphic design and cultivating students' creative skills.

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